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LIST OF CONTRIBUTORS TO VOL. XII.

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<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noyes, F. B.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Nutting, C. W.</td>
<td>Spring Valley, Minn.</td>
</tr>
<tr>
<td>Nyman, J. E.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Ottofy, L.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Paul, J. W.</td>
<td>Minneapolis, Minn.</td>
</tr>
<tr>
<td>Peck, A. H.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Pfeifer, J. D.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Prinz, H.</td>
<td>St. Louis, Mo.</td>
</tr>
<tr>
<td>Prothero, J. H.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Pruyn, C. P.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Robertson, R. W.</td>
<td>Plymouth, Wis.</td>
</tr>
<tr>
<td>Robinson, F. S.</td>
<td>Wabasha, Minn.</td>
</tr>
<tr>
<td>Richter, R. G</td>
<td>Milwaukee, Wis.</td>
</tr>
<tr>
<td>Royce, E. A.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Snyder, C. L</td>
<td>Freeport, Ill.</td>
</tr>
<tr>
<td>Stearns, C. H.</td>
<td>Owatonna, Minn.</td>
</tr>
<tr>
<td>Taft, J.</td>
<td>Cincinnati, Ohio.</td>
</tr>
<tr>
<td>Talbot, E. S.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Taylor, C. R.</td>
<td>Streator, Ill.</td>
</tr>
<tr>
<td>Wassall, J. W.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Webb, M. A.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Woolley, J. H.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Wright, F. R.</td>
<td>Minneapolis, Minn.</td>
</tr>
<tr>
<td>York, E. L.</td>
<td>Chicago, Ill.</td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Address (President’s)</td>
<td>888</td>
</tr>
<tr>
<td>Alloy as a Filling Material</td>
<td>766</td>
</tr>
<tr>
<td>Alveolar Abscess</td>
<td>363</td>
</tr>
<tr>
<td>A Few Remarks on Prosthetic Dentistry</td>
<td>893</td>
</tr>
<tr>
<td>A New Process of Fusing Platinum</td>
<td>504</td>
</tr>
<tr>
<td>Amalgam</td>
<td>82, 498</td>
</tr>
<tr>
<td>Care and Treatment of Children’s Teeth</td>
<td>17</td>
</tr>
<tr>
<td>Clay and Plaster Modeling Applied to Crown, Bridge, and Porcelain Work</td>
<td>737</td>
</tr>
<tr>
<td>Cocaine</td>
<td>881</td>
</tr>
<tr>
<td>Conservation in Oral Surgery</td>
<td>589</td>
</tr>
<tr>
<td>Crystal Gold</td>
<td>351</td>
</tr>
<tr>
<td>Degeneracy in its Relation to Deformities of the Jaws and Irregularities of the Teeth</td>
<td>263</td>
</tr>
<tr>
<td>Dental Education of the Public</td>
<td>98</td>
</tr>
<tr>
<td>Dental Hygiene and Care of the Teeth</td>
<td>890</td>
</tr>
<tr>
<td>Dietetic Influences on the Dental Organs</td>
<td>96</td>
</tr>
<tr>
<td>Doctorate Address</td>
<td>339</td>
</tr>
<tr>
<td>Erosions as Found in the Orient—Cause and Effect</td>
<td>107</td>
</tr>
<tr>
<td>European Dentistry</td>
<td>742</td>
</tr>
<tr>
<td>Extraction Under Anesthesia</td>
<td>81</td>
</tr>
<tr>
<td>Failures in Cataphoresis</td>
<td>417</td>
</tr>
<tr>
<td>Formaldehyde, its Antiseptic and Irritating Properties</td>
<td>356</td>
</tr>
<tr>
<td>Formaldehyde, its Use in Dentistry</td>
<td>507</td>
</tr>
<tr>
<td>Forty-six Years of Continuous Gum</td>
<td>286</td>
</tr>
<tr>
<td>Hydronaphthol</td>
<td>753</td>
</tr>
<tr>
<td>Incidents from Practice in Germany</td>
<td>175</td>
</tr>
<tr>
<td>Metal Posts for Anchorage for Fillings in Incisor and Cuspid Teeth</td>
<td>257</td>
</tr>
<tr>
<td>New Methods and Appliances in Orthodontia</td>
<td>575</td>
</tr>
<tr>
<td>Oral Hygiene</td>
<td>284</td>
</tr>
<tr>
<td>Our Porcelain Teeth</td>
<td>7</td>
</tr>
<tr>
<td>President’s Address</td>
<td>367, 436, 759</td>
</tr>
<tr>
<td>Prophylaxis in Bridge Work</td>
<td>370</td>
</tr>
<tr>
<td>Pyorrhoea Alveolaris</td>
<td>803</td>
</tr>
<tr>
<td>Report of the Committee on Dental Science and Literature</td>
<td>441</td>
</tr>
<tr>
<td>Report of the Committee on Dental Art and Inventions</td>
<td>697</td>
</tr>
<tr>
<td>Report of Clinic No. 37—Amalgam Experiments</td>
<td>609</td>
</tr>
<tr>
<td>Report of the Supervisor of Clinics</td>
<td>687</td>
</tr>
<tr>
<td>Shaping and Improving the Appearance of the Natural Teeth with the Wheel Used in the Dental Engine</td>
<td>29</td>
</tr>
<tr>
<td>Signs of the Times</td>
<td>39</td>
</tr>
<tr>
<td>Some Thoughts on Alveolar Abscess</td>
<td>268</td>
</tr>
<tr>
<td>Specialism in Country Practice</td>
<td>756</td>
</tr>
<tr>
<td>Suggestive Therapeutics</td>
<td>288</td>
</tr>
<tr>
<td>Surgical Clinic at the Chicago College of Dental Surgery, October 25, 1898</td>
<td>818</td>
</tr>
<tr>
<td>Surgical Treatment of Harelip</td>
<td>23</td>
</tr>
<tr>
<td>Surgical Treatment of Congenital Cleft Palate</td>
<td>811</td>
</tr>
<tr>
<td>Syphilis</td>
<td>10</td>
</tr>
<tr>
<td>Syphilis from a Dental Standpoint</td>
<td>272</td>
</tr>
<tr>
<td>The Adaptation and Retention of Artificial Dentures</td>
<td>1</td>
</tr>
<tr>
<td>The Advisability of Devitalization, Banding and Removal of Enamel in Crown and Bridge Work</td>
<td>87</td>
</tr>
</tbody>
</table>
The Application of Comparative Dental Anatomy to Dentistry.......................... 895
The Application of Heat in Dentistry for the Destruction of Pathogenic Germs............................................ 172
The Articulation of Crowns and Bridges.......................................................... 85
The Artistic and Mechanical in Dentistry.......................................................... 33
The Building of a Small Contour Filling with Gold........................................... 77
The Ceramic Art in Dentistry................................................................. 655
The Drug Habit............................................................ 3
The Essential Oils and Some Other Agents, Their Antiseptic Value, Also Their Irritating or Nonirritating Properties........................................... 593
The Importance and Manner of Sterilization of Dental Instruments......................... 803
The Influence and Power of Association.......................................................... 167
The Introduction of Gold in Large Cavities...................................................... 684
The Law of Similars Applied to Dentistry.......................................................... 18
The Logical Relation of Dentistry to Medicine.......................................................... 729
The Need of Local Cooperative Dental Protection............................................. 183
The Passing of the Foot Power............................................................. 433
The Physiological and Pathological Conditions of the Nerves Relative to Dentistry.............. 764
The Preparation of Cavities.......................................................... 677
The Presence of Arsenic in Cements............................................................. 431
The Protection and Maintenance of the Gum Tissue in the Interproximal Space...................... 347
The St. Louis Dental Society............................................................. 879
The Welding Property of Gold, with Demonstrations........................................... 278
Where Shall I Locate, or the Beauties of a Country Practice........................................... 500
Why Coagulants Diffuse Through Dentine.......................................................... 496

PROCEEDINGS OF SOCIETIES.

Alumni Clinic, Chicago College of Dental Surgery, January 19, 1898.......................... 145
Chicago Dental Society.................................................. 43, 110, 218, 294, 372, 382, 444, 513
Illinois State Dental Society........................................... 243, 518, 623, 702
Isaac Knapp Dental Coterie, Ft. Wayne, Ind.......................................................... 152
Minnesota State Dental Association.................................................. 57, 126, 188
Odontographic Society, Chicago.................................................. 52, 228, 303, 386, 453, 465, 770, 819, 903
St. Louis Dental Society............................................................. 516
Tri-State Dental Association............................................................. 565
Wisconsin State Dental Society............................................................. 773, 837, 913

DISCUSSIONS.

Addresses........................................... 57, 382, 518, 773
Alloy as a Filling Material.......................................................... 782
Anew Process of Fusing Platinum............................................................. 180, 533
Amalgam.......................................................... 625
Banquet Odontographic Society.................................................. 386
Care and Treatment of Children's Teeth.......................................................... 63
Cataphoresis.......................................................... 298
Cement and Amalgam.......................................................... 199
Ceramic Art in Dentistry............................................................ 712
Clay and Plaster Modeling Applied to Crown, Bridge and Porcelain Work.......................... 770
Cocaine.......................................................... 903
Crystal Gold.......................................................... 453
Current and Controllers.......................................................... 242
Dental Analgesics.................................................. 188
Dental Protective Association.......................................................... 60
Essential Oils.......................................................... 631
Extracting Under Anesthesia.......................................................... 216
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure of Cataphoresis</td>
<td>444</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>516</td>
</tr>
<tr>
<td>Hydronaphthol</td>
<td>858</td>
</tr>
<tr>
<td>Incidents of Office Practice</td>
<td>50, 513</td>
</tr>
<tr>
<td>Incidents from Practice in Germany</td>
<td>218</td>
</tr>
<tr>
<td>Metal Posts for Anchorage for Fillings in Incisors and Cuspids</td>
<td>308</td>
</tr>
<tr>
<td>Method of Applying Clamps in Difficult Cases</td>
<td>855</td>
</tr>
<tr>
<td>Oral Hygiene</td>
<td>294</td>
</tr>
<tr>
<td>Oral Surgery</td>
<td>628</td>
</tr>
<tr>
<td>Our Porcelain Teeth</td>
<td>43</td>
</tr>
<tr>
<td>Preparation of Cavities</td>
<td>702</td>
</tr>
<tr>
<td>Pyorrhoea Alveolaris</td>
<td>200, 810, 856, 918</td>
</tr>
<tr>
<td>Replantation</td>
<td>990</td>
</tr>
<tr>
<td>Saliva in Infancy</td>
<td>790</td>
</tr>
<tr>
<td>Some New Things in Orthodontia</td>
<td>627</td>
</tr>
<tr>
<td>Some Relations of the Oral Cavity to the Eye, Ear, Nose and Throat</td>
<td>139</td>
</tr>
<tr>
<td>Some Thoughts on Alveolar Abscess</td>
<td>320</td>
</tr>
<tr>
<td>Specialism in Country Practice</td>
<td>860</td>
</tr>
<tr>
<td>Surgical Operations for the Treatment of Harelip</td>
<td>32</td>
</tr>
<tr>
<td>Surgical Procedure in Correction of Cleft Palate</td>
<td>830</td>
</tr>
<tr>
<td>The Advisability of Devitalization, Banding and Removal of Enamel in Crown and Bridge Work</td>
<td>110</td>
</tr>
<tr>
<td>The Application of Heat in Dentistry for the Destruction of Pathogenic Germs</td>
<td>303</td>
</tr>
<tr>
<td>The Building of Small Contour Fillings with Gold</td>
<td>126</td>
</tr>
<tr>
<td>The Importance and Manner of Sterilization of Dental Instruments</td>
<td>837</td>
</tr>
<tr>
<td>The Influence and Power of Association in the Dental Profession</td>
<td>315</td>
</tr>
<tr>
<td>The Logical Relation of Dentistry to Medicine</td>
<td>729</td>
</tr>
<tr>
<td>The Need of Cooperative Dental Protection</td>
<td>221</td>
</tr>
<tr>
<td>The Physiological and Pathological Condition of the Nerves as Relating to Dentistry</td>
<td>779</td>
</tr>
<tr>
<td>The Presence of Arsenic in Cements</td>
<td>465</td>
</tr>
<tr>
<td>The Welding Property of Gold, etc.</td>
<td>312</td>
</tr>
<tr>
<td>Where Shall I Locate—Beauties of a Country Practice</td>
<td>623</td>
</tr>
<tr>
<td>Why Coagulants Diffuse Through Dentine</td>
<td>558</td>
</tr>
</tbody>
</table>

**EDITORIAL.**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Midwinter Meeting</td>
<td>933</td>
</tr>
<tr>
<td>A Retrospect</td>
<td>721, 790</td>
</tr>
<tr>
<td>A Weekly Dental Journal</td>
<td>791</td>
</tr>
<tr>
<td>Alveolar Abscess</td>
<td>640</td>
</tr>
<tr>
<td>Are you a Reader ?</td>
<td>870</td>
</tr>
<tr>
<td>Arsenic in Cement Powders</td>
<td>476</td>
</tr>
<tr>
<td>Bleaching Teeth</td>
<td>245</td>
</tr>
<tr>
<td>Cataphoresis</td>
<td>474</td>
</tr>
<tr>
<td>Cocaine Poisoning</td>
<td>639</td>
</tr>
<tr>
<td>Cushing, Dr. George H</td>
<td>400</td>
</tr>
<tr>
<td>Dental Congress in Paris, 1900</td>
<td>70, 933</td>
</tr>
<tr>
<td>Dentists in the Army and Navy</td>
<td>566</td>
</tr>
<tr>
<td>Denver, Colorado</td>
<td>154</td>
</tr>
<tr>
<td>Explanation</td>
<td>932</td>
</tr>
<tr>
<td>Hydronaphthol as a Mouth Wash</td>
<td>158</td>
</tr>
<tr>
<td>Illinois State Dental Society</td>
<td>244</td>
</tr>
<tr>
<td>List of Medicines for Use of Dentists</td>
<td>324</td>
</tr>
<tr>
<td>Matrices</td>
<td>870</td>
</tr>
<tr>
<td>Merry Christmas and Happy New Year</td>
<td>932</td>
</tr>
<tr>
<td>Midwinter Enthusiasm</td>
<td>244</td>
</tr>
<tr>
<td>Odontographic Society, of Chicago</td>
<td>158</td>
</tr>
<tr>
<td>Organic Germicides</td>
<td>323</td>
</tr>
</tbody>
</table>
Removing the Pulp .................................................. 720
Secret and Proprietary Preparations .......................... 323
State Board of Examiners .......................................... 475
State Meetings ......................................................... 322
The Close of the Volume ........................................... 932
The DENTAL REVIEW .................................................. 871
The National Dental Association ................................. 567, 639, 720
The Tri-State Meeting at Put in Bay ........................... 474
To Our Contributors .................................................. 566
We Thought So When We Wrote It ................................ 69
What is Medicine? ....................................................... 243

DOMESTIC CORRESPONDENCE.

Letter from Dr. F. H Bowman (Removing Pulp) .............. 795
Letter from Dr. B. H. Catching .................................. 871
Letter from Cleveland .............................................. 567
Letter from Denver ................................................... 793
Letter from Dr. F. J. S. Gorgas ................................. 325
Letter from Dr. F. J. Kester ..................................... 647
Letter from New York ............................................... 154, 246, 326, 405, 477, 641
Letter from Onlooker Re Faculty Association .................. 934
Letter from Dr. Rhein ............................................... 402

FOREIGN CORRESPONDENCE.

Letter from Switzerland (Dr. L. C. Bryan) ................... 160

DENTAL COLLEGE COMMENCEMENTS.

Chicago College of Dental Surgery ............................. 409
Columbian Dental College ......................................... 410
Northwestern University Dental School ......................... 408

REVIEWS AND ABSTRACTS.

A Text-book of Dental Pathology and Therapeutics ........... 798
Black’s Dental Anatomy of the Human Teeth .................. 370
Cataphoresis .......................................................... 331
Manual of Histology ................................................. 252
Oral Pathology and Practice ..................................... 648
Park’s History of Medicine ....................................... 331
Tomes Dental Surgery .............................................. 252
Transactions of the American Dental Association ........... 722
Transactions of the Illinois State Dental Society, 1897 251
Books Received ........................................................ 481, 570
Pamphlets ............................................................. 331

PRACTICAL NOTES.

The Ideal Laboratory ............................................... 986
Were Silver Palates Made in 1694? Yes, They Were .......... 935

MEMORANDA.

MEMORANDA ......................................................... 71, 163, 253, 332, 411, 481, 570, 649, 726, 797, 873, 941

OBITUARY.

OBITUARY ............................................................ 76, 338, 946

IN MEMORIAM.

IN MEMORIAM .......................................................... 492
The Adaptation and Retention of Artificial Dentures.*


While this is an old subject, yet it is new and will continue to be so until there is some better agreement as to the principles involved in the operation.

These principles will not be well established unless they are based upon actual conditions present in mouths. They must also be broad enough to apply to all the variations that present themselves.

Atmospheric pressure is one of the forces claimed as being essential in retaining the dentures, the pressure being produced by a central chamber in which a vacuum is produced. The force exerted is estimated to be from a few ounces to fifteen pounds to the square inch. This claim is entirely faulty. A vacuum cannot be produced in this way, and if it could, would only be of very short duration. Again, if it were possible to get the benefit of such force, it would be better to have it extend over the entire surface of the denture than to confine it to a small central area. Still further, it cannot be applied to lower dentures successfully.

Capillary attraction or adhesion is another force mentioned as all important in the retention of the denture. As whatever force of this character that might be utilized is based upon the laws of cohesion and adhesion, the limit of its operation is so small that it would be insensible in an artificial denture. If, however, the force was greater, it would be better that it should apply to the whole surface than to a part of it.

The conditions presented in the upper jaw are peculiar many

*Read before the Odontological Society of Chicago.
times. The idea that a mouth that is flat is more difficult than a deeper one to secure good results should not be entertained. In general, in from six months to a year after the loss of the teeth, there are not so many difficulties in the way of good results. After a denture has been worn for a long time with only a partial antagonism with a few opposing teeth, the difficulties are multiplied. So also when the mouth is edentulous and no denture has been worn.

When the best model obtainable is at hand, a careful digital examination should first be made of the surface of the mouth, to locate and define the depth and form of the soft spaces within the area to be covered by the plate. These spaces and their form and depth should be outlined on the model, the depth indicated by figures, as it varies greatly in corresponding locations in the same mouth.

The model should then be scraped away in the various places to the proper depth so that the denture will bear evenly over its whole surface, keeping in mind that the central or palatal portion will not change materially while the alveolar ridge is constantly changed by resorption.

For the upper jaw there are five localities where the denture will find a firm and reasonably permanent rest without undue pressure on the parts.

The palatal surface, two on the labial surface immediately over the region occupied by the cuspids, and two over the malar processes extending to and above the maxillary tuberosities.

For the lower jaw there are four localities for a firm rest for the plate, two on the labial in the region of the cuspids and two on the posterior buccal margins between the summit of the alveolar ridge and the attachment of the buccinators to the inferior maxillary. The greatest interference with a denture being retained in its place, as they are usually constructed, consists in the action of the muscles upon the margins of the plate to push it either up or down as the case may be, or oftentimes the posterior margin of the upper one extends upon the soft palate and is thrown down by its movement; or in the lower denture the posterior ends of the plate are so long that in opening the mouth the stretching of the tissues in front of the ramus move it forward.

While all the muscles may throw a denture out of position, yet by a proper form of the margins, some of them may be utilized
as the most important force for retention; notably the buccinators and the orbicularis oris.

A careful examination of the attachments of these muscles should be made and in shaping the margins their movement should be opposed to each other in such a way that they will be compressed upon the denture and hold it firmly.

If improperly made the patient never gets the use of dentures until they learn to hold them in place by the buccinators assisted by the tongue and the orbicularis oris.

With an even pressure over the entire surface of the plate in contact with the mouth, a free movement of the anterior frānum and the anguli oris muscles, the anterior border of the buccinator, the compression of the buccinator at the posterior borders and the compression of the orbicularis oris at the anterior portions, a free movement of the lingual and sub-lingual muscles on the interior surface of the lower denture, with plenty of room for the tongue, accompanied with a stable pressure on the hard or permanent parts of the mouth will produce a perfect adaptation and retention of an artificial denture.

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**THE DRUG HABIT.**

*By A. W. Harlan, M. D., D. D. S., Chicago, Ill.*

Thirty or thirty-five years ago the custom of using washes, lotions and pastes in the mouth as a habit had not become firmly fixed, but after the introduction of the Listerian system of surgery a sort of epidemic of antisepticism struck the whole populace. Every one was seeking for an antiseptic to destroy some unseen, unknown, unfelt enemy to human health. It was believed not only by the public, but by the practitioner that it was an absolute necessity that every time a person awoke in the morning his or her mouth should be washed with something ending in ine, ol, or at, or some such ending as that, the sum and substance of the article used being derived from the name of the principal antiseptic. The habit of prescribing washes and lotions and pastes for oral cleansing has been growing and has grown so enormously that to-day we are confronted with a possible condition of things which it may be difficult to eradicate. Our teeth and our

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mucous membranes being bathed or sprayed once or twice or three times, or oftener daily, have acquired what in general medicine would be called the drug habit, drug toleration, or drug necessity, the mucous membrane in the morning is dry or hot, not moist, not having a normal temperature, but soon from the stimulating effects of the habitual antiseptic (?) the mouth assumes something of naturalness. The fact is that this custom of feeding the mucous membrane daily with sprays and washes and lotions and pastes, the composition of which is unknown to the taker, frequently unknown to the prescriber, is doing a vast amount of injury. Most of these so-called antiseptic lotions contain acids in varying degrees of strength. Acids in a high state of dilution, as most of you know, are more destructive to tissues like the teeth than those in a concentrated state, because those that are in a highly diluted state do not excite a quick flow of saliva to neutralize their effects. But those in a concentrated state cause such an outpouring of saliva and mucus that they are soon neutralized, or so changed, or they are thrown out of the mouth so quickly that no damage is done. It is the highly diluted, minimized acid that is so insidious, and its destructive influences are not seen or felt until the disaster has been accomplished. It is this habit of drug taking and drug using and continual drugging that we wish to protest against. There is no necessity for the use of the so-called antiseptic mouth washes and lotions and pastes in a state of health. It is only when the tissues of the mucous membrane of the mouth are abnormal, not performing their proper functions, that drugs should be used to correct any variation from the normal until nature has a chance to reassert herself. If our forefathers had been supplied with listerine, pasteurine, borolyptol, borine and sanitol, and numerous other preparations of this character, to-day probably we would not be blessed with the mucous membranes and the teeth that we have, because a long series of years, of generations of use of deleterious drugs must have had a modifying influence on the structures of posterity. We find with a state of normality of the mucous membranes and the teeth, that the use of warm water first with the mere act of cleansing, and the using of cold water immediately following for the refreshing shock that it produces, is all that is necessary. But when there are masses of putrefaction between the teeth and underneath the edges of the gum or gums, the mere introduction of a little spray
of listerine, of borolyptol, or any of the other advertised mouth washes will not destroy these masses. They must be gotten rid of in some other way, usually by some operative interference. What would be thought of a man who, when he got up in the morning, would rush to a bottle of boro glycerine water and bathe his face in it, or a bottle of listerine, and bathe his face in that? Would he have that refreshing sense of ablution that one has from the use of cold water? Would his skin be bright; would the blood rush to the surface? Is there any necessity for this continued, inefficient, useless antiseptic washing of the mucous membrane of the mouth with antiseptics, which are not even strong enough to destroy anything that would be dangerous, and which would only destroy innocent bacilli or micrococi, which could be destroyed mechanically without the use of such antiseptics?

The drug habit is not only confined to use in the mouth and around the teeth, but every time one has a little pain in the left side of the head, or all over it, then they want bromo-seltzer, bromo-soda or bromo-caffeine. If they have a little cut or bruise, or something which nature will take care of well, they must have a paste, a salve, or an antiseptic, something or other containing cocaine as one of the ingredients to dress it with. The Spartan-like principle which was so prevalent in the days of old seems to have departed from the present generation, and now we cannot have a little pain in the belly, the stomach, the toe, the head, or the ear but what we must use some effervescing drug or other containing a deadly nervine which dulls the senses, dulls the appreciation of all the things in life that are worth living for and later becomes fixed as a habit. It is within my own experience, working from day to day, that men and women spending so much time in the pursuit of idleness and frivolity, are being kept alive, and what little vivacity they possess is due to the immoderate, unnecessary and continuous use of drugs.

I wish to say to you to-night, gentlemen, that the man who needlessly or causelessly fixes upon a patient the necessity for using the so-called feeble, unnecessary antiseptic washes, lotions, and pastes, is doing great injury. Most of the erosions that we have on teeth, if not begun by the use of these feeble, diluted acid lotions and washes, are carried along, by the injudicious and too frequent use of tooth brushes, tooth rubbers, tooth pastes and powders containing ingredients that are not soluble in the fluids of
the mouth or in water. Half of the ridges and grooves, and even disfigured faces of teeth that we see, are brought about through these means. What I would ask of you to do is to do as I have done—get a half dozen or more samples of the washes and lotions and pastes that are sold, not by the direction of the physician or dentist, but sold by advertising through the daily press and elsewhere, and procurable at any drug store, any department store, or any place where such things can be sold, and containing the recommendations of dentists and physicians who have never examined them—I say, if you will get a few samples and test them, as I have done, you will find that nearly all of them have a decided acid reaction, which must be deleterious not only to the mucous membrane of the mouth, but to the teeth, and the greatest danger from the use of these is to the teeth first, but the secondary danger is to the mucous membrane because the continued use of such drugs blunts the sensibility of the mucous membrane just as certainly and more destructively than the use of tobacco or chewing gums, or any other of the pernicious habits of the present civilization. What we want is scientific prescribing for abnormal conditions not the indiscriminate use of the confectionery tasting drugs for the prevention of some far off ill which would not be dangerous to the mucous membrane of the mouth, throat or teeth.

Preventive medicine rests on a sounder basis than the prescribing of nostrums or the ignorant use of them.

A growing evil is the too frequent use of chloroform to produce a partial anesthesia for the relief of probable pain in the cutting of dentine. This is accomplished by inhalation. Its use is at first a pleasure to some and later it is used to alleviate imaginary or other ills until it is relied upon to take the place of energy of mind or body, or both. I regard the illegitimate use of chloroform in the practice of dental medicine or surgery a crime against the community. It is only necessary to look at the statistics of death from its use for extractions alone to prove this. I protest against the induction of partial anesthesia for the purpose mentioned and also against it as a fascinating way of acquiring a drug habit. It needs no argument to prove that in the legitimate use of drugs many cases of the drug habit have been acquired notably in the use of anodynes and soporifics in neuralgia, sciatica and other affections of the nervous system. We are too prone to think that all of the little ills of life must be assuaged by the use of chloral,
hemp, opium, cocaine and coal tar extracts and others of the sedative class. A large regard for the future welfare of the race would lead us to look after ventilation of houses and schoolrooms, the use of water for bathing, the decrease of heat in our homes, the proper selection and cooking of nutritious food, well aired and well ventilated sleeping rooms. Exercise and sleep are of so much importance that if we would have a sound mind in a sound body both should be taught as a part of our common school system. The rosy cheek and elastic footstep of youth would be seen and heard hourly by you if you would insist on the observance of a few plain precepts and examples and the dissemination of such accurate and pleasant rules as could easily be practiced with pleasure. Drugs would not fill every closet and shelf in every house where money can buy them, if people were told that necessity did not exist for their abuse or overuse. The drug toleration is no evidence of need, it is feeding a pernicious habit which grows through the laxness of laws, or the inefficient exercise of them, but more than all the abuse grows out of the ignorance of the practitioner who is loaded down with samples and requested to try them on his patients and friends. Woe to the public that is thus prescribed to, and upon which the intolerable tyranny of a drug habit is fixed.

Our Porcelain Teeth.*

By L. P. Haskell, D. D. S., Chicago, Ill.

There are no dentists of experience and artistic tastes who have not realized the serious faults in the porcelain teeth of all the manufacturers of to-day, and yet, to use a familiar phrase, few of them do any "kicking." There is no one thing in the making of a set of teeth that gives me as much annoyance as the selection of teeth—simply a set of plain rubber teeth—at the dental depots. I oftentimes look over the large stocks at our two principal depots and fail to find what is needed. Seeking first the size and shaped mold, then the color, and finally (and this is where the main trouble lies) to see what sort of bicuspids and molars have been combined with the fronts.

Now, what is the trouble? I presume most dentists think the fourteen teeth are made in one mold. The fronts are

*Read before the Chicago Dental Society.
made in one mold and the bicuspids and molars in another. They are combined in sets by the girls who place them on cards, but under the direction of the superintendent. But after all these years of experience, there is no judgment whatever used in making the combinations. Go to any stock of teeth in this city and you will find complete verification of my statement. Here is a set of large front and small back teeth—small fronts and large back teeth. Often the bicuspids are longer than the cusps—should always be shorter, not only because it is true to Nature, but because it is sometimes difficult to arrange them properly without shortening.

Another serious fault is found in the lack of masticating surface, the teeth are not sufficiently broad and thick.

There is a certain relative proportion of each class of teeth to each other—centrals, laterals, cusps, bicuspids and molars.

Some twenty-five years ago Dr. Bonwill, after an exhausted study of the subject and the examination of thousands of jaws of all races and ages, found the shapes of teeth were governed by geometrical principles or laws, and in this matter there has been no evolution. Show him any tooth in the upper jaw and he will tell you the relative proportion of each other class of teeth in that jaw.

He found also that the six anterior teeth formed the arc of a circle, the radius of which was determined by the width of the central, lateral and cuspid teeth. A circle of metal, of which these teeth are the radius, if placed in the mouth on the cutting edges of the anterior teeth, it will be seen that a line drawn through the center will always pass through the center of the second bicuspids and across the posterior margin of the circle will always be in line with the posterior margin of the second molars, thus demonstrating the truth of his theory, and is another evidence of an all-wise Creator. The application of this rule in arranging sets of teeth will be found of value to young practitioners.

An illustration of this theory in an article upon "Typical Tooth Forms," finely illustrated, showing the relative size of all the teeth from every point of view, may be found in White's catalogue of teeth, and yet no attention whatever is paid to it in shaping nor combining their great variety of molds.

In natural teeth, as illustrated in the above descriptive article,
the lingual cusps of the upper teeth are shorter than the buccal, and the lingual cusps of the lower are longer than the buccal, and yet in nearly all their upper teeth the lingual cusps are fully as long as the buccal, making it difficult to articulate them without grinding.

Still another very serious fault is found in the position of the pins in the bicuspids and molars being placed so near the ends of the teeth, so there is but little porcelain, and if grinding is needed in articulating, as is often the case, so little porcelain is left that it will soon break off in use. There is no need whatever for this except in very short teeth, and yet in some of the very longest, the pins are placed in this ridiculous position, making also a very inartistic finish with the rubber gum margin near the end of the teeth. This condition of matters could be easily remedied without making new molds, by placing the pins lower and cutting the molds lower so as to lengthen the porcelain over the tooth. Molds are multiplied unnecessarily. In White's catalogue of teeth are nearly 100 molds of upper rubber bicuspids and molars. I could not find use for more than a dozen molds varying in length, width and thickness.

In the anterior teeth are many molds of so-called "short bite" teeth for which I could never find any use, and they are exceedingly objectionable from the fact that the tongue encounters a thick mass near the ends of the teeth, so contrary to Nature, and interfering with speech. It also shows the rubber very low if any space is left between the teeth; yet I am often told at the depots there is much demand for them.

In plate teeth, both plain and gum, the pins are very generally placed crosswise, weakening the tooth so that it is far more liable to crack and is entirely unnecessary except in short teeth.

Another serious fault is in the colors. It is so often the case that some of the most natural shades are not to be found in stock, but running largely to ultra shades, very light or dark, sometimes needed of course. There is great lack of knowledge or judgment in the manufacture of teeth, which after all these years of experience should be remedied. But as the dealers say, they have a demand for all the teeth they can make, why should they trouble themselves about the complaints of a few fault-finders. I leave it to you, gentlemen, to say whether my complaints are well grounded, and, if so, whether this Society is prepared to take any steps
toward securing something more in accord with Nature, for I feel sure that if a well directed movement is made to induce the manufacturers to correct these serious faults, it will be done.

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**Syphilis.**

By Frank R. Wright, M. D., Minneapolis, Minn.

A large majority of dental colleges give no instruction whatever in regard to syphilis. For this reason I shall give a short history of the disease, its nature, course and treatment, and shall endeavor to show its relations to dentists and dentistry, rather than treat the subject from a purely dental standpoint.

The history of syphilis is obscure. Much has been written to prove its existence in ancient times. The principal proof upon which these writers base their claims are the lesions found in exhumed bones of ancient people. It is true that in some of these old bones are lesions resembling those of syphilis, but when subjected to microscopical study, nothing has been discovered that could not be charged to tuberculosis, gout, osteomyelitis, leprosy, rickets or traumatisms, as well as to syphilis. In order to prove that syphilis existed in those days it is necessary to find some lesion that is distinctly syphilitic. This has never been done.

The first authentic account of syphilis dates 1494, when it appeared among the soldiers in the armies of France and Spain, who were quartered near Naples in Italy. The physicians of this time were already familiar with gonorrhoea and chancroid, and recognized and described syphilis as a new disease. During the sixteenth century the three diseases, gonorrhoea, chancroid and syphilis became confused, and the belief prevailed that they were various stages of a single disease.

It was not until the middle of the present century that syphilis was, a second time, recognized and described as a distinct disease.

Syphilis is an infectious, constitutional disease, chronic in character, beginning as a primary sore, followed after a period of incubation by lesions of the skin, mucous membranes and deep tissues.

The cause has never been demonstrated, but the nature of

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the disease is similar to that of other diseases that are known to be of bacterial origin, and therefore, without absolute proof of the fact, we believe it due to the presence in the system of some germs.

Syphilis may be either acquired or congenital. The acquired form is the one we most often meet.

Infection may be mediate or immediate. Immediate is that produced by contact with a syphilitic person, as in sexual contact, kissing, accidental contact with some lesion upon the body or from the blood.

Mediate infection is where the virus is carried by some article, and may be acquired by the use of articles that have been used by syphilitic persons, as a knife or fork, clothing or instrument upon which either the secretion of some sore or the blood of a syphilitic person has been allowed to dry.

For convenience in study and treatment syphilis is divided into three stages, according to the character of lesions presented. These are the primary, the secondary and the tertiary.

The primary stage begins at the time of infection and lasts until the disappearance of the initial sore. The secondary begins with the appearance of the constitutional symptoms and lasts over a period varying from three to five years. The tertiary stage is really not syphilis at all, but is a perverted cell growth or nutrition, due to the effect that syphilis has had on the economy. It may begin before the disappearance of the secondary symptoms, may be delayed for several years or, as in the majority of cases, may never appear.

Thus it will be seen that there are really not three stages of the disease, for the secondary symptoms may appear before the primary lesion has disappeared, and we then have the primary and secondary stages together. This occurs in 50 per cent of all cases. Also, while tertiary lesions do not occur in all cases they may appear very early, long before the disappearance of the secondary symptoms, and we then have a combination of secondary and tertiary lesions.

Infection can take place only through a break in the epithelium, an unbroken surface presenting an impassable barrier to the virus, whatever it may be.

Inoculation is followed by a period of incubation averaging about three weeks in length. At the end of this time there appears
at the point of infection a sore, the initial lesion or chancre. This sore is a round or oval ulcer, with smooth, sloping edges, a grayish floor, an indurated base, a very slight discharge, and is practically painless. The induration is distinctly outlined, is freely movable, and to the touch feels very much like a piece of cartilage in the skin.

About the time the initial lesion appears the lymphatic and lymphatic glands near it become thickened and enlarged. This enlargement of the lymphatic and lymphatic glands means that the poison has entered the general system, and after this has occurred, nothing can be done to prevent the development of constitutional symptoms.

A second period of incubation follows the development of the initial lesions, usually lasting from three to five weeks.

The onset of the secondary stage is marked by a few hours or days' feeling of malaise, fever reaching 100° to 102°, headache, particularly at night, loss of appetite, etc. The eruption first appears near the point of infection, and gradually spreads over the entire surface of the body. It is usually erythematous in character, but may be either macular, papular or pustular. The color is at first a rosy pink, but as the spots become older, this changes to a grayish or coppery brown, a color that has been likened to raw ham. The eruption may be very profuse, or it may be so slight that it is easily overlooked by any but a most careful observer.

The early eruptions are general and show no tendency toward grouping, while the late syphilides are grouped in circles, part of a circle or "S" shaped groups.

It is a peculiar fact that where lesions are found on one side of the body, you are almost certain to find some lesion in the same region on the opposite side.

Anaemia is a prominent symptom of the secondary stage. It is manifested by paleness, progressive loss of weight and by falling of the hair. This loss of hair is characteristic, coming out in spots and thus giving the head a moth eaten appearance.

The dentist is more interested in the lesions of the mouth than those of the general system. Unfortunately, very little has been written upon this subject. None of the works to which I have access, devote enough space to the lesions of the mucous membrane to amount to anything, the majority giving only a few lines to the consideration of that subject.
With the onset of the general constitutional symptoms, the mucous membrane of the mouth and fauces shows a general redness and engorgement of all the vessels. This condition of the mouth and throat is quite characteristic, and like the authors of the various books, one can only say that it cannot be described.

In the mouths of women and those men who do not use tobacco or liquor, this congestion may be very light, but in the mouth of the inveterate smoker, the whole pharynx is a dark red, while the vessels can be plainly traced with the eye. The redness and engorgement of the vessels cover the entire pharynx, tonsils and spread up over the soft palate, and at times seem to involve the whole mouth.

The characteristic lesion of the mucous membrane is the mucous patch. The spots appear at irregular intervals, being more profuse in mouths subjected to irritation. They may appear in almost any part of the mouth, but are usually found on the pillars of the fauces, the tonsils, the soft palate, the uvula, on the sides or the tip of the tongue, with an occasional spot on the roof of the mouth, or on the inner side of the lips.

A mucous patch is an irregular spot of a peculiar grayish color surrounded by an area of redness, lighter than that of the mucous membrane in general. They are superficial, there being no appreciable thickening of the tissues and no loss of tissue except the mucous membrane.

The infectious period of syphilis begins with the appearance of the initial lesion, and lasts throughout the secondary stage. There is no danger of infection from a tertiary lesion, but if the lesion be an early tertiary one, it is possible that the secondary symptoms have not entirely disappeared, in which case infection might take place from the secretion of an otherwise harmless lesion.

The infectious material exists in the secretion of any lesion that may be on the body, whether it be due to the disease or not, and in the blood. The normal physiological secretions of the body are not infectious unless contaminated in the duct of glands which secrete them, or in the cavities of the body which receive them from these ducts. Thus the saliva itself is not infectious, but being found in the mouth, which may be filled with mucous patches, it at once becomes an element of danger.

The prevalence of syphilis is something appalling. Unlike most diseases, if properly treated, it gives no external evidence of
its presence. Compare the case with that of the consumptive. No matter how scientifically he is treated, or how he may try to conceal his condition from his friends and relations, his efforts are useless. The cough and continual loss of flesh arouse the suspicions of his friends before he will acknowledge even to himself, that he is sick. How different is it with the case of syphilis. The initial lesion appears and does not heal in a few days as an ordinary sore. The patient becomes alarmed and goes at once to his physician, and together they attack the disease before it has made a marked impression on the system. The ordinary case yields readily to treatment and in a few days all outward signs have disappeared, then, if the patient keeps his own counsel, no one knows of his condition. In this way the vast majority of cases are unknown to any but the patient and his physician.

It is hard to believe that one person out of every fourteen in the United States either has or has had syphilis. Still it is true, 70,000,000 population and over 5,000,000 syphilitic. Now, in the country a case of syphilis is a rarity, even to a physician. If the disease is rare in the country, it leaves nearly the whole of the 5,000,000 cases to be distributed among the cities and larger towns. This leaves a proposition like this: One in fourteen in the country, as a whole, and nearly 5,000,000 cases to be distributed in the cities and towns. What is the proportion in the cities and towns? If the proportion in the cities is 1 to 14, or 1 to 12, as the case may be, what proportion of these visit the dentist in the course of a year? How many of those who do inform him of their condition? The majority of people visit their dentist more or less regularly, so that the majority of these patients, sooner or later, come under the care of some dentist. But very few of them ever tell him of their condition.

What is the dentist to do? Every case that comes under his care is a source of danger, not only to himself, but to his other patients in whose mouths he may use his instruments. You cannot refuse to accept as patients all persons who come to you with a congested pharynx, or suspicious spots in their mouths. These patients have the same right to the service of a dentist that they have to those of a physician. For a member of a profession like either medicine or dentistry to refuse to care for one of these unfortunate ones is to brand himself as ignorant and cowardly, and a man unfit to practice the profession he has chosen.
With this patient before you, three things must be considered. First, the patient; second, other patients who may come to the office; third, the protection of the operator.

First. These patients are entitled to the same consideration that other patients receive at your hands.

Second. Other patients who are treated in the office must be protected. This can be done in only one way—cleanliness. By cleanliness I do not mean the simple washing of the instrument used, but surgical cleanliness. Every instrument that has been used should be sterilized either by boiling or by being placed in strong carbolic acid for some time. Under no circumstances should an instrument or napkin that has been used in the mouth of one patient be used in treating that of another without being sterilized.

Third. The operator must protect himself against accidentally wounding his hands with the instrument he is using, and against inoculating any abrasion that may be on them, with the secretion of any sore that may be in the mouth of the patient. It must be remembered, also, that where there are specific sores in the mouth, the saliva will be contaminated and infection may take place from contact with it.

Hereditary disease usually appears about the third week after birth, but it may not appear for several months. The longer the appearance of the disease is delayed, the better is the outlook for the child. The lesions are usually more active and cover more area than do those of acquired disease, and lesions of the mucous membrane are more pronounced. One of the earliest symptoms in the child is coryza, commonly spoken of as the "snuffles."

Bone lesions are more common in hereditary syphilis than in the acquired form, but usually do not appear before the third year. The teeth present a characteristic appearance, and are called "Hutchinson's teeth," after Dr. Hutchinson who first described them. They are slim and narrower at the cutting edge than at the gum line, are thin and may be set wide apart, and divergent or convergent. At birth the cutting edge is perfect but soon falls away, leaving a crescent shaped notch in its center. This notch exists until it is removed by wear, usually at about the twentieth to twenty-first year.

The treatment of syphilis should not begin until the onset of the constitutional symptoms. No matter how suspicious a sore
may look or how complete the history may be, it may not be an initial lesion. The only positive proof of syphilis is the appearance of the secondary symptoms. If treatment is begun before this time the secondary symptoms may never appear—that is, if the treatment is thoroughly carried out without the secondary symptoms, you cannot be positive in your diagnosis, and will never know whether your patient is diseased, or whether you are keeping a healthy man under treatment for from two to three years.

The treatment begins with the general hygienic condition of the patient, and ends with a systematic course of medicine administered at intervals over two or three years of time.

The patient should live a steady, regular life, avoiding all excesses; should keep himself as free as possible from all business care and worry, and should be very careful about his diet and the hour of sleep.

The medicinal treatment consists of the administration of mercury in some form, together with, or at alternate intervals, with iodide of potash, the mercury usually being given in the form of proto-iodide or as an inunction, using 33 per cent ointment. If proto iodide is used it is given continually for from four to six months, then iodide of potash is given for a time. If inunctions are used the rubbing is done five nights in the week, for from eight to twelve weeks, then is followed by a period of rest, then iodide of potash is given for some time. The amount of mercury administered is governed by the rapidity with which the symptoms disappear. The usual amount of proto-iodide is 1 to 2 grains daily; of the ointment four grams or one drachm daily is rubbed into the skin.

The local lesions disappear much more rapidly if the ointment is applied directly to them. The treatment of the lesions in the mouth consists of cleanliness. The patient should be given some antiseptic solution, with instructions to use four or five times a day.

The mucous patches should be lightly touched with a strong solution of or a solid stick of nitrate of silver.
The importance of the subject under consideration cannot well be overestimated. When we contemplate the direful results of the neglect of these things we are appalled. There are many reasons why the teeth of children should have the best of care that can be given by parents and family dentists, for I believe that it is just as necessary that every family should have their dentist as physician, and that by having a dentist to look after the teeth of the members of the family, prevent many cases of illness by the prompt relief which he can give.

I note the case of a man who was suffering from an abscessed tooth being treated by a prominent physician for abscess of the glands of the neck. He was put to quite an amount of expense and pain with only temporary relief. The parents who by virtue of their relation can have a closer watch over the necessities of the case. These same parents should qualify themselves so as to be able to instruct their children in the care of their own teeth, such as the proper sanitary care of the teeth and mouth and the timely removal of the temporary teeth. This last should be with the advice and assistance of the dentist. I find that a large majority of the parents cannot distinguish between the temporary and permanent teeth. Especially do they mistake the six year molars for temporary teeth. Temporary teeth are allowed to remain in the mouth long after they should be removed, to the detriment of the permanent set, causing crowding and disallignment and consequent non-articulation. It is sometimes found necessary to remove temporary teeth which have not become loosened by the process of absorption. I have found portions of temporary teeth in the mouths of patients eighteen to twenty years of age wedged in between the permanent teeth. In my practice I find in a large number of children between the ages of two and six more or less decay of teeth. If decay is superficial I apply a remedy to cauterize the surface, which in a great many cases seems to be sufficient to prevent further trouble. If the decay is deeper, the enamel and dentine softened, I apply carbolic acid, dry, as well as circumstances will permit, and fill with cement. If the enamel is firm and retaining shape is easily accomplished, I fill with amalgam. If decay has

*Read before the Minnesota State Dental Society.
progressed so far as to involve the pulp I sometimes apply devitalizing agents, remove as much of the pulp as I can without making too long an operation and fill the tooth. If the pulp is dead I cleanse cavity, wash out very thoroughly, remove as much of the pulp as possible, apply disinfecting agents, and without attempting to thoroughly fill root canals, fill the tooth. I find that a great deal of our work with children must be palliative not to attempt long operations. No gold fillings in temporary teeth and few in the first years of permanent teeth. A dentist to be successful with very young patients must have a large amount of tact and real kindness of heart. A child quickly learns to discriminate between professional urbanity and disinterested sympathy and gentleness. If the confidence of the child is once gained it will bear a surprising amount of pain. I think oftentimes the mistake is made of trying to do too much at one sitting, tiring the child and causing it to lose courage by the long endurance. Better short operations and often. A child should be taught the use of the brush as early as possible, and continually admonished to use it until it becomes a necessity. I believe an examination of the teeth of the children of the public schools as often as once in a year is as necessary, or if anything more, than the examination of the eyes, which has proved very beneficial.

As dentists we have a duty to perform in advising, admonishing and aiding in every way that we can until these little sufferers will learn to appreciate the benefit we do and can be to them.

The Law of Similars Applied to Dentistry.*


When Hahnemann promulgated his great law of nature *similia similibus curantur*, his evident view of the subject was limited. Limited to the idea of cure of what was sick; and while this principle is large enough to found a great school of medicine upon, the real and great law of similars is infinitely greater, and is the law by which "like attracts like."

Like attracts like because it loves like, and this love or affinity is the great centralizing, life giving force in nature which perpetuates species, distinguishes races, crystallizes families into homoge-
rous masses which are the nuclei known as the home, that great potentiality which is the foundation of our civilization, social and economic, political and religious, individual and collective.

In the mineral world this law has given us strata of limestone, of sandstone, of granite; it has given us beds of coal and iron and copper, quartz laden with gold, silver and platinum.

In the vegetable world it has given us the great forests of pine and spruce and fir; of oak and hickory and ash; of magnolia and orange and pepper. It has given us meadows of clover and timothy; plains covered with buffalo grass, cacti and sage brush; fields grown to daisies, poppies or thistles; patches of cowslips, buttercups or violets. And each and every one in specially favored spots known to us as their homes.

In the animal world it gives us the drove of buffalo, the herd of cattle, the flock of sheep, the bevy of partridges, the covey of quail, and the shoals of fishes.

In other words, this law of similars is the law of selection, and so strong is it that while the shark may be found in a shoal of cod it is immediately recognized as being there for no good to the cod, and while we still hear of the wolf in sheep's clothing, all instantly recognize it as a menace to the sheep; and we do not expect to gather nuts from maple trees, apples from gooseberry bushes, figs from thistles, nor grapes from a pumpkin vine, but each and every one in its own special habitat and among its kind.

In the human family it is the chord which struck reverberates throughout the race, the great law known as harmony; harmony throughout the simplest and the grandest of melodies, and yet this law of similars, of selection, of harmony reduced to simple language is, I like, I love, I want, and the echo comes back, I like, I love, I want, and the selection is made.

An individual likes harmony, he loves music, wants an opera and produces it; other individuals like symphony, love harmony and flock to hear the opera.

Other individuals enjoy rhythmic motion and seek the association of those who enjoy the dance.

Some enjoy business bustle and select a bustling business; and if we allow natural inclinations to dictate this law of similars chooses our trade, our profession, our labor and all employment is adjusted to this law, but, unfortunately, we are sometimes led to go contrary to it and the friction that follows leads to much of the
catastrophe of our commercial world; lives are wrecked, families broken up and communities scattered by disobeying this law.

Along with this law of "I want," comes the counterpart "I give." the one is the complement of the other; either alone is disastrous to an equilibrium. If one likes and wants music and is not willing or able to make it, he must render an equivalent in some other way. If each of the eight notes of the musical scale stood by itself, and simply wanted music there would be nothing but want, but when each accompanies that "I want" with an "I give" we have the great combinations of notes which represent harmony from the simplest ditty to the sublimest oratorio, transcending the highest ideals of even the inspired notes that went in to help make the combination.

Apply this law to dentistry. In entering this profession we should consider this law of selection, our tastes and inclinations, to see whether the discords will not overbalance the harmonies.

We should feel that here is a profession which I can throw my whole energy into and not only get a living but get harmony, and not only this but one in which I can give help and add to the harmony.

The man in dentistry who gets the idea that he is so great that he can gain nothing by association is making a great mistake, and while he may be great on the start he will see the little fellows grow up around him nourished by this flowing to and fro of vitality in dental associations until they fairly outstrip him, and he gets sore on the profession at large, whereas if he had joined them and given freely he would have been growing fastest of all.

"It is more blessed to give than to receive." "As ye give so shall ye also receive." And while we cannot all be great inventors, or all great operators, or all great teachers, yet we can all cast in our mite and it will be as the talent that was used, it will increase.

Our trouble is that we seek and give in the spirit of wanting to be seen instead of wanting to see.

Now to apply this law of similars to practice. You want nice clean patients; the way to get them is to make them so. If your office is clean, if your instruments, linen, etc., are clean, and most, of all if you are clean, the idea is infectious and the patient takes the hint and it will make a noticeable improvement in his appearance the next time he comes, for all are sensitive to these little
things. Especially will he notice how your teeth are kept and if your breath is tainted by beer, tobacco or uncleanness, or odors disagreeable of any sort. If we are thus particular about ourselves we are apt to be enthusiasts upon the matter, and there is nothing that spreads like enthusiasm, and every dentist should be an enthusiast. If he enjoys his work and takes pride in it the patient may not thoroughly enjoy operations but will enjoy results and take pride in keeping the work in the best possible condition.

We cannot enthuse so much over doing a piece of work in some old and inartistic way, hence we should be always trying to do something more difficult and more artistic and keep up our enthusiasm; we should not be satisfied to make rubber plates but reach out toward aluminum, gold and continuous gum and always be excelling previous efforts; this is imparted to the patient; and when we lose this we lose prestige; we may continue to put in a good filling or a good set of teeth, but we want enthusiasm enough to permeate a community; to make them feel the desirability of taking care of their teeth properly and preventing decay; habits of person are formed very much as habits of mind and in the office the ideals in both should be cultivated.

You often notice in conversation with people an uneasiness, if they think you are better educated than they are, yet an attempt to use the very choicest of language, they may be awkward and unnatural at first but it soon becomes easy and natural; so with habits of caring for teeth, your patient may be awkward at first, even unnatural, but if you instruct him carefully in the best methods of caring for his teeth and urge him to heed it and the next time he visits you inquire after the use of methods and suggest that he finds pleasure and comfort from following advice (having found that he followed it) and an impression upon mind and habits will often be made which will last a lifetime.

Our patients come to us through personal acquaintance or advice of acquaintances and will be according to law of similars. They select us because of existing sympathies, because of similar inclinations which seem to harmonize with their needs; hence if we want the best of patients let us be the best in skill, best in care and sympathy; best in helpful advice; best in disposition (and do not forget the smile); best in our equipment for doing our work; best in our personal attractions, mental and physical; best in our inclination toward our patient; best in our habits of thought
and living and we will not only have the best of patients, but we will have the best of our patients, and will, therefore, be able to render the best equivalent for our remuneration.

But let us all look forward to the ideal, a time when dollars will not be our remuneration, when our economic system shall be so adjusted that all will have what they need (the advice and assistance of the dental profession) that the profession will have much more to give to the public and give it freely.

Did you ever think what a deplorable state of society we live in, where more than one-half of the people are unable to apply any other remedy than extraction to the treatment of diseased teeth because of the lack of money and consequent lack of education? And yet we brag of our civilization. The fault lies in our economic system, as there is in reality enough produced for all, but a few get it because of a special ability in finances; don't blame the few, but study and adjust the system so that all may have what they need, and we shall all receive a remuneration in gratitude from a perfecting and perfected organization of the human, which will then have time to apply the law of similars to preventing disease rather than curing it. Unconsciously is this law of similars working with us and about us, and while we may be influenced in our work by our patients we should ourselves exert the influence and keep control of ourselves so perfectly that our atmosphere shall influence the patient, and that is the case usually if we are confident the patient has confidence; if we are nervous the patient is nervous; if we are pleasant, the patient is pleasant, and so on; so it is possible for us to carry with us an atmosphere of hope, of cheer, of calm, of enthusiasm that shall pervade the space about us to make it light and hopeful, and permeate and influence all who come near us; at the same time we shall be strengthened thereby.

Finally let us, as members of the dental profession, be so permeated by the law of "I want" and "I give," so stirred by enthusiasm, so in love with harmony, that we will unite our varied elements to make up a grand symphony that will be worthy of a place upon the great programme of human progress.
Surgical Treatment of Harelip.*

By Truman W. Brophy, M. D., D. D. S., Chicago, Ill.

Harelip is a congenital malformation confined with some exceptions to the upper lip, resulting from arrest of development, and presenting, in the mature state, a continuance of that which is the normal condition in the earlier stages of embryonic development.

When situated in the lower lip it is frequently associated with other deformities, such as fissure of the lower jaw and tongue, and complications of various forms.

Harelip is a deformity so conspicuous and so difficult to conceal, that when accompanied with cleft palate, as it frequently is, it has brought more sorrow to the hearts and homes of parents whose children are thus unfortunate than any other anatomical defect with which mankind is afflicted.

From the surgeon’s standpoint it has always been a condition which has claimed most earnest attention and upon which he has bestowed his greatest ingenuity and extraordinary care in devising and performing the delicate manipulations necessary for its relief.

The mouth is formed between the twenty-fifth and the twenty-eighth days of embryonal life. The frontal lobe becomes very much enlarged, and shows a great hollow which divides into two smaller lobes called the incisive centers, from which the incisive or

*Read before the Odontographic Society.
intermaxillary bones and the central portion of the upper lip are developed.

The centers for the superior maxillæ, which form the lateral parts of the upper lip, converge one toward the other and come nearer to each side of the corresponding incisive center.

At the fortieth day the two incisive centers, in the substance of which the incisor teeth are developed, unite one to the other in the middle line and thus complete the central portions of the upper lip. Thus, if the two lateral portions do not unite to the incisive portions we have a double or bilateral harelip; if only one of these sides fails to unite, then we have a single or unilateral harelip.

The alleged causes of arrest of development in embryo resulting in harelip and cleft palate are numerous and diversified. My

![Diagram](https://via.placeholder.com/150)

No. 2.

own study of the patients who have come to me in consultation or for surgical treatment, numbering 497, have shown conditions as follows:

1st. A very large majority of these children were the first born.

2d. In about four-fifths of all the cases of unilateral harelip which have come under my observation, the deformity was upon the left side.

3d. Prenatal impressions.

In many cases the mother claims to have sustained a shock of some nature during the early period of gestation to which she attributes the deformity of her child.
4th. The feeble condition of a mother in the early months of pregnancy, her inability to take and digest food are no doubt potent factors which operate to prevent nourishment and the normal development of her child. This may be due to one pregnancy following soon after another.

5th. The influence of heredity is indeed the only reliable ground upon which to account for harelip and cleft palate, and as few people know the physical condition of their ancestors except by their own personal recollections it cannot be regarded unjust to assume that many congenital malformations which come under our observation are inherited from remote ancestors whose deformed condition was unknown to the parents of children having similar deformities. Among those applying to me for treatment there were in one family of five children, three of them born with hare lip and cleft palate. The grandfather of these children was afflicted with the deformity. In another case of congenital cleft
palate and harelip the mother had been operated upon for the cure of appendicitis at the third month of the period of gestation. As to whether the shock of the operation and the enfeebled condition of the mother before and after had the effect of causing the deformity is a matter of speculation. In another case a child of a physician having congenital cleft palate and harelip was brought to me for an operation. The father was firm in the belief that the child's deformity was brought about by an impression made upon his wife during the early months of pregnancy.

The doctor having a patient call upon him at this time with a cleft palate discussed the case with his wife, who became deeply interested in it, and devoted a great deal of time to the study of

No. 4.

the deformity in the text-books of the doctor's library. When her child was born with the deformity both the doctor and his wife declared that it was due to the impression described. Drawing No. 1 a represents the usual form of unilateral harelip. When cleft palate accompanies harelip the palate should be operated upon first; this should be done within the first three months, after which the lip should be united. The ends to be accomplished in operating to correct this deformity are: 1st. To make flaps (Malgaignes' operation) in such a manner as to avoid a notch or V-shaped depression in the lip after union has taken place.

This may be done by making incisions as per drawing No. 1 b. In drawing No. 1 it will be observed that the wing of the nose upon the side of the cleft of the lip has spread out, as the nostril is divided also. To correct this defect the incision or paring of the
lip should be carried into the nose and the flattened nostril carried over in contact with the septum and held in contact with it until it unites. To accomplish this a silver suture may be used, carried through the nose at this point and adjusted to lead buttons on both sides to hold the parts in place. Drawing No. 2-a.

2d. To so adjust the flaps as to have mucous membrane approximate mucous membrane, and skin approximate skin. After union a lip is very unsightly indeed when the surface of the flaps are improperly adjusted, with the skin united with mucous mem-

![Diagram of a nose and lips]

brane or a marked deviation from the line of the vermilion border of the mucous membrane.

3d. After the surfaces of the lip are placed in contact to retain them there until union is complete.

Many devices have been suggested and employed for this purpose, all of which possess some meritorious features; nevertheless they are all open to some objections.

Harelip pins, with figure of eight sutures adjusted to them to force the edges of the flaps together and hold them there, have long been employed. These pins will surely hold the parts in con-
tact, but the pressure of the sutures where they pass beneath the pins always make indentations in the skin which are likely to leave scars. The application of adhesive plaster serves quite well after silk sutures are employed, but it frequently loses its adhesive properties at the line of union, and owing to the contact of the exudate from the tissues it becomes loose and unclean and is therefore very objectionable.

Applications of flexible collodion and cotton are open to the same objections.

Hanesby's compress or truss, drawing No. 3, has been employed to press the lips together until union is perfect, but it is so clumsy that it is not used to any great extent. Indeed, I have never seen this instrument used, nor have I ever had a desire to use it.*

The method I have devised and herewith present is as per drawing No. 4. It consists in introducing two silver sutures which are to extend from the outer border of the orbicularis oris muscle on one side of the fissure to the corresponding position on the other side. The sutures are to pass through the skin and not pass through the mucous membrane, drawing No. 5, but fix the parts together as per drawing No. 2-Δ. When these sutures are in place they are imbedded in the substance of the lip and are not visible except where they are twisted on the surface of the plates. These sutures are to be of silver wire No. 26, and are to pass through lead plates gauge No. 17.

*Since writing and reading this paper I am informed that Prof. Garretson described a method similar to this in a paragraph in his work on oral surgery.
The holes in the plates should be made so that the wire will fit them tightly, and thus prevent the accumulation of moisture between the wire sutures and the lead. The wires are then twisted. Tension is thus applied to the lip, and the edges which are to be united are firmly held in contact.

Coaptation sutures are then adjusted to the borders of the fissure, the parts thoroughly cleansed, dusted with boracic acid powder and the dressing is completed by covering the surface with antiseptic gauze, which is applied to keep the parts warm and free from external irritants.

The advantage this method possesses over others is that little or no irritation of the skin follows, and there are no scars caused by the sutures such as follow the use of pins, besides the surface of the lip is left free and may be kept thoroughly clean and the process of repair may be observed from time to time.

The coaptation sutures may be removed about the fourth or fifth day, and the silver wires and lead plates allowed to remain about a week.

In the treatment of bilateral harelip incisions are to be made as per drawing No. 6; and in case we have great prominence of the intermaxillary bones, they are to be forced back in their places whenever it is possible to do so. These bones, when put in proper place, give prominence to the lip and normal contour of the face.

It would be impossible, during the time I am expected to occupy this evening, to describe every phase of harelip and outline in detail the steps to be taken in intricate and complicated cases; but I have presented certain principles to be utilized which simplify treatment and lead to success.

Shaping and Improving the Appearance of the Natural Teeth with the Wheel Used in the Dental Engine.

By Dr. M. A. Webb, Chicago, Ill.

The practice of dentistry embraces for its followers important duties in the direction of the health and comfort of the patient (and others, though secondary in importance) looking toward the better appearance of his mouth and teeth.

*Read for the author, by Dr. Chas. J. Sowle, of Rockford, before the Northern Illinois Dental Society, Rockford, October, 1897.
Dentistry is not only a science, or the following of set rules of procedure, but it is much more, because in its successful practice we must bring to our assistance the powers of art, in the deviation from such rules, to suit the case in hand.

In other words, while we all admire an even and perfect set of natural teeth, yet, in constructing artificial ones it is better to follow the opposite rule, by making them both irregular in length and position, for in so doing we make a nearer approach in looks to the natural teeth as they usually are.

On the other hand, we cannot make natural teeth too perfect in form, or position, in proof of which fact I would cite the important, and universally practiced operation of regulation, which is resorted to, to overcome in part, at least, nature's faults.

We are aware, however, that regulation has most to do with the change in position in the teeth, while this paper is a plea for a change in shape, or length in those teeth which are in fact freaks in nature, because I believe there are freaks among teeth as well as among those who operate upon them.

My subject has not occupied much time in our discussions, or space in our literature in the past, although its importance cannot be easily overestimated, for while the operation is simple, the results are permanent and gratifying to both patient and operator.

In order to be better understood I make use of two imaginary lines, defining the boundaries of a perfect set of teeth; one defines the cutting edges, and the other the faces of the teeth.

The one formed by the cutting edges is the line of eruption, because it defines its general limit, while the other passing over the labial faces of the teeth, thus defining their general prominence, is the line of facial presentation.

Those teeth which extend so far below the line of eruption as to be conspicuous, or possibly but a part of such teeth, I dress off with the wheel to make them of equal length with the others. Very often we see an unsightly corner of a tooth, an angular surface formed by the proximal surface with the cutting edge. Such projections I name from the surfaces by which they are formed; to illustrate, the distal proximal cutting angle would mean the angle formed by these two surfaces.

Nature intended our teeth so arranged that the cutting edge of each one, with the exception of the cuspids, should just touch the line of eruption, and that the labial face of each (again except-
ing the prominence of the cuspids), should also touch the line of facial presentation; but in the arrangement of the teeth, as in other things, nature is unable to fully carry out her plans, and for this reason I present these thoughts for your consideration to-day. Irregularity in presental eruption can be removed by regulation, and such disfigurement can sometimes be partially hidden by bringing all of the teeth to the line of eruption by grinding off those which are too long; but the unevenness of the cutting edges can be obliterated by the wheel used in the dental engine. I believe our duty is then to remove the ends of all elongated teeth, unsightly angular surfaces, or other defects, rounding corners, etc., thus producing a greater uniformity in the cutting edges. In following this practice it is seldom necessary to operate upon more than two or three teeth for one patient. Take overlapping central incisors, and usually we have a portion of the cutting edges below the line of eruption, and it is nearly always the distal proximal cutting angle, because the turning of the teeth outward pushes this corner down below the normal position, but by dressing it off the teeth not only look better, but the crowded condition is less conspicuous.

Many times the teeth will be even, and otherwise perfect with the exception of the centrals or laterals, whose cutting edges will be too rounded, consequently spoiling the general good appearance of the otherwise perfect set of teeth, in which case I would grind them off, and make them conform in shape to the others. Sometimes the cuspids are too long and pointed, and have too much of the carnivorous in their construction, and if so, do not fail to shorten them, and then note the improvement. The most interesting case of which I have recollection relates to the shaping of the central incisors, where the distal proximal cutting angles or corners were very acute, and extended at least an eighth of an inch below the line of eruption, and yet this patient had reached the age of forty years, and had many operations performed by good dentists, but no one had given sufficient thought to the subject to remove those corners until I did so, making a marked improvement in his teeth, as they were in other respects of good form. In case of irregularity those teeth outside the line of facial presentation are usually too short, because they are crowded out, and up, while those within this line are too long, because of being crowded in and down, so that in neither case do they occupy their normal position, or have a proper length. We can obliterate the first dis-
figurement only by drawing the tooth down into position by the process of regulation, but in the second case the appearance may be greatly improved when regulation is impossible, either because of age or other reasons by grinding off the tooth to a line with the others.

My practice is in all cases to remove the ends of such teeth, and by so doing cover up, as it were, their malposition, as it certainly does, to some extent. The illustrations given in this paper only describe a few of the many ways of improving the appearance of the teeth by grinding, but I think the few suggestions pointed out in it, and methods advocated are worthy of thought and discussion; because experience proves that very few people have teeth perfect enough to even approximate the lines designated in the first part of this paper, but on the other hand they are crowded, or irregular in length or position, and such defects will never be improved unless along the lines pointed out. It is the only way of improving those cases where, because of age or other reasons, regulation becomes an impossibility, and it is a practical remedy for elongated teeth. Many times the edges of the teeth become chipped, and uneven from use, and if so we should smooth them off to prevent further damage, because the enamel is seen under the glass to be full of pits, with overhanging edges, and because of the friability of the material every act of biting is followed by disintegration of the surface. In some cases patients will object to the operation from fear of injury to the teeth, but if we are sure we are doing them a service we can usually convince them that their fears are groundless, and they are always pleased with the change brought about. As to the dangers of such practice there is only one possible, and that is the bringing about of extreme sensibility, a result which I have never known to occur, and I have removed as much as a quarter of an inch in extreme cases, although I would advocate such practice only when we are sure of the teeth upon which we are operating, because so much depends upon their structure in this regard that caution must be observed. In case the teeth should be sensitive after cutting, my practice is to dry the cut surfaces thoroughly with hot air and saturate them with carbolic acid; one or two treatments should be enough, but the necessity of doing anything in the way of treatment is very rare. The rule that guides me is this: the more sensitive the tooth the less I cut, and experience proves that it is
seldom necessary to remove enough tooth substance to prove harmful in any way. Sometimes a little grinding in just the right place is all that is required to get the desired result. As to polishing I leave that to nature, because as the cut surfaces are exposed to the friction of cutting or mastication they soon become smooth, but I am careful not to leave any sharp edges or corners to annoy the patient.

My paper, though short, will, I hope, prove beneficial to some of you, for while I may not have said anything new, I believe that many opportunities of improving the appearance of a certain class of teeth are overlooked, and if the methods of practice advanced in it give to any one, by their more general adoption, as much satisfaction as they have to me, I shall feel well repaid for what effort I have made to present them to you at this time.

The Artistic and Mechanical in Dentistry.*

By Dr. C. W. Cox, Batavia, Ill.

The words artistic and mechanical cover two vast fields, differing greatly one from the other, but it is absolutely impossible, to draw a distinct line of demarkation between them, for they so overlap, commingle and dovetail one into the other that no absolute line can be drawn where one can say without being controverted, thus far can' st thou go, and no further, without stepping from the artistic field into the mechanical, or vice versa, from the mechanical into the artistic. We all recognize there is a vast difference, but, exactly where one begins and the other leaves off I believe impossible to tell.

Who is the artist? Who is the mechanic? Webster says of art: "A system of rules serving to facilitate the performance of certain actions; opposed to science or speculative principle, as the art of building or engraving." Arts are divided into useful or mechanic, liberal or politic. The mechanic arts are those in which the hands and body are more concerned than the mind, as in making clothes and utensils. These arts are called trades.

The liberal or politic arts are those in which the mind or imagination is chiefly concerned, as poetry, music and painting. Skill, dexterity, or the power of performing certain actions ac-

*Read before the Northern Illinois Dental Society, at Rockford, October, 1897.
quired by experience, study or observation, as a man has the art
of managing his business to advantage, etc. The word artist fol-
low in the wake of art, and its definition, in present usage, is one
who professes any one of the liberal arts, in which science and
taste preside over the manual execution. It is thus that the artist
is distinguished from the artisan, who follows mechanically the
rules of his handicraft or art. The word artist is particularly ap-
plied to painters, sculptors, engravers and architects. Following
closely we have the artisan. Artisan and mechanic are nearly
synonymous words. The definition of artisan is, "One trained to
manual dexterity, in any art, mystery or trade, a handy crafts-
man, a mechanic." Although an artisan is a mechanic, the word
mechanic comes more directly from the word machine. The de-
inition of mechanic is literally a person whose occupation is to
construct machines, but is applied to one who constructs goods,
wares, instruments and the like, or one skilled in a mechanical
occupation or art.

Artistic or artistical comes from the word artist, and means
pertaining to an artist, made in the manner of an artist, conform-
able to art, regular.

Mechanical means pertaining to machines, or the art of con-
structing machines, pertaining to the art of making furniture, goods,
wares, etc., etc. So you see even in the definitions of these words,
one word is used to help define the other, a mechanical art, or on
the other hand an artistic machine. Therefore mechanical and
artistical are close relations although differing greatly in tempera-
ments and characteristics.

I think we of to-day give the word artist a broader meaning
than it really possesses and mean oftentimes when using it, to
give it the broader meaning of the French word artiste, which is a
word of very extensive application among the French people to
denote one who is particularly dextrous and tactful in almost any
art, as an opera dancer and even a hair dresser or cook. I think
the word artistic as we generally express it in conversation with
one another, conveys the idea of a perfect whole, nothing lack-
ing, something done without exact and definite rules, while
mechanical conveys to our minds something made to exact
measurement and design.

I would hardly apply the term artist to a wood sawer, but
there is a man in my town who saws wood for me sometimes
(when I can't get trusted for coal and can get wood on some old dental bill) who does it artistically. He does it quickly, with dispatch—every stick being the proper length—but the pile he makes is absolutely artistic, it is noticeable for its neat outlines.

I do not believe I could make so neat and tasteful a pile of wood with ten years' practice as this old Swede makes by his seemingly careless tossing of sticks as he throws them from his saw.

I do not believe even the French people would apply the word artiste to a ditch digger, but I know a man who digs ditches artistically. He will cut out the sod on your lawn without line or measure, put it away in sections in a neat pile, then dig his ditch, throwing out the dirt in such a manner that it makes a heap which is perfect in outline; the length of the ditch he digs standing accurately from its apex to its base, which forms a straight line about six inches from the opening of his ditch, so that no dirt rolls back into it. After the water pipes are put in he fills the ditch, getting every bit of dirt back into it, replaces his sods accurately, so that in two days' time you would never know your lawn had been cut up. Although he is a mechanic of the lowest order, his work is artistic, and the artist in his nature crops out, even in this humble toil.

He has the mechanical ability to do his work correctly, and the artistic ability to do it neatly. Were his station higher in life the attributes he possesses would possibly make him a sculptor.

Passing up many steps from the wood sawer and the ditch digger, without pausing to note the many different callings we pass on our way, we come to the musician and see if we can differentiate there the artistic from the mechanical, we soon find we can. I have no doubt there are hundreds of people in Rockford, and thousands of them in Chicago, who can play upon the piano, any piece of music, note for note, measure for measure, noting their crescendos and diminuendos, their loud pedal and their soft, as accurately as the great Paderewski. But there is but one Paderewski and he is a great artist, whose every note charms and thrills us with delight. As compared with him most of the other hundreds I have mentioned are but mechanics, who play with skillful fingers indeed, but who lack the subtile something which he possesses, which so clearly distinguishes the artist from the mechanic,
that even those who know nothing of music, readily acknowledge and feel the difference.

Paderewski plays not only with the mechanical skill of hands but with the artistic skill of heart, brain and soul.

Dentistry is a peculiar calling, a peculiar occupation, a peculiar vocation, or trade, or profession, or whatever other name you may be pleased to give it, in that it is a composite calling, business, occupation, trade or profession.

We are obliged to have a smattering of so many trades, callings and professions, we have sympathies with, and can give and take hints from all the professions and most of the trades. If it was not for offending our poetic, artistic and sensitive natures too much, we might properly be called Jacks of all trades.

We are jewelers, and can sympathize with them and can talk intelligently to them, in regard to working and soldering precious metal—constructing gold and silver appliances. We are molders, and can sympathize with them and can talk intelligently to them in regard to moldings and, pouring metals, making dies and opening flasks.

We can talk intelligently with the machinist in regard to bur drills, twist drills, tempering steel instruments and the like. We can talk intelligently to the potter in regard to making porcelain. We can talk knowingly to the blacksmith in regard to forging tools.

We are physicians in that we diagnose and treat diseased conditions. We can sympathize with and give them some points about diseases that come sometimes to them.

We can at least tell them the uselessness of endeavoring to devitalize the pulps of teeth where the patient is suffering from alveolar abscess and has a swollen face, and I actually had a physician bring a patient to me in that condition, and ask me to kill the nerve of the sore and elongated tooth.

We can sympathize with and talk intelligently to the sculptor as far as mixing plaster and making plaster casts. We can sympathize with the lawyer in that we always tell our patients the absolute truth. We can sympathize with the minister of the gospel in that we preach what we practice, and can repeat with him in concert “a soft answer turneth away wrath.” We can sympathize with Satan himself and talk intelligently to him in that we are daily with the “weeping and wailing and snatching out teeth.”
And I have no doubt the morning papers will have us down as carpenters.

Apparently we are a little of everything, but are we artistic? I believe there are many dentists who have artistic qualities, in that they know what they would like to do and can see what is required in a given case to bring out artistic effects, but lack the mechanical ability to accomplish what their artistic minds conceive. I think they would make better poets or preachers than they are dentists.

Again we have the mechanical dentist, who does everything by rule and measure. He performs good substantial operations, anchors his fillings according to mechanical laws regarding the pressure they will have to bear, makes artificial teeth that grind and chew, and will not tip or rock, but which lack artistic taste in regard to the general fitness of things in size, shape, color and contour, and is very apt to get Mr. Smith's teeth into Mrs. Jones' mouth, a state of affairs which is horrible to contemplate; but I think he makes a more satisfactory dentist than the artistic man who lacks the mechanical skill.

We have been accustomed to divide dentistry into the "operative" and "mechanical."

How familiar the titles "Taft's Operative Dentistry," "Richardson's Mechanical Dentistry."

But quite recently a more appropriate name has been devised than "mechanical," using the word "prosthetic" instead; but I think as appropriate terms would be "mechanical dentistry" and "artistic dentistry," letting mechanical take the place of operative, for I believe filling teeth is always mechanical, and can never by any possibility be artistic with the filling materials we now have.

The most beautiful gold filling that it is possible to insert, even the building down of a third of a central incisor, building on a corner to the proper length and contour, burnishing the edges to the nicely beveled and polished enamel, so that no sense of touch can discover where the gold begins, polishing the gold to so smooth a surface that even the magnifying glass shows no scratch or blemish, and when you have it all done you have performed nothing more nor less than a fine mechanical operation. There is nothing artistic about it, simply because that shining piece of gold looks no more like the natural tooth than so much amalgam would.
Practice and experience has given you the mechanical ability to use deftly gold pluggers and weld one piece of gold to another. But you have been working to lines and measures, you have the remnant of the tooth you restore to guide you and the adjacent tooth to measure from. A common cement filling requiring very little skill to make would be more artistic, for it would look far more like a tooth. But prosthetic dentistry opens up a field for the artistic mind as broad almost as that of the sculptor.

It is here the dentist has opportunities to be not simply an artiste but an artist in all that the English word implies.

There was a tendency not long ago, in the city dentists at least, to separate the operative from the prosthetic, but I think since crown and bridge work have come so much into vogue, the two departments of dentistry are more closely united than ever before.

The dentist who can insert two artificial dentures into the mouth of a patient and build out the lips to their natural shape, have the teeth just long enough, just the right colors to harmonize with complexion, age and temperament of patient, can give just the proper artistic twist to a cuspid here, or just the proper lapping of an incisor there, and bring out the individuality of that patient as it should be, that dentist is an artist even though he has mounted his teeth on nothing but vulcanite.

He has not worked by rule or measure, but his artistic mind has understood what was required and his artistic fingers have set those teeth as they should be.

Crown and bridge work gives the operative dentist with his exquisite mechanical ability an opportunity to bring out all the artistic there is in him, and if he is possessed with this divine attribute to any great extent he can become the greatest artist of them all; and the dentist who can utilize five or six roots and teeth and mount upon them a full set of teeth which are lifelike and natural, satisfying the beholder with their beauty and the patient with their capabilities of performing the functions for which teeth were originally made, they are the Paderewskis of the dental profession; they are greater than Paderewski, for the art he possesses gives but passing pleasure, while theirs gives lasting and enduring joy.

Crown and bridge work where artistically constructed constitutes, I believe, the very height of artistic dentistry of the present day.
Signs of the Times.*

By F. T. Bell, D. D. S., Aurora, Ill.

Twenty-five years ago the Missouri Dental Journal inserted the following specimen of dental advertising that appeared in the daily papers of that date:

"Teeth—teeth—teeth—teeth. Great reduction. Gold and platinum sets, $30.00 (usual charges, $100.00); silver, aluminum and other materials, $15.00 (usual charges, $50.00); gold fillings, $2.00 (usual charges, $5.00); silver, amalgam and cement fillings, $1.00 (usual charges, $3.00). Dr. B. offers to insert sets of teeth at the above prices, with or without the extraction of roots. Warrants the purity of all materials, as also the fitting of plates, stability and duration of fillings, as if paid at the highest prices. Extractions and other operations performed by means of anæsthetic agents. Toothache cured instantaneously. Consultation gratis."

A writer in the magazine says that at nearly every meeting of each of the dental societies the subject of raising the status of the dental profession has been discussed by the man whose name appears in this advertisement.

For many years before the appearance of this advertisement the dental journals had endeavored to impress upon the members of our profession, that only by a proper appreciation of the dignity of their calling could they inspire in others the respect due to it, and were earnestly pleading with students to enter some one of the dental colleges, to fit themselves for their future profession, believing that such an education was the cure for all the evils that do so easily beset the dental profession.

Twenty-five years have passed, and with fifty-two dental colleges conferring degrees, yet to-day the most prominent sign in the dental world is the dollar sign and a commercial instead of a professional spirit prevails. Who is to blame for this—the college or the individual?

Taking up the dental salvation which the journals of twenty-five years ago worked out, let us see what the colleges are doing to elevate the standard of dentistry.

Any young man with the fee in his pocket and a modicum of brains can be admitted to a dental college, where he can study as

*Read before the Northern Illinois Dental Society, Rockford, October, 1897.
many years as he choose, knowing that what he there learns is the result of the latest attainments in science, the research of the very brightest intellects in this country and Europe, that the lectures are by men who stand foremost in their profession.

The teachers, too, may be gentlemen of the highest character, capable of instructing students in the honorable and dignified practice of their profession, but if there is no such instruction required of the teachers, it is small wonder if in the struggle to make a living, after graduation, the young practitioner is content to keep within the bounds of honesty, and allow honor to take care of itself.

Let us take the case of two young men graduating from college. They open offices in the same town. After some months of patient waiting, during which the door knob has been oiled many times to prevent it from rusting, the fear that too much time is being lost induces one to advertise in flaming type that he is the cheapest dentist in town; that his operations are painless; his bridges the results of mechanical perfection and sets of teeth are a mere bagatelle to this modern Herrmann of dentistry.

This is an age and a country of cheapness, and the people are ever eager to grasp at shadows. This dentist—writing D. D. S. after his name, mind you—soon finds his "dental parlors" full of patients, with all sorts of teeth to be filled, crowned, bridged, extracted or treated in any way that best suits the judgment of this experienced young practitioner. At this juncture diplomacy must be called to his aid. It is well understood in commercial circles that the best salesman is not the one who can sell a man what he wants, but he who can talk him into buying what he does not want. So, too, the patient with a shawl over her head and his advertisement clutched in her toilworn hand must be firmly but adroitly led to believe that what was advertised as good at a certain price, is not good enough for her. And one whose appearance indicates that while he may be capable of buying a picture painted at a sitting, yet has learned to keep his money in a bank instead of in a stocking, is persuaded to have an aching central crowned with gold, and as business is rushing the dentist does not take the time to destroy the pulp in the tooth; and this is the breach in the wall that in time is to widen and let in the flood that will overwhelm him. These little slights that will continue to
creep into his work will not stand the test of time. Nothing but truth can endure.

Meanwhile his rival across the way with too jealous a regard for the honor of his profession to advertise, is watching—with some little bitterness, if he is hungry or has a family—the other's success. And when reports reach him, he is almost persuaded to go and do likewise. But something within prevents him, and the long hours of waiting he devotes to study and experiments, so that when the failures of his neighbor are deflected to his office, he is able to give them the proper treatment.

The history of the world's progress is the history of men of genius, whose work has been made the subject of sneers of friends and enemies alike. Who have lived and worked in solitude, because they knew that truth was on their side and would win. And those lonely hours were the hours in which great pictures were painted, sonatas composed, poems written, and the greatest triumphs of science achieved. Meanwhile the individual has been developed, and is ready for all future work, with a foundation established upon an unassailable rock. His work, if he is a capable man, is the best advertisement any dentist can have, making and retaining friends for him as nothing else can do.

And now, has the college that takes a man's fee, professing to fit him for his life's work, honestly done so when it graduates him? Has it taught him anything about how to use the knowledge acquired under its care, or the ethics of his profession? Should not lectures be given to instruct students in the theory of building up a business upon legitimate lines, so that the dignity of the profession may not suffer at the hands of their students, if no higher aim is accomplished?

Has the education, advocated twenty-five years ago, resulted in advantage to the profession? We should certainly say that it has, but colleges cannot refine the grossness of every individual, any more than a common boulder can be polished like Parian marble.

The standard of the colleges is not yet high enough. Some time in the millennial future a college may arise that will have the courage not to admit students on any other conditions than that they live up to a high code of ethics established by their alma mater.

The dentist who seeks the best is the one who identifies himself with the various societies of his locality. And the benefits
derived from intercourse with his fellow practitioners consist not alone in the knowledge gained at these societies, but the intercourse itself is a stimulus to a system often overstrained by the exacting duties of a dental practice. And the desire to get among his brother sufferers and air his woes or tell of some professional discovery makes him look forward to the meeting with keenest pleasure.

With these thoughts and sure of his welcome, the sanguine young dentist proceeds to the meeting. He is a stranger, and if at all sensitive to social atmosphere, he may find a low temperature pervading the hall. No one bids him welcome, and unless he has personal friends, he may have a lonesome time and gather the impression that that meeting would have been just as good, perhaps even a little better if he had remained in his own modest office, where at least, he reflects, he is "the whole thing."

The papers, too, may refer to some branch of dentistry not interesting to him, or entirely impracticable. New theories are advanced and labeled as facts, where really their practicability has not been demonstrated.

Now while we are always glad to learn something new, and it is true that advance is only made in that way, the fact remains, that much time is lost by dentists trying to put into use theories that they hear advocated in the society. It has not taken their authors so long to find out their worthlessness, and he does not take the trouble to correct his mistake at the next meeting—he may have forgotten it by that time. But harm is done, for the young dentist feels that he has been lead astray in the meeting, and has less desire to attend again.

Then again theories are advanced that are not acknowledged by the majority of the society, but are carried through as if they were, by the genius of the speaker. While the man who is a less ready speaker is quickly silenced by the friends of the essayist, so that the timid one, although he be in the right, does not again return to the subject.

In every society there are men who are able to give clinics, write good readable papers and help the society, but who at the same time never offer their services, simply because they are not as skillful or brilliant as some of the leaders. They think it wiser therefore, to keep still and listen to the others—of course we all know some who we wish would do more of the listening, but if
we all do the listening there would be nothing but a mechanical clinic. There must be leaders in every society, but it appears to me that in order to promote the usefulness of our dental societies so that every member may be interested and benefited, each one should be willing to assist in some way; that committees should be appointed to introduce new comers, and make them feel that they are welcome, and needed, as they are, for new blood is the life of progress.

PROCEEDINGS OF SOCIETY.

Chicago Dental Society.

A regular meeting was held December 7, 1897, with the President, Dr. A. H. Peck, in the chair.

Dr. L. P. Haskell read a paper entitled "Our Porcelain Teeth."

DISCUSSION.

Dr. E. J. Perry: I have been honored by Dr. Haskell by a request to open the discussion of his paper, "Our Porcelain Teeth." "Our porcelain teeth" means, I suppose, of course, the sum total of American manufactures in this line; and as we are nearly the "whole thing" from the dental standpoint, the title might just as well have been "Porcelain Teeth," leaving the qualifying word "our" off.

A paper was read recently before one of our dental societies which was provocative of little or no discussion. Each gentleman simply said that he agreed perfectly with the essayist, and with a few words of confirmation or approval took his seat. I made the point that it was a very poor paper indeed. Now my friend's here is another. All we can do is for every man to rise in his seat and shout amen. The points made in Dr. Haskell's paper are all true. I am heartily pleased that he of all of us has made them. This paper should be printed in italics in every dental journal in the land, and it should be engrossed and sent to every tooth manufacturer in America, and to it every dentist should shout amen so loud that it could be heard at the source of supply. The essayist truly says his most perplexing time comes when selecting the teeth, and it most frequently happens that we have to be satisfied
with "the best we could do," and seldom do we get just the right thing. Just why it is that the manufacturers have stood still in this very important department I cannot say. The excuse given in the essay does not seem just to them, at least the White Company. This company has been bold in enterprise in every other department. No other kind of manufacturers have been more progressive than the White company have in the various departments of their business; and yet I cannot see that this one department of porcelain teeth has kept pace with themselves or the profession.

Why bicuspid are not exact reproductions of Nature's forms I cannot see. Even in the Cont. gum sets, which are especially good and natural, we have those little rudimentary back teeth. The celluloid teeth, which were especially designed for that work, were a vast improvement in form and size. But upon the disuse of celluloid the makers ceased to show them, and upon inquiry I am told they have ceased to make them. I cannot see why these teeth, with slight modifications in the laterals, are not as good for rubber work as they were for celluloid. As they served my practice well. Then there was the "hand carved teeth." This was a grand advance, and in many cases perfect reproductions of Nature's forms and shades. These were withdrawn and I am told at the tooth counters that their price drove them out of concurrent circulation, or rather the commercial ratio between them and the others was so great that the cheaper tooth drove out the dearer. Still another tooth the White company withdrew is the countersunk tooth. Here we had bicuspid and molars, which were natural in size and shape, and the oral teeth also were superior in this respect. There were elements of weakness in these teeth; yet the principles of their construction were all right, and with a little of the enterprise displayed in other ways the White people could have made them perfect. When finished they presented the most natural appearance, especially the lingual and grinding surfaces. Why can't we have them now?

I hope this society will take some united and formal action in the matter, and that some way of reaching our principal makers of teeth may be developed in the discussion this evening, or that a committee be appointed to act in behalf of the society, as suggested by the essayist.

Dr. W. V-B. Ames: I would like to see something come of
all this discussion. I will say, that a similar discussion was had at a meeting of the American Dental Association some ten or twelve years ago, with which Dr. Haskell had something to do. I do not know that anything came of it at that time. Progress in this line is more apt to come from competition than from demands of consumers so if we look partly to some of the new producers, who have recently made molds, and are in the act of completing their line it will probably be to our advantage.

I recognize the difficulty described by Dr. Haskell, the little malformed bicuspids and molars. I get around this by taking home two or three sets, juggle them there and return a set or two, with the combination no worse than usual. I cannot, however, get around some of the shapes and colors they give us so easily. They make the majority of their teeth with incisive half or two-thirds of a shade we might use, and which would match, in doing partial work, the adjoining natural teeth, but they insist on putting on some yellowish, brownish or greenish tinge at the cervical third or half.

In practice among people who care for their teeth, that is not called for at all, but perhaps, where most of the artificial teeth are sold, this coloring is called for. They insist also on giving us a bulging anterior surface; a surface which bulges from the gum margin to the tip, which is not natural. I generally have to put these teeth on corundum stones to straighten them which does not improve the surface. This is done no doubt for bulk of porcelain over the pins, but I do not think there is any necessity of having this bulging. These are the points with which I find most fault.

Dr. L. P. Haskell: In selecting a set of teeth if the posterior teeth are not of a proper character I exchange them for others; but then it is often difficult to match the shade, still this is not of so much account, as it is well if the posterior teeth are darker, as is usually the case in nature, yellow predominating. Unfortunately, a very large proportion of the sets of bicuspids and molars are exceptionally light, often white. When the White Company, commenced the manufacture of teeth the shades were superior to what they make to-day, especially of the delicate blue tints; but desiring to strengthen the material, this translucent effect was destroyed because using more silex and clay the teeth were more opaque.
Dr. J. G. Reid: I wish to relate an incident that occurred in my practice a few years ago. A physician came to me and wanted me to make a partial denture for him. He said he wanted big creamy white teeth. I told him I could not get such teeth. I went to the White company and told them that I wanted the largest teeth they had in stock, and they were about the size passed around by Dr. Haskell. I said they would not do. I then went to another manufacturer and said to him, "I want the largest bicuspids and molars you have in stock." He brought out a tray of the largest teeth he had and I told him they would not suit. He said: "Do you want horse's teeth?" I replied: "That is just what I want." He then said: "We have about two dozen sets of horse's teeth, but never show them. We are ashamed to put them out. If you find anything in the lot you are welcome to them." They were the teeth I wanted. They were the most beautiful teeth I had ever seen both in shape and character. They were more natural in appearance and more in accord with the natural teeth, as they should be. If any of you will take pains to go to Justi & Company, you will find that they have about one dozen sets in stock at the present time, and they come as near being ideal teeth as any I have ever seen. They are twice as large as the ordinary teeth on the market.

If the dental profession desires the character of artificial teeth changed, if they demand it they can get it. But as it is now, we have got to take this or that class of teeth. It seems to me, agitation of this question would bring about some results in the way of modifying the character of teeth. To my knowledge, I have never heard this subject presented to a dental society before for action. I believe the suggestion is a good one. I believe if we are in accord in that such changes are necessary, and I believe we all are, we can bring about results that will be beneficial to all of us.

Dr. G. W. Schwartz: I have been going to the dental depots and making complaints about teeth, and the man in charge says, "You are the first person to complain of them." I have known other dentists to go to these depots the same day and make the same complaints and get the same answer. The reason they do not make these changes for us is because it is not convenient for them to do so. If we continually kick it will eventually compel them to make the necessary changes. Dr. Ames struck the keynote when he spoke of grinding the shape of the teeth down until
they look right; but when we do we change the color of these teeth if we grind the contour off. If the bicuspid facing is too full you grind it down, and you change the color of the neck. You have it too dark. It may perhaps look a little yellow or green, a dark brown or dark yellow. So much color is entirely uncalled for in a good many cases where we use a facing for the crown. Some manufacturers have plenty of shades in their teeth and not enough shapes. They pay no attention to the anatomy of the teeth from the bicuspid back, particularly the grinding surfaces of the teeth, which are made after the set form of the manufacturer. Dr. Haskell spoke of lingual cusps of lower molars and buccal cusps on the upper molars. This is very important, because we get a grinding and rolling motion by having the cusp arranged in that way. It is entirely absent on porcelain teeth given to us to use, especially in rubber and continuous gum work. We also know that those men who bake porcelain have greater trouble in getting bodies than they do teeth. I have begged the S. S. White people to get some more colors in close bodies, if possible, and I believe if their factories were in Chicago instead of in Philadelphia we would soon get them. I have made the complaint time and again as to the shape of all facings. The dealers have said to me, "You are the first man to give us any complaints." I know that this is not true. I am sure that if we will register a vigorous kick we will get what we want.

Dr. F. N. Brown: I wish to add a word in regard to the teeth we have for porcelain work, or teeth that will stand the heat of the electric furnace. In the last month I tried teeth from nearly every depot in Chicago. I first used a set of six from one depot, and after reshaping and baking them for special use they came out with shape destroyed and all color gone, being a milk white. I tried other depots and the teeth came out with little bubbles all over them that would catch and retain the pumice used in polishing. So I had a great deal of trouble in trying to find teeth that would stand the heat of the electric furnace. I, however, discovered that after grinding the tooth to suit, if you will put it through the electric baker, it will bring the polish back. In trying to secure a special tooth for a case in hand, last week, a tooth with sufficient grinding surface, I was finally compelled to use a rubber tooth adding Close's body to the palatine cusp, baking it on, thus increasing the grinding surfaces. I have had lots of
trouble and poor success when I needed teeth that would stand electric heat.

Dr. L. P. Haskell: I do not understand what Dr. Brown means by saying that the teeth do not stand the heat of the electric furnace. I have been using Custer's furnace exclusively for a year in continuous gum work, and I use this class of teeth altogether. I have not had any difficulty with reference to their not standing heat. In baking Close's body, after I have ground a tooth or any portion of it, and sometimes I grind the surfaces of the tooth to flatten them, or grind the cusps in articulating, the heat is just enough to retouch the enamel, but not enough to destroy the color or shape of the tooth.

Dr. Truman W. Brophy: I do not know very much about this subject, but I am prompted to ask one or two questions for information. The first one is, has anybody ever applied to the head or management of any dental manufacturing establishment and presented to him definite forms of teeth which he desired to have made?

Dr. Haskell: I have.

Dr. Brophy: If that has not been done, we can hardly find fault with manufacturers for not producing such teeth. If it has not been done those who have taken part in the discussion to night might advantageously prepare some patterns and request the manufacturers to produce them in porcelain as they should be, and if they refuse to do it, then we will have good ground for complaint. Every one knows, who has had experience in constructing artificial dentures, that the teeth need to be changed in form to meet the requirements of certain cases. Dr. Haskell changes the forms of teeth to suit the case he has in hand. In other words, he cuts, grinds and forms the teeth to suit the individual case. I would suggest to the gentlemen who are deeply interested in this subject, that each one prepare some patterns of teeth, such as he would like to have constructed, bring them together, compare notes, and make out a set of fifty kinds and request the manufacturers to make them, and they will get them. I do not see any motive which would lead manufacturers to make teeth which are not wanted. If dentists desire a certain make they can get them made. I do not see any reason why a dental manufacturer should not make new molds and make them exactly to meet the requirements of dentists for carrying on their work with satisfaction to themselves and to their patients.
Dr. L. P. Haskell: In answer to the question of Dr. Brophy, I will say that for six or seven years I have been in correspondence more or less with the White company, the Justi company, and with Dr. Starr, who had charge of the manufacture of teeth under the White company. I met Dr. Starr first at a meeting of the Southern Dental Association in Atlanta. I had a long talk with him. I also met him both in Philadelphia and at my office. We went over this subject again and again. Then I had conversations with Mr. Lewis, in Philadelphia once, and once in Chicago at their dental depot. The subject was repeatedly discussed, and as a result he made four molds with long lingual necks, but I seldom find them in stock combined with the fronts.

Dr. G. A. Thomas: There is one point in regard to American teeth that I have never seen carried out, with but one exception, and that is, not the slightest regard is paid to the lingual contour of a tooth to get a natural effect. In coming here to-night, I was at a loss to understand what kind of a paper we would get, whether the subject would be our porcelain teeth, or whether it would be our porcelain teeth. The profession has in the last few months been making strides in regard to individual porcelain teeth, made by different artists in the profession, and the artistic effect, the innumerable styles, contours, shapes and colors—some of them abnormal—would astonish the ordinary manufacturer of teeth. To my mind, the question of our porcelain teeth is one that we should study ourselves in the individual cases in which we have to supply natural deficiencies with artificial teeth, and after we have had some little experience and begin to see where we get artistic effects, the manufacturer will readily supply us with all the teeth we are able to buy of them. I made a vigorous kick in the office of the S. S. White dental company one day in regard to their teeth. The manager from Philadelphia was standing near by at the time, and told me that if I would take the time and care to carve a model set of teeth that my experience called for, he would take them into consideration, and if there was any call for them he would make them up, and would be glad to do so. If a number of dentists should carve model sets of teeth, each set to correspond with their individual ideas, we can readily see what a Herculean job the manufacturers would have to supply the varieties called for. It would be something stupendous. But my idea of what we should pay most attention to is our individual experi-
ence. Every case that comes under our care is a little different from any other, as a rule, and to expect the stereotyped forms of teeth we get at the dental depots to suit all cases is out of question, and I think if we study the matter carefully, study the difficulties that manufacturers encounter in supplying what we want, we ought to be satisfied that they are doing all that their business requirements call for.

I have been very much pleased at the different samples of porcelain work where the individual carving of the dentist is brought into play and to see the artistic and natural effect of work they do. It is a great relief to me when I compare it with the stereotyped forms that we see on the market. I think after studying this matter more carefully, we will find that after we have practiced with porcelain teeth a little while in carving, baking, and matching the colors, we will be more competent judges to estimate and form some idea of the kind of teeth we want from the manufacturers. I have had difficulty in getting colors and materials, but whenever I find I cannot get the color I want I smash up a few old teeth, and after grinding them with a Close's body I find I can get all the color I care for. There is one point I have found absolutely necessary, that is a thorough grinding should take place between the materials which we try to blend. If we are careless in this matter we will have freckled looking porcelain when it is baked.

**INCIDENTS OF OFFICE PRACTICE.**

Dr. G. W. Schwartz: One of the incidents of office practice that worried me a great deal was that of a case that came under my care about a week ago. A patient came to me for whom I had been doing a great deal of work. I was getting her teeth ready for eight crowns. I had put on one or two crowns, and I had some other roots under treatment. Unfortunately two of the roots I did not have under treatment began aching on Saturday. Sunday I was not in my office, but on this day she went to a specialist with a view of having the two roots extracted. This was done. The teeth extracted were the cuspid and left first bicuspid. I think a specialist, before undertaking to remove the roots of teeth of that kind, should at least find out whether the patient has a reliable dentist and has the case under his charge. I think a man who will take out a cuspid root as this one was ought to be censured. I do not think specialists ought to be encouraged in work of this
kind, because this dentist by so doing spoiled one side of the woman's face. It was a large cuspid root, and there will be a great deal of absorption when the gum heals and the case assumes the shape it will after about a month or probably six weeks. This side of her face will be much smaller in the region of the cuspid. Furthermore, this specialist left me a little lateral, a very poor bicuspid root, and a third molar to put a bridge on. He told her that her dentist could put a bridge on and it would be better than those crowns. I think taking out a cuspid root as good as that was ought to be a penitentiary offense. I should be sorry to take out such a cuspid root for anybody, even though the root were abscessed, as it may have been, and there was no excuse for the dentist, under any circumstances, to remove it, because he could have sent her to some dentist who was in his office on Sunday. Any dentist in the neighborhood could have given her relief. An extracting specialist knows that he has no right to administer gas and take out two roots simply because there might have been or was four dollars in it. If he had allowed them to remain I would have given him five dollars myself to have had him left them in. This patient lost the best root on that side of her mouth, and this fact alone gave me the most concern. It was not through any mercenary purpose that I wanted to have the cuspid root left.

I wish to say a few words now on crown work. I have spoken so much on this subject that some of you may think that I do not know anything else but crown work. The fitting of bands for porcelain work, as is ordinarily done, to say nothing of gold crowns, is something that ought to have more attention than it does, and I want to be as forcible as I can in speaking of this matter. We see some gold crowns put on proximating that are like two oyster cans; everything is crowded out of the way, there being no interproximate space left. It is a shame that we as dentists do not better prepare teeth to put on crowns, because if there is anything in crown work to which great attention ought to be paid it is the proper shaping of the teeth at the neck. If you do not have a tooth correctly trimmed above the neck you cannot get the crown to fit properly. Contouring, the proper knuckling of the crown, and the fitting of bands about the necks, are of vital importance to dentists, and some dentists ought to be ashamed of the kind of crowns they put on. It is a backset on crown work. They ought to wake up and try to learn how to trim teeth down.
THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

The regular meeting was held December 13, 1897, with the President, Dr. George B. Perry, in the chair.

Dr. T. W. Brophy read a paper on "Surgical Operations for the Treatment of Harelip."

DISCUSSION.

Dr. Thomas L. Gilmer opened the discussion. He said: Mr. President: One of the conditions that I made when I agreed to open the discussion on this paper was that I should see the paper one or two days in advance of its presentation in order that I might read it carefully and thereby be enabled to discuss it intelligently. This condition has not been complied with, therefore I do not feel that I can do the subject justice.

I am pleased with the practical way the subject has been presented by the essayist, and also with the ingenuity he has exhibited in the treatment of these cases.

As to the causes of harelip and cleft palate it is useless for me to add anything further, as we really know very little about them. We know that there is an imperfect development, but beyond this I presume we know practically nothing. The essayist brought out one point that I have not heard mentioned before, namely, that the first born is the one of a family of children most likely to have clefts in the palate and lip. Possibly there is something in this statement. I recall a few cases myself where the cleft occurred in the first born. I saw one such case yesterday. Dr. Brophy has said nothing about the age for operating. He has simply covered one practical form of the operation. Surgeons differ materially as to the time when an operation should be done. Some operate as soon after birth as possible. Others believe that an operation should be performed at any time previous to the eruption of the deciduous teeth. My experience would lead me to say that the best time to operate is near the time of birth, perhaps the sixth or eighth week. Of course the physical condition of the patient would in a measure govern this. If the child was anaemic, or had some of the diseases to which children are subject at this period, then we might prefer to delay the operation until the child was in a better condition. In order that the best results may be had the operator must have three qualifications. He must be artistic, mechanical and have surgical proficiency. Artistic ability,
that he may be able to look at the imperfect lip and see how the parings and the flaps should be made, so that after union the lip will have its most natural shape. Great care is necessary in making these flaps. If he makes the flaps larger than they should be he has wasted tissue and gets an imperfect result. He must see in advance what the result will be, and follow with his knife the lines which his mind has laid out. He must have mechanical skill in order that he may execute with the knife what his mind has conceived. It is perfectly plain why he must have surgical proficiency.

There are a great many different methods for the cure of hare-lip, and almost every operator of note has an operation of his own. But all of these operations are quite similar in certain respects. I made a few models from spunk, showing some of the different methods of making the flap, and what the results will be after the flaps are brought together, but unfortunately I left them at home. It is the only really practical method of demonstrating the operation. We can use drawings to illustrate, but they do not show so well the results of the different parings and flaps, as do dummies made of spunk or felt. I regret exceedingly that I neglected to bring them.

The operation described by the essayist is practically the same as one given in Garretson's "A System of Oral Surgery." It is an operation that I have performed several times with slight variations and with good results.

Instead of two, Garretson recommends the use of three or more sutures; he uses the smallest sized silver wire for this purpose, which is sufficiently strong, fastening them to the lead plates by compressing on them perforated shot. I am glad the essayist brought out the point with reference to the nose, as I think it is a feature that has been very much neglected. The surgeon often forgets this important matter, his attention being drawn principally to the restoration of the contour of the lip. I have not used the wire as described by the essayist to correct the malformation of the nose, nor have I seen it done by any one else. I have depended on a third retention suture when necessary for holding the nose. It is placed high up and this accomplishes the same object; of course, it is used in connection with the small superficial approximating sutures. I had hoped that Dr. Brophy would exhibit a drawing showing the lip before it was
pared, demonstrating the necessity for making the incisions in the manner they are made. There is a point which the essayist omitted which I believe important. I believe that the lip should be dissected from the jaw in order to relieve tension and to increase the length of the lip. With regard to the different mechanical appliances that are used as aids to relieve tension on the lip. No. 9.

I would not employ the Hainsby truss, because it may be dislodged, it is uncomfortable to wear and it is possible that the pressure may interfere in some measure with the freedom of the circulation of the blood. The Marcy suture is better adapted for this purpose. This suture was recommended for this purpose in a recent number of The Cosmos by Dr. George T. Carpenter in a paper read before the American Medical Association. It is composed of two pieces of adhesive plaster with holes for laces punctured in one end of each, the other is secured to the face and the two are laced together, drawing the parts toward each other. By it the two halves of the lip may be brought together and held in a very substantial way. Recently I used it in my clinic where I removed a nævus maternus from the side of the face. Quite a large part of hairy pigmented skin was removed and this method was employed to relieve tension with good result. For harelip operation it is far better than the old method of using one piece of plaster, extending it from one side of the face to the other.

I will add but little to what the essayist has said regarding double harelip. It is more difficult to deal with. Some surgeons prefer to repair one side, and at a second operation the other. It is probably best, if possible, to repair both sides at once, and the intermaxillary bone where it projects in these cases should always, if possible, be forced back into place. By some it is recommended that a section of the bone be cut away and the projecting portion set back to its proper position, making the operation on the lip later. I should not remove it bodily for obvious reasons.

When I have operated on the lip previous to closing a cleft in the hard palate, if present, I use modeling composition to bring the jaw to a normal shape. The composition, which has an antiseptic mixed with it, is softened and placed in the cleft, and molded so as to make the part approximate a perfect jaw. When it is nicely formed it makes an excellent bed and mold, so to speak, for the lip to rest on while the parts are uniting, and I believe give a more perfectly shaped lip. The subject in its entirety is a large
Dr. C. P. Pruyn: I have very little to add to what has been said. My experience in cases of harelip has been somewhat limited; nevertheless, I have had several cases. I have been delighted with the presentation of this subject by Dr. Brophy, and we ought to feel complimented that we have had such an excellent paper this evening. It is something different from the usual order. In continually talking upon subjects that are so familiar to us in our everyday practice, we are apt to become rusty on those subjects with which we are not so familiar, and papers of this kind should spur us on to further thought and study. It is a great service to us to have a paper presented occasionally on some such subject as this. It is an educator. It helps to broaden our range of vision and prevents our falling into ruts. Cases of harelip are interesting to us, but we are not all privileged to see a large number of them. The only way to become familiar with these cases is to qualify one's self to deal with them and be ready for them, and when they come to us we will know how to deal with them, and have the ability to successfully treat them.

Dr. Brophy (closing the discussion): Dr. Gilmer said something about the time of operating. I did not discuss that phase of the subject. In regard to method of retaining the lip in contact, the time that this should be done is after the palate is closed. As soon as you get the palate closed and perfectly united, and the patient has sufficiently recovered from that, then the operation should be made on the lip, and not until then. It is a matter of a good deal of surprise to me that surgeons usually close the lip and let the palate go, telling the parents that when the child is old enough it should have an artificial palate made. This is a very great mistake. It is gratifying to me to know that some of our most distinguished surgeons have discovered that mistake. Some of the most celebrated surgeons in our city to-day have within the last few years changed their views in regard to this matter, and are advocating the making of early operations for closure of cleft palate. They have seen the good results which follow early operations. I would not operate upon a child for harelip until after I had been successful in closing the palate, and that can be done in almost all of the cases that are presented, no matter how broad the cleft may be, provided the plate method be employed. And the time of operating on the
lip is as soon as the other operation is completed and successful. Dr. Gilmer made a statement, if I understood him correctly, which surprised me, namely, that Professor Garretson uses lead plates for the closure of harelip.

Dr. Gilmer: It is in both editions that I have seen.

Dr. Brophy: If there is anything in Garretson's work on the use of plates, such as those on the sides of the mouth, for the closure of the lip, I have not seen or heard of it.

Dr. Gilmer: I read it last night.

Dr. Brophy: As to the use of plasters and lacing I have never seen the use of them. If the plates are put on as these are, just at the border of the orbicularis oris muscle, as I have described in the paper, there is no occasion for anything else. It would be impossible for those plates to draw through the skin, and unless they do draw through the skin it would be impossible for the fissure of the lip, which was closed, to separate. The sutures should be strong, No. 26. I would not think of using anything else, because there is a good deal of strain on them and it would be an unpleasant experience to have one of them break. I have never found any use for more than two silver sutures to close the fissures. These are placed in position, carried through the plates and drawn together, after which the lip cannot possibly separate. The application of the suture referred to by Dr. Gilmer, as having been presented by Dr. Carpenter before the American Medical Association, I regard as cumbersome, wholly unnecessary and uncalled for.

A word or two with reference to dissecting up the lip. I have never dissected up the lip but once, and I am sorry I did it in that case. It led to dropping of the lip and caused it to be altogether too long. If the cleft be first closed, and the fissure in front united, there is no occasion for dissecting up the lip. There is enough tissue in the lip for the purpose of uniting, and when the flaps are made as large as these shown by the drawings, they will come together all right. If I made an incision at all it would be in the absence of a central part. In the event of their being double harelip and the intermaxillary bones absent—as they sometimes are—badly displaced, or dwarfed in development, it would not be possible to bring them in to utilize them, so if they were put in position they would be of little value; then I would dissect up the lip in part from the sides, but not all of it.

Drawing No. 5 exhibits the form of the lip where the nostril is dilated upon the affected side; and as I stated in describing the
case, the lead plates instead of being round like a penny are a little more elongated than usual, making them oval, extending deep enough to get tension on a considerable portion of the surface of the skin. The principal merit of the plates is to bring tension on a good surface of the skin. That is the reason why they are so potent and valuable in closing the palate. With a lead plate two and one half or two inches long, as the case may require, with a plate on the side of the palate, and tension sutures put through it, instead of having tension on the sutures through which it passes we have tension on the entire palate. The plates embed themselves slightly in the mucous membrane; they draw on the mucous membrane, and do not cut out. They will stay there and the fissure will unite. So it will here. The whole lip is clean and free, there being nothing in the way to prevent a dressing, no bandages, no compresses, no plasters. It may not be amiss to place a little dry gauze or a loose bandage over the lip just to hold the parts in place. If I used plaster at all it would be to hold the piece of gauze, and then take it off each day so that the lip could be examined. In this way you can keep the parts clean, and it saves the patient the cumbersome appliances that are used for the purpose. The child may go on and take its food, and when it comes back the next day you need have no fear that the lip will be separated. On the other hand it will be united.

I thank you, Mr. President and Gentlemen, for the honor of inviting me to present this paper.

MINNESOTA STATE DENTAL ASSOCIATION.

The fourteenth annual meeting of the Minnesota State Dental Association was called to order at 2 o'clock P. M., on Tuesday, September 6, 1897, in the Medical Building of the State University, by the President, Dr. W. D. James, of Tracy.

In the absence of the vice president, Dr. O. A. Weiss was called to the chair.

The roll was called by Secretary Cruttenden, after which Dr. James delivered the president's annual address.*

DISCUSSION.

Dr. H. M. Reid: I would like to emphasize one point in the president's address, and that is in regard to membership in dental

*See page 836.
societies. I heartily endorse everything he said in regard to that matter, and I do say that those who fail to connect themselves with societies of this nature are great losers.

In regard to the law he has spoken of, that is a matter I had not thought of, but to my mind it would be a good idea, I think, to appoint a committee to look up that matter and take some action, so that something might be done with it later in the session. I have not thought of it myself, only just since he has mentioned it in his paper, but it looks to me as if it would be better to place it in the hands of a committee, say a committee of three, to look that matter up and get it in some kind of presentable shape so that we can take action upon it somewhat later in this meeting.

Dr. C. H. Stearns: I would also like to endorse what has been said in that paper, and I am particularly pleased with what the president has said in regard to society work. There is no man who can afford to be without society affiliation. It may be he would not learn a great deal from the remarks of others, but if he attempts to teach he will find that he will learn a great deal himself in that way, and we find it is not the man who sits back in the back seat who gets the benefit, but it is the man who comes to the front and helps to run things; he is the one who gets the benefit and the one who benefits the society.

So far as the dental patents are concerned, I have not given the matter much thought, but it is desirable that some action be taken by which this great evil can be remedied. What that action should be I am not prepared to say, whether by the abolishing of certain classes of patents, or by restrictions, or by some other way, I cannot now say. I think, as Dr. Reid has suggested, it would be a good thing to place the matter in the hands of a committee and let them look into it and take some action.

Dr. A. Owre: I understood the president to say he was against the granting of patents. I do not think that would be doing the fair thing by the dentist, and it would give the man who sells instruments an undue advantage. I think if there was a restriction placed on it, it might be safer and perhaps better. There may be a man who has not succeeded in his practice, yet he may be a good dentist, and he may have spent twenty-five years in perfecting an instrument which dentists could scarcely do without, and I think he should have some remuneration for his work.
I agree with Dr. Reid that it would be a good thing to place this matter in the hands of a committee and let them look it up, but at the same time I think it is a good idea for us to discuss it and express our opinion in regard to it. I certainly think a man should be rewarded in some way the same as other men are rewarded for their ideas.

Dr. H. L. Cruttenden: I would like to hear the exceptions that the president takes to the patent laws which he spoke of.

Pres. James: There is no exception taken in my paper to patents. I simply stated what one class claims and what another class claims. I have heard the matter discussed before, and while one class claims it is unprofessional, another class claims it is just, and that the man should be rewarded for his labors. The point I wanted to make was in regard to the patents on processes, where you have to pay a man for using his process, which you all know is a humbug and imposition, because it restricts a man in using his own judgment. There are lots of things we use every day in the way of processes, which we would do just the same without a patent.

Dr. Cruttenden: I understand now; you only objected to the patent processes.

Dr. Barnett: I do not know that I fully understand the president's remarks on the subject. As I conclude from the paper he has read, what he means is to change the patent laws. Can a committee of dentists have much influence in doing that? Am I right? Is not that the idea, to change the patent laws of the United States?

Pres. James: Yes; so far as that particular portion of them is concerned.

Chairman Weiss: There are others from whom we would like to hear on this subject.

Dr. Cruttenden: I think it would take a great many years; we would all be rather gray before we should be able to change the patent laws. I see no objection to taking out a patent. It may be some think it is unprofessional to patent an article; I do not. There are means of disposing of a patent or of bringing it into uses which are unprofessional. I think a man has a perfect right to patent an article, and if he wants to give it to the profession all very well, but if he wants to control the manufacture of it, or see that the article is manufactured according to his ideas, a
man who spends years in perfecting an invention or an idea should reap his reward. If an author writes a book he is entitled to a copyright, and a copyright is nothing more or less than a patent on his work, and I think the same is true in our line of work, whether we are writing a book or making an instrument, we should have some claim on it. It is a fact which has many times been demonstrated, unless a person secures a patent on an article he has invented, he will sooner or later have to pay royalty to someone else who steals it from him. I think it is perfectly legitimate and perfectly proper, and if dental societies shut down on that work I think it will be detrimental to the profession and to the progress of dentistry. It is the patent on a process and the way of disposing of a patent that makes it objectionable. Some of us know what we have had to undergo with the Goodyear Dental Rubber Company, and we came very near having the same experience with the International Tooth Crown Company, if it had not been for the Dental Protective Association. That association has been doing a great work, and it should be encouraged. I think the Dental Protective Association is willing to encourage any legitimate patent; it simply fights a patent that is not right. I hope this matter will not drop here, and I think it ought to be discussed more fully.

Chairman Weiss: Perhaps it would be a good idea to have the president read the last portion of his address again for the benefit of those who have come in since it was read.

Pres. James: I can explain that matter in a moment without reading the paper. The question I called particular attention to was not in regard to patents on appliances or instruments. I believe it is no more than just and right that a man should be compensated for getting out an invention, and he should be rewarded for his labors, but it is the question of patents on processes, where we have to pay a fee for using that certain process for making an appliance or an operation. That is the question I wish to bring up, the difference between the patent on an appliance or an instrument and the patent of a process which the inventor simply perfects and then seeks to collect payment for the privilege of using it.

Dr. C. W. Nutting: I think I fully understand the position that our worthy president has taken in this matter, and I think one of the particular things he is driving at is the International Tooth
Crown Company, the patent on their feature of work. In my opinion, as has been previously stated, there is no dental association under God's heaven that can blot out or regulate this matter. These men exist to take advantage of every opportunity to steal a little process and humbug the community, and the dental profession in particular, and I think we have one great advantage and one great influence on our side, as has been stated, and that is in the Dental Protective Association. In that association we have had and still have a great obstruction to the workings of the International Tooth Crown Company, and I would recommend everybody to help this protective association out. The members of the society have just received circulars asking us to help, and I do not know but what they want to call an extra assessment. Those who belong to it feel satisfied that they will not be called on for remuneration for the use of a patent if they are members of the Dental Protective Association.

Dr. Barnett: This seems to be a question for the supreme court of the United States to settle for us. It simply resolves itself into the question, whether we will allow a new process to be patented the same as whether we believe a new instrument should be patented, and the inventor should receive his reward. It seems to me it is simply a question of law for the supreme court of the United States to settle.

Dr. S. Bond: This objection to the securing of a patent for a process or an instrument is not aimed at the rank and file of the profession, but this International Tooth Crown Company has bought up a great many patents and others that are not patentable which they had no right to, and the Dental Protective Association was organized to fight the unjust claims of this company.

Dr. E. M. Johnson: I am in favor of the suggestion which has been made by several here, to leave this matter in the hands of a committee to report, and to have another discussion of it later on. In this way we might save time, as I see some interesting papers on the program for this afternoon.

Pres. James: What I was asked to bring before this society is this, that this society appoint a committee, not to act here, but to take the matter under consideration and act with other societies when the time comes, because these laws we seek to change have not yet been formulated. The New York Dental Society asks every other State society to appoint a committee to
coöperate with them when the time comes to strike the blow in the repealing of the law on that class of patents. The idea is simply to appoint this committee which is to report to the New York society, so that everything may be done in unison. The appointment of this committee here to look this matter up will not cut much of a figure, but the appointment of the committee is simply for the purpose of coöperating with the New York State society. They have written to every society in the United States, making this same request, and all have responded to this request for the appointment of such a committee, and, of course, we should do the same, because it will eventually be of the greatest benefit to us.

Dr. Reid: How long would that committee be supposed to continue?

Pres. James: I should say the committee would stand until the purpose we are after has been attained. I simply suggest this, as I was asked to bring the matter before you.

Dr. Reid: I would suggest, before the president makes his closing remarks, that the chair appoint a committee of three to coöperate with the New York society. I would make that as a motion that the chair appoint a committee of three to coöperate with the New York society for the purpose of changing the laws in relation to patent processes.

The motion was seconded by Dr. Bond and, being put to a vote, unanimously prevailed.

Pres. James: Mr. Chairman and Members of the Association: I do not know that I have very much to add to what has already been said. I have already stated the purpose of that committee, but I want it understood that I am highly in favor of patents in the way of instruments or appliances for the good of humanity. A patent is simply a protection to the manufacturer; you cannot get up an invention and get any one to manufacture it unless he is protected by a patent, no more than you can write a book and ask the publisher to publish it without having it protected by a copyright. If a patent was not issued everybody would be tied to make and use an invention, and there would be no protection. My idea of what we should do in regard to this matter is this: You could not get a manufacturer to manufacture any appliance unless he was protected, and it is no more than right and just that he should be protected. I think that is very plain to you
all. If we look up those laws we can at once see that it is just, but I do not believe it is right and just that we should be restricted or prohibited from making an operation, or making any appliance that our skill directs us to make, whether it has been patented by any one else or not. Speaking of the Dental Protective Association, we can all unite in saying that it has done a noble work. It has saved to the dentists of the United States many thousands of dollars, and it is a good deal like the criminal law that protect humanity, but it does not stop crime in the least. I will not say in the least, because it may and perhaps does to a certain extent, but crime will be committed right along just the same. We would have no use for the association if it did not protect the interests of the society. As long as we have laws to protect us in that class of patents the association should be supported by the dental societies. I see some men who are enthusiasts on that question of the Dental Protective Association, and who claim that we should leave the laws as they are and contribute to the association for the purpose of fighting these patents. I think it is better to regulate the evil if we can; if not, it is a good game to play and we may win, and if we do not we cannot lose much.

In regard to societies. I feel that it is the duty of every one to take an active part in the dental society. We are not all gifted; we are not all orators, but we can do some little thing, and if we do what we can, be it ever so little, it helps others and it helps us. A man is a better listener and he can take part to better advantage if he has had experience, and I think it is our duty to recognize this State society, and I hope we are all looking forward to the time when we will all be one vast band of brothers, when we will have none of those outside contentions to deal with, and then we shall be successful in the highest sense. (Applause.)

Pres. James: We will now listen to an essay by Dr. J. W. Paul, "Care and Treatment of Children's Teeth."*

Discussion.

Pres. James: The discussion of this paper will be opened by Dr. Weiss.

Dr. Weiss: I have not had an opportunity of seeing this paper before, so I do not know that I am any better prepared to open this discussion than any of the others.

*See page 17.
I agree with the essayist in regard to the importance of looking after the temporary teeth. I think we are all agreed as to the importance of the temporary teeth, and that they do not receive the care they should, is I think, generally admitted. Perhaps one of the principal reasons why they do not receive the attention they require lies in the lack of remuneration for the operation; and second, the difficulty in performing the operation. Children are often very difficult to control, and the work, of course, must necessarily be of a temporary nature because of the difficulty in doing it.

As regards the method of procedure in caring for the temporary teeth, there are some methods of procedure that are very simple and yet very efficient. Where the temporary teeth are badly decayed, an application of nitrate of silver will often arrest decay. In fact, it is a preparation I use very much, and applied to the cavity decayed, it will arrest decay for a long time. It blackens the surface, but it does arrest decay for a long time. Where proximal cavities exist they may be filled very readily with gutta-percha. If the cavities are only partially excavated and then cauterized with nitrate of silver, and then filled with gutta-percha, it makes a very effective filling, checking further decay, and it makes it possible for the little one to preserve its teeth. We have three distinct functions of the temporary teeth. In the first place there is the function of mastication; this is the most important. The next is the promotion of the growth of the jaws to accommodate the permanent teeth, and lastly by the regulation of the relation of the jaws one to the other. Where the temporary teeth are lost, as they frequently are, or not entirely lost but so badly broken that the occlusion is not perfect, the jaws are often thrown out of their proper relation, causing an abnormal bite. Then, too, where the temporary teeth, the bicuspid or second molars are lost before the time of eruption of the permanent teeth, serious injury arises in the eruption of the permanent teeth, irregularity resulting. It is of the utmost importance to retain the second molar and the cuspid until the time for the eruption of the succeeding permanent teeth. If the temporary molar is lost before the proper time we have a crowding forward of the six year molar, and in that way causing a lack of space for the second bicuspid; and with the cuspid, where that is lost before the proper time for the eruption of the permanent teeth, we have the bicuspid moving forward and crowding the space, which is usually the last of the three to be replaced.
I think with this I will close and leave others to discuss the question further.

Dr. Johnson: It seems to me the oversight of children's teeth at school is of the utmost importance, and success depends upon the education of the children as they are now growing up. Older people are not giving these matters as much attention as the children are, and you know the more intelligent they are the better it will be. It seems to me the society should take steps toward having a law enacted which would make the inspection of children's teeth obligatory, in the same way as it is now necessary for children's eyes to be tested, which is so beneficial, and an inspection of the teeth would be no less so.

Dr. F. E. Twitchell: I have been very much interested in the reading of this paper, and it is a subject which it will not pay us to pass by. I have adopted the method of using compressed air with an atomizer to spray around the teeth, using borolyptol, and I think it would be a good idea to advise parents to get one of these little atomizers and spray the children's teeth; it would clean the teeth better than anything else.

Dr. Nutting: Would you not use the brush at all?
Dr. Twitchell: Oh yes, use it in connection with the brush.
Pres. James: I hope you will not be backward in discussing this paper, and I want to extend an invitation to all those who are not members to take part in the discussions.

Dr. Twitchell: I would like to ask Dr. Paul if he ever crowned a temporary tooth?
Dr. Paul: No, sir; I never have.
Dr. Twitchell: Would it be advisable to do so?
Dr. Paul: No, sir, I think not. There might possibly be exceptions, but as a rule I do not think it would be advisable.

Pres. James: Are there any others who wish to discuss this paper?

Dr. Hoff (Ann Arbor): I do not like to see the good time going to waste. I did not hear the paper read, but it is a very interesting subject to me, but unfortunately I have no children of my own, so that I do not know whether I am a competent witness.

The care of children's teeth is the essential thing. It is one of the things we cannot neglect. If we look at it from a mercenary standpoint, if we as dentists look at it from a practical standpoint we know that we are to get our patients from the children, and some of us will pass on and our successors will get the patient whom we
have treated as a child, and the children now coming on, and it seems to me these children should be educated in the care of the teeth, not only in the way of adopting hygienic and sanitary measures, but if they are educated to take care of them they will look to the professional man to advise them. It has been a favorite topic of mine, and one I have talked to the boys at school about. Young men when they graduate, a great many of them have very exalted ideas of what they are going to do. They are going to locate on Nicollet Avenue, right across the street from somebody that has a fine business, and they are going to get rich right along, and their career is going to be a brilliant one. We all know how soon they get rid of that idea. The advice I have frequently given to our boys was that for a year or two after they leave school they should do a little missionary work. A great many poor people have never had any care taken of their teeth; they have had no instruction, they have not had this benefit and they cannot appreciate it. There is hardly a town in which there are not dozens of people, yes hundreds, who need to have their teeth cared for, but if they realize the necessity of it at all, they do not realize the importance of having them carefully looked after. I think it is entirely within the province of the graduates, if they are not encumbered with financial interests, and very few of them are, to devote themselves to this kind of work. In every large city there are communities where a young man might have valuable experience in treating teeth for people, practically gratuitously, or for what they can afford to pay, and such work would be of as much profit as a post-graduate course as any year of their work, and one in which they would have the consciousness of doing a good thing for humanity and themselves. I think if our young men could be encouraged to go into such localities and do this sort of work, perhaps ingratiating themselves into the hearts of the families of the neighborhood through the children, they could do just as much good to the children taking care of their teeth, teaching them the importance of looking after their teeth, and in that way reach their families, and I think there is hardly a community that would not pay the young man’s board and expenses; but he should live as they do, and work for them and show his interest in them. I do not think a young man could do a more magnanimous thing, and no one would question the value of an experience of that sort. After having a year of such experience he would be qualified to take care of the families of the
children, and it would give him an experience that would be invaluable. I think the time is coming when our young men will be urged, and in fact compelled to do some such public work before they are allowed to undertake general practice. It would be a splendid thing for the man himself; it would cultivate in him a fellow feeling that would be worth more, perhaps, than anything else he could get. You would never find such a man taking advantage of his fellow practitioner in any way. I do not think that man would get business by advertising for it, or do business that would work detriment or harm to his dental brethren; I think such an experience would soften a man's heart, would give him a different idea of life, would give him an aim and motive in life, and he would not be imbued with the idea that his chief aim in life was the making of money for his own selfish purposes. So possibly some of our young men, and some of our older men, if they were willing to devote a portion of their time to look after the people of their communities who are not well cared for, might be doing something that would add not only to the stock of one's benevolent feelings, but to one's intelligence, and it would be directly in the way of educating people along this line, and when they grow up these children will be patients, and they would not always remain poor, but some day they would be able and willing to pay a man a reasonable fee for his services. So I think that the general cry that there are too many men in the profession now is a mistake. The colleges are not doing enough; they are not turning them out fast enough; there ought to be twice as many dentists as there are now, and it will be a century before this country will be oversupplied with a competent set of dentists to take care of the teeth of the people as they ought to be taken care of. If we are willing to go and make a personal sacrifice, and do what we ought to do, we would not only be helping ourselves, but we would be sowing the good seed that future posterity might reap an incalculable benefit. (Applause.)

Dr. Nutting: It was my pleasure some six or eight years ago to read a paper before the Southern Minnesota Dental Association, which convened at Zumbrota, on the same subject as that which was read to-day, and one of the principal points I made emphatic then I want to make emphatic to-day, and that is the care of the children's teeth before the children are born. Educate the mother before the child is born. I know it is a delicate sub-
ject to broach to a lady, but since that time I have had a chance to put a little of that missionary work to the test. (Laughter and applause.) I have a little boy two years old that stands a living monument to my rules of work. We all know that either one or the other has got to suffer from the lack of lime salts. If the mother is deficient in lime salts she is going to suffer; she will lack the condition necessary for the growth of teeth, and the child will only draw from her what the mother possesses. I have had two or three cases under my notice in this respect, and would advise the use of limewater. I know the eruption of the teeth will be easy, they will come through without any pain, and the mother will not suffer and the child will not have decayed teeth.

Dr. Mary V. Hartzell: I am naturally interested in the subject of children's teeth, as I have a great many little patients. There is one point I am obliged to notice that has not been touched upon. We have been talking about treating them as grown people, supposing they wish the services of a dentist, as they come to the office, which is not always the case, and it is very much like approaching a sensitive plant, and it is according to the first impressions they get whether you ever get a chance to work for them. In those cases it is the very best thing to do to make a pretense of working for them; show them the mirror, and show them how you are going to fix their teeth for them. Do not tell them you are not going to hurt them; it is not always possible to perform an operation on little children without giving them a little pain. I always tell them the exact truth. I do something that will not hurt them at first, and then if I do come to something that will give them a little pain I tell them they have got to be brave for a little while, that it may hurt them a little, but it will soon be over, and in that way I gain their complete confidence. You can do a great deal more for them and with them in that way than by telling them you are not going to do a thing and then go ahead and do it.

Pres. James: If there are no others who wish to speak we will give Dr. Paul a chance to close the discussion.

Dr. Paul: I have not much of anything to say in conclusion; I am glad the members have been able to add quite a little to what I have said. I think it is a subject that is more widely preached than practiced, and the only question to ask ourselves is, do we practice what we teach.
We Thought so When We Wrote it.

In the December issue of the Dental Review we said something about the toothbrush, and this is what we get for it. More trouble in store for us all the time:

Dr. A. W. Harlan, Chicago, Ill.

Dear Sir:—In an editorial in the December Review entitled "Drug Toleration," the toothbrush is referred to as one of the abominations of civilization. Will you kindly inform me—and there may be others that would like to know—how the teeth may be properly cared for without the use of the brush? Will be glad to see explanation in the next number of your journal.

Yours truly,

W. G. Clark, D. D. S.

The toothbrush—seems that we have seen some reference to it somewhere in ancient history. Before the toothbrush was discovered our parents did not eat so much cooked food as we do in 1898. Some of the chocolates and bonbons were not invented, nor even chewing gum nor tobacco. Most of our fruit was eaten raw, there were no toothpicks or floss silks or rubber bands, no files or disks or dentists. Then the world was happy.

Later on all of the above pleasures of civilization were discovered nearly in a bunch, and the world now gladly supports them all. It continues to lose its teeth by erosion and abrasion and caries in the proximal spaces in spite of all these useful adjuncts to cooked food and confections and bad air and overheated houses and loss of sleep and many other of the frailties of the present day, not to mention the various nervines and anodynes and hypnotics which are making our brethren of a scientific turn in Germany so wealthy. We had not all of these in times gone by. We have them now.
If our breakfasts were simpler with fruit, uncooked, and we exercised even only a little every day, say one to two hours, and bathed in water daily in summer and two or three times a week in winter, and tried to keep the food from between our teeth, by not having the first permanent molars extracted we would gain one step. The second could be gained by taking a little calcined magnesia or chalk on the wet corner of a towel or napkin, and forcibly rubbing the teeth and gums for about five minutes, twice daily, and then using a waxed thread between them we would not need a brush, as such friction would be all that is needed to keep the teeth clean. Washes with a little alcohol or peppermint water might be used in cases where the gums were thickened or reddened, or if an astringent were needed a little watery extract of white oak bark, or some such simple would not be amiss. The friction is what is needed in these days without the bristle or the paste or powder. The multitude of washes are only to be used to correct abnormalities, not to take the place of intelligence or a little labor. Brushes must be used we suppose by most persons on account of the fixed habit, and also on account of the gaps in the dental arcade made by the cruel, ignorant, thoughtless use of the forceps. We always feel cleaner for using a simple friction of the teeth in the above manner than when our teeth are brushed with any kind of a wash, no matter what paste or powder has been used.

Contributions are respectfully solicited on this and other subjects.

Dental Congress in Paris, 1900.

The time is fast approaching when the various dental societies which participated in the great World's Columbian Dental Congress of 1893, take the preliminary steps for the holding of a dental congress during the Paris Exposition of 1900. Under a resolution adopted by the congress during its session, it was decided to leave the initiative in the hands of such dental societies, which by delegates were there and then represented. The American Dental Association and the Southern Dental Association were both represented, but as these associations do not longer exist, their legitimate successor, the National Dental Association ought to take steps for the appointment of committees at its next meeting. We believe it would be competent for the Southern Branch of the Association, which meets at St. Augustine, Fla., next month,
to appoint a committee to coöperate with a committee which may be appointed by the National from among its Eastern and Western members.

The foreign dental organizations ought also to take active steps at their next meetings.

MEMORANDA.

Dr. F. S. Whitslar, of Youngstown, Ohio, visited Chicago during the holidays.

Dr. H. A. Smith, of Cincinnati, was present at the technic meeting in December.

Dr. Geo. L. Field, of Detroit, one of the younger pupils of the late Dr. C. W. Spalding, of St. Louis, was in Chicago in December.

Dr. J. D. Patterson came into our sanctum the other day fresh and bright as usual. He says that the Omaha meeting will be a large one.

Dr. Chas. H. Quinlan died in December at his home in Evanston. Dr. Quinlan retired from practice thirty years ago, having amassed a fortune.

If you are going South this winter or to the Hot Springs of Virginia, be sure and take the "Big Four," as it is the picturesque route. We have tried it.

DRYING AGENT.

A mixture of dried chloride of calcium and quicklime is recommended as being superior to either alone as a drying agent in desiccators, etc.

TO POLISH ALUMINIUM.

Gray or unsightly aluminium may be restored to its white color, it is said, by washing with a mixture of 30 grams of borax, dissolved in 1,000 grams of water, with a few drops of ammonia added.

There were so many visitors in Chicago during the technic meeting that we did not meet them all, but some old friends, Drs. Weeks, Brown, Patterson, Carlton, Moore, Hoff, Morgan, Horford and others came to see us, and many others we saw at the dinner Thursday evening tendered by the Chicago College of Dental Surgery at the Union League Club, Dr. Brophy presiding.

NORTHERN IOWA DENTAL SOCIETY.

At the meeting of the Northern Iowa Dental Society, held at Mason City, September 7, 8 and 9, the following officers were elected for the ensuing year: Dr. G. N. Beemer, President; Dr. A. N. Ferris, Vice President; Dr. G. H. Belding, Treasurer; Dr. Wm, H. Steele, Secretary.

HAYDEN DENTAL SOCIETY.

At the last meeting of the Hayden Dental Society the following officers were elected for 1898: President, Hugh Salmon; Vice President, A. Guthrie; Secretary, W. F. Michaelis; Treasurer, Geo. Menges. M. B. Rimes, Secretary.
THE NATIONAL SCHOOL OF DENTAL TECHNICS.

Newly elected officers for 1897-98: Dr. G. V. Black, President, Chicago; Dr. N. S. Hoff, Vice President, Ann Arbor; Dr. D. M. Cattell, Secretary-Treasurer, Chicago; Dr. G. E. Hunt, Member Executive Board, Indianapolis. Time and place of meeting not decided on yet, left in charge of the executive board.

TETRA-IODO-ETHYLENE.

This substance, proposed as a substitute for iodoform, is said to be prepared by dissolving iodine in potassium iodide solution and adding calcium carbide in small quantities at a time. The product contains both diodo-acetylene and tetraiodo-ethylene, the former crystallizing in colorless, soluble needles, while the latter forms inodorous nonvolatile crystals that fuse at 187° C.

Sometimes a little unconscious cerebration is indulged in by even one of our esteemed (?) contributors. On page 952 (Pulpitis) we are surprised to read that the description is almost a word for word copy of some remarks made by Dr. C. N. Johnson before the Chicago Dental Society in 1896 in discussing a paper read by Dr. L. L. Davis. Now, if we were in the place of our esteemed contributor we would not do it again. Selah!

ODONTOGRAPHIC SOCIETY.

The election of officers of the Odontographic Society of Chicago for 1898 resulted as follows: President, G. W. Schwartz; Vice President, H. J. Goslee; Secretary, F. H. Zinn, 70 State St.; Treasurer, Geo. N. West. Member of Board of Directors, three years, B. J. Cigand. Board Censors: E. K. Bennington, A. G. Johnson, F. E. Roach.

F. H. Zinn,
Secretary.

THE DANGERS FROM BLISTERS.

M. Comby reports an instance which should be a warning against the use of cantharidal vesication in children (Jour. of Med. and Sci., Vol. III., p. 314). The symptoms suggested the existence of meningitis, stiffness of the neck, agitation, delirium and anuria. Auscultation showed only a few insignificant râles. The temperature was 102.2° F., and the anuria was almost total. These symptoms disappeared after a run of fever and convalescence was established.—C.

OINTMENT FOR CHAPPED HANDS.

Steffen is credited with the following prescription (Therap. Woch):

Menthol............................. 0.6 gme. (10 grn.)

Salol.................................. 1.25 gme. (20 grn.)

Olive oil................................ 1.25 gme. (20 min.)

Lanolin................................ 45 gme. (11 dr.)

Externally.

MINNESOTA STATE DENTAL ASSOCIATION.

The fourteenth annual meeting of the Minnesota State Dental Association was held in the Medical Building of the State University, Minneapolis, September 7, 8 and 9. The following officers were elected for the coming year: President, C. A. Van Duzze, St. Paul; Vice President, L. P. Leonard, Waseca; Secretary, H. L. Cruttenden, Northfield; Treasurer, H. M. Reid, Minneapolis. Executive Committee: T. B. Hartzell, Chairman, Minneapolis; Master of Clinics: C. H.
MEMORANDA.

Goodrich, St. Paul; H. A. Knight, Minneapolis; W. N. Murray, Minneapolis; M. B. Wood, Mankato. Membership Committee: I. C. St. John, Chairman, Minneapolis; T. B. Mercer, Minneapolis; J. B. Little, St. Paul; C. W. Nutting, Spring Valley, G. R. Day, Farmington. The next annual meeting will be held in St. Paul.

H. L. CRUTTENDEN,
Secretary.

ILLINOIS STATE DENTAL SOCIETY.

FREEPORT, ILL., January 3, 1898.

EDITOR DENTAL REVIEW:—I wish to make an announcement regarding the program that is in course of preparation for the next meeting of the Illinois State Dental Society. I have up to this time secured the following papers, viz.:

Why Coagulants Diffuse Through Dentine, with experiments, by Dr. E. Lawley York, Chicago.

A New Process of Fusing Platinum, by Dr. L. E. Custer, Dayton, Ohio. Dr. Custer will also illustrate by a clinic.

Cataphoresis (electrolysis), by Dr. W. V. B. Ames, Chicago.

Preparation of Cavities, by Dr. M. L. Hanaford, Rockford. Dr. Hanaford is preparing lantern slides by which he hopes, if successful, to illustrate the subject.

I hope to have the program complete by the next issue of the REVIEW.

Sincerely yours,

E. H. ALLEN, Executive Com.

This was the program for the fifth annual meeting of the National School of Dental Technics; Palmer House, Chicago, December 29, 30, 1897:

Wednesday, December 29: 10:00 A. M., Organization; executive business.
1:30 P. M., "Prosthetic Technique; Principles Involved and a Method." By N. S. Hoff. 2:30 P. M., Discussion: New and Successful Methods; exhibition of results. 8:00 P. M., "Instrument Nomenclature with Reference to Instrumentation." By G. V. Black; to be followed by a general discussion.

Thursday, December 30: 9:00 A. M., "Dental Anatomy and Operative Technique." By Thos. E. Weeks. 10:00 A. M., Discussion: Improved Methods; exhibition of results and facilities. 1:30 P. M., Symposium on General Teaching Methods, especially those not already considered; conducted by S. H. Guilford. 8:00 P. M., Report of Executive Board on Technic Courses in the Schools, G. H. Wilson. Election of officers and adjournment.

We hope to have results of classwork sent in from all membership schools. The exhibits of class work under W. J. Brady (master of exhibits) will be open for inspection before and after sessions.

Fifth Annual Clinic given by the Alumni Association of the Chicago College of Dental Surgery, to be held Wednesday, Jan. 19, 1898, 10 A. M., at the College Building corner Wood and Harrison Streets, Chicago.

The following is a partial program of the fifth annual clinic of the Alumni Association of the Chicago College of Dental Surgery, to be held in the College Building on Wednesday, January 19, 1898, and which will be followed in the evening with a banquet at the Leland hotel:

Case, C. S., "Regulating;" de Trey, Aug., "'Solila' Crystal Gold and Instruments;" Ottofey, Louis, "Implantation;" Johnson, C. N., "Models of Pre-

ALKALIN ANTISEPTIC TABLETS. BY HENRY W. WANDLESS, M. D., DALLAS, TEXAS.

Each tablet is composed of the following: Acid boracic, grs. 22.5 sodii bicarb., grs. 7.5; sodii bborat., grs. 7.5; camphor, grs. 1%; menthol, grs. 1%; thymol, gr. .5 combined with three minims of the following combinations of oils: Oil pinus pinolias, 2 parts; oil eucalyptus, 2 parts; oil Scotch pine, 2 parts; oil spruce, 1 part; oil cedar, 1 part; oil cubeb, 1 part; oil wintergreen, .25 part; oil bay leaves .25 part; chloroform, 2 parts.

These tablets are very useful in the treatment of catarrhal conditions of the nose, throat and ear. They are used by dissolving them in hot water and used as a douche or spray, and are sometimes useful dissolved in the mouth in cases of sore throat and troublesome cough caused by irritation of the larynx. One of these tablets dissolved in one or two ounces of boiling water will make a very agreeable wash or spray for the nose, throat or ear. I usually have made one gallon of the solution at one time, which is prepared as follows: After the water reaches the boiling point, one tablet is added for each fluid ounce and allowed to boil for five minutes, after which the solution is placed in a macerating jar and allowed to stand with occasional shaking from three to four weeks, or until needed for use. It is then filtered or siphoned from the bottom without disturbing the top and is then ready for use. The solution, prepared as described, imparts a very rich, mellow odor; and while it is a little sharp when first sprayed into the nose this is followed by a delightfully refreshing and soothing effect.

The efficacy of the solution does not seem to be increased by age. A freshly prepared solution differs from that macerated for some time, only in the absence of the rich, mellow odor and taste which comes with age. Some mucous membranes are much more sensitive than others, and for these the solution should be diluted with a 4 per cent solution of acid boracic. For simple catarrhal inflamations of the nose, throat and ear, its curative influence is very marked; for dissolving and removing impacted cerumen from the ear and for general cleansing purposes of the organs named, I have not found anything that has given me the same degree of satisfaction. In fact, my entire experience with this formula (which covers a period of three or more years) has been extremely happy.

The unusual amount of volatile oils of pine held in solution by reason of the salts of soda, undoubtedly imparts to the mucous membranes of the nose and throat its acknowledged therapeutic effect, and that it is rapidly absorbed into
the system by the mucous membranes, especially the nose, is shown by the effect upon certain organs of secretion.

I have the formula put up in tablets, because it is very convenient to use them, and besides a patient may make the solution at home as he needs it. It has been observed that a portion of one of these tablets dissolved in the mouth and swallowed will relieve the sickness caused by the swinging motion of a moving train; also the sickness and vomiting caused by the disagreeable effects of cocain applied to the naso-pharynx, larynx and soft palate.—Jour. Am. Med. Ass'n.

ODONTOGRAPHIC SOCIETY.

The Odontographic Society, of Chicago, which will celebrate its tenth anniversary on the 21st and 22d of February, is not only a notable feature in the professional life of Chicago, but it holds high place among the scientific bodies of the country. Its growth during the ten years of its existence, both in numerical strength and scientific importance, has been unusual, almost unprecedented.

In 1887 a group of thirteen men of that year's class of the Chicago College of Dental Surgery met in the office of one of the number and decided to form themselves into a society whose purposes should be mutual improvement along the lines of their profession and social intercourse. The new association was christened the Odontographic Society of Chicago, by Dr. A. W. Harlan, and Dr Chas. E. Bentley was chosen President, Dr. Geo. N. West, Secretary, and Dr. J. E. Keefe, Treasurer.

Shortly after formation the society decided to admit other graduates of the Chicago College of Dental Surgery, by which arrangement the membership was soon considerably augmented. At the end of the third year the constitution was so modified as to permit the admission of graduates of all reputable dental colleges. Membership has increased steadily, and to-day the Odontographic Society numbers 250 members, and is the largest dental society in the country, with the exception of the National Dental Association.

Many distinguished dentists have appeared before the society from time to time. Notable among this number was Dr. G. V. Black, who gave to the profession, through the Odontographic Society, his paper on the "Cleavage of Enamel;" Dr. C. S. Case, Dr. T. L. Gilmer, Dr. E. H. Angle, Dr. W. C. Barrett, Dr. W. T. Belfield, Dr. T. W. Brophy, Dr. W. X. Sudduth, Dr. C. N. Johnson and others.

One of the causes of the unprecedented success of the Odontographic Society, it may be said with safety, is the total elimination of all politics from its workings, recognizing as it does no existing faction in the dental profession of the city. Its membership has always been distinguished by a cordial good fellowship and a spirit of cooperation which has attained the highest results for all concerned. Every circumstance attending the coming celebration seems to indicate that this tenth anniversary will be not only an important event in the history of the Odontographic Society, but that it will make an epoch in the dental history of Chicago. Acceptances have been received from almost every State in the country. Men eminent in the profession in every section have signified their intention to be present.

It is the earnest desire of the Odontographic Society that all members of the profession in the city of Chicago, should cancel the dates upon their appointment books for those two days, and hold themselves in readiness to extend the hand of
good fellowship to the strangers and to give what assistance they can in making the occasion a great and memorable success.

The sessions will terminate in a grand banquet on the evening of the second day.

Below is appended a list of clinicians secured up to date:

**Clinics.**—W. H. Taggart, porcelain bridge; I. A. Freeman, treatment of pyorrhea alveolaris; B. J. Cigrand, unannounced; H. H. Schumann, cataphoresis; C. P. Pruyn, combination filling, amalgam and gold (app. cavity); Elgin MaWhinney, unannounced; G. W. Schwarts, porcelain crown and porcelain exhibit; G. T. Carpenter, restoration of gum tissue, showing models and appliances; George W. Cook, bacteriological exhibit; E. L. York, bacteriological exhibit, photo-micrographic exhibit; C. S. Case, exhibit of original appliances for the measurement of force as applied to a tooth; W. V-B. Ames, a method to hasten the setting of cements; C. T. Gramm, right angle mallet, using soft gold; C. F. Hartt, root filling with Hill’s stopping (new method); G. S. Solomon, approximal gold filling, using electric mallet; J. S. Marshall, surgical clinic; A. E. Morey, approximal gold filling in bicuspid; C. N. Johnson, approximal gold filling in molar; W. T. Reeves, restoration of corner of incisor with porcelain; Edmund Noyes, preparation of approximal cavity in molar or bicuspid; T. L. Gilmer, surgical clinic; J. H. Woolley, demonstration of heat in roots of teeth; R. C. Brophy, cast aluminum; G. A. Thomas, continuous gum plate upon aluminum foil; J. Austin Dunn, table clinic and exhibit; T. A. Broadbent, unannounced; J. W. Wassall open faced crown; J. B. Palmer, potpourri of mechanical appliances; A. B. Freeman, unannounced; E. J. Perry, cataphoresis; T. W. Brophy, cleft palate; A. H. Peck, demonstration; replantation as a cure for chronic alveolar abscess; Ira B. Crissman, filling approximal cavity in bicuspid—cohesive foil—hand pressure; A. W. McCandless, unannounced; E. H. Allen, removing pulp by cataphoresis; A. C. Hewitt, unannounced.

**Obituary.**

Thos. W. Evans, M. D., D. D. S.

Odontological Society of Chicago.

The following resolutions were unanimously adopted at the last meeting of the Odontological Society of Chicago, most of whose members met Dr. Evans on his recent visit to the United States, and some of whom had the pleasure of making his brief visit to the Western metropolis a pleasant one:

Whereas, in the course of natural events, Dr. Thos. W. Evans, of Paris, France, passed beyond the invisible veil which separates mortals from immortals, at a ripe age beyond the allotted period of three score years and ten, and

Whereas, Dr. Evans was the most noteworthy exponent of American dentistry beyond the limits of his native land, having done more than any other individual in dental history to secure for dentistry among the people that recognition which the profession so richly merits, being true to the best principles during a life crowded with professional, philanthropic and diplomatic duties; therefore be it

Resolved, That the Odontological Society of Chicago, add its tribute to the glory of his renown, and express its sympathy and sorrow upon the demise of Dr. Evans, that it regrets that his life was not spared for that brief period, which would have enabled him to enjoy the privilege of seeing carried out the philanthropic projects which engrossed his mind at a time when he knew that life’s span was nearly over; be it further

Resolved, That this society express its sympathy and mourn with the profession of France and of the world at large, and that these resolutions be spread upon the minutes of the society, be published in the dental journals of the United States and France, and a copy of the same be transmitted to the nearest relative of the deceased.

Chicago, January 6, 1898.

A. W. Harlan,
T. W. Brophy,
J. W. Wassall.
Committee.
THE BUILDING OF A SMALL CONTOUR FILLING WITH GOLD.*

By Dr. C. W. Nutting, Spring Valley, Minn.

I beg the indulgence of your patience while I do a little rehashing of old hashed up hash. Not because I know more about it than any of you, nor because I know more of it than any other subject I might have taken, neither because it is a particular hobby of mine; but because I want to learn a little more about one of the many every day occurrences in my office.

With the understanding that there is nothing new under the sun, I care not to lay claim to being the first discoverer of any method I may present; therefore, if any of my hearers have been using the same methods, I will not raise any point of priority. We can flatter ourselves that some great mind has said, “Great minds run in the same channel.” Perhaps one of us may be adorned with an appropriate badge of recognition for our benevolent contribution.

With myself, this pesky little gold contour filling has been the source of a great annoyance to me in the past. O, so beautiful when completed, and such a satisfaction to you when you dismiss your patient and she leaves with you, ringing in your ears the assurance that, “That is such a nice filling, doctor.” But how chagrined a few days, a week, or two weeks later, when this same beautiful creature returns to you (not so beautiful now as then), saunters into your office, right into your operating room, and before your patient she says, “See that! That filling is no good! It came out in less than a week.” It is pleasant, gives your

*Read before the Minnesota State Dental Association.
patient more confidence in your work. How many of you have had similar experience? I have.

A few embarrassments of this kind led me to investigate the cause of all this disturbance. There is no result without a cause; and likewise my failures could not escape such a criticism. I thought it was my method of work, and now I am convinced of it. I don't wish to say that all my fillings made after this manner failed, nor even a large per cent of them, but a few will suffice to cause one to look around for a remedy.

For easy illustration we will take a small proximal cavity in one of the incisors, it matters not which, for instance the right lateral of the upper jaw, which I have attempted to illustrate in figure four (4). The decay is near the mesio-occlusal angle, so much so that the corner will have to be sacrificed.

My old method was to open cavity, cut away corner, as in figures one (1) and two (2), grooving the labial and lingual walls, making floor of cavity as near flat as possible, cutting a horn like projection in each cervical angle as represented in figure three (3). Also cutting undercut beneath the mesio-occlusal angle. I used noncohesive gold for starting and for part of the body of the filling, especially along the grooves and in the undercut, finishing the main part of the filling with cohesive gold. A few failures led me to discard the use of the noncohesive gold in the grooves and body of filling, and finally altogether. My failures were less. I candidly believe that the noncohesive gold had something to do with the failures. I believe the adage that "a chain is as strong as is its weakest link" is equally applicable to a gold filling, i. e., a gold filling is as strong as its weakest point. And I don't believe that as strong a filling can be made with noncohesive gold as can be made with cohesive gold. Even the discarding of the noncohesive gold did not entirely eradicate the difficulty. My work would come back broken off at cavity margin, the gold in cavity remaining hard and well condensed. Frequently the mesio-occlusal angle would be chipped off. I made up my mind to three important points; first, the body or rather neck of gold uniting that within with that without was not of sufficient strength to stand the strain; second, the wall of the enamel covering the point of gold at mesio occlusal margin ought not to be there or else it would not have broken off. It would not, in my opinion, stand the constant pounding it certainly had to be subjected
to in its everyday use; third, that the direction of force upon the filling was wrong; it had a tendency to crowd the filling out.

My method now is, to open cavity, carrying the cervical margin away from the point of contact, dressing the labial margin as I will eventually want it, as represented in figure five (5). I make no short angles, but strive to have a continuous curve. The margin should be strong and slightly beveled, the whole thickness of margin, to prevent cleaving away of enamel rods. Now take a small, round bur, begin cutting at mesio-occlusal angle toward the median line just far enough to give a firm floor, a kind of second story affair. I now prepare the lingual margin as represented in figure six (6), cutting away the margin somewhat more than the labial, which will give a strong body to the whole filling. I make long, continuous curves here. Cut the lingual and labial grooves, horn like projections in each cervical angle, and grooving my second story affair and cutting horn like projections in its distal angle, as represented in figures six (6) and seven (7). Dress margins of cavity with cavity stones and disks.

I use number four cohesive foil, sheets cut into quarters and rolled, neither loose nor tight. I find too tight rolling ruins the cohesive qualities, and too loose rolling is liable to result in puncturing with the plugger. The rolls are cut into pieces just long enough to go into cavity without doubling on themselves. For the body of the filling, after passing the cavity margins, I cut the pieces longer and fold back on themselves as I work. For starting, I take an unannealed piece large enough to reach across the floor into each cervical angle, holding in a position with an assistant and condensing with hand pressure, being very careful not to let the piece curl. I next take a small piece partially annealed and place in either angle, usually the cervico-lingual, and mallet to place; doing the same to opposite angle; then carrying a piece across the floor, binding all securely together. Fill the cervico-
lingual angle and cover margin at this point. Beginning at this angle, gradually fill the lingual groove and bring over into my second story and anchor securely in distal angle. I now begin back at cervical margin, working up from lingual margin toward labial groove, continuing until I have the same filled; working lingual parts ahead of the labial. I now bind this part of main filling with that of my second story, filling the same to the occlusal surface. After I have brought the gold to labial margin I leave this surface and complete the lingual surface, working it to the proper contour, finally finishing on the labial surface and occlusal angle. I finish my fillings with strips, disks, pumice stone and whiting. Figures eight (8) and nine (9) represent the completed filling.

In my opinion one of the first points to be considered, is the direction of force, which should be studied carefully, and the cavity so constructed that the force brought upon the filling will have a tendency to crowd it into the cavity rather than to pry it out. Right here, the articulation plays an important part. Mouths are frequently found where the incisors bite squarely against each other; others where the inferior incisors bite against the palatine surface of the superior incisors, both of which are hard to contend with.

In this essay I have attempted to present but one case, trusting to the discussion to bring out the various other complications, such as the different manner of forming grooves, especially where the lingual wall is very thin. In such cases I make my groove in the body of the dentine away from the enamel wall. Frequently you will find a very thin tooth which will not stand a groove in either wall, all of which complications have to be met in the best way possible.

But as I said in the first of my essay that I chose this subject as much to get as to impart information, and if I have been the means of awakening an interest which will produce a lively discussion, which will result in the exchange of many useful and interesting points, I have done all I could expect to do. I have already been benefited by the preparation of this essay, and most surely expect to get many useful hints, both from your criticism and discussion. And may this pesky little gold contour filling be less a bugbear in the future than in the past is my earnest appeal.
Extraction Under Anaesthesia.*

By F. S. Robinson, D. D. S., Wabasha, Minn.

The extraction of teeth under anaesthesia is an operation which we are called upon to perform almost daily, and yet, how many of us have things conveniently arranged for doing it with the greatest expediency and least inconvenience to ourselves?

In the extraction of teeth, in the preparation of mouths for plates, the choice between nitrous oxid and ether or chloroform is one with which most of us are familiar. In all cases where there are many roots or badly broken down teeth to be removed, ether or chloroform is preferable. It gives more time to work, thus enabling them to be removed with more care, and preventing laceration of the gums. The choice between ether and chloroform is left entirely with the attending physician. The patient is required to fast for several hours previous to the operation, and also to see that the bladder and bowels are empty before the administration of the anaesthetic. The clothing should be loose so the respiration may be free and easy. A large rubber apron, fitting closely around the neck, is placed over the patient to prevent the clothing from being soiled. The table is placed near the chair, on which are a porcelain wash bowl, partly filled with water, to which has been added a few drops of euthymol, one large soft sponge, a half dozen small surgeon's sponges, and a couple of towels. The large sponge is used to wipe the blood from the face and apron. The small sponges will be found very useful in freeing the mouth of blood, enabling you to see clearly what you are working at, and also preventing the patient from swallowing any blood. Especially is this true where there are many roots.

As the sponges become saturated with blood they are readily rinsed in the bowl of water, and are again ready for use. The most convenient hand spitoon which I have found is an ordinary pint tin cup. It is light, easy to handle, and can be placed near enough to the mouth to prevent the blood from trickling over the chin and down the neck.

In the after treatment of extraction, the antiseptic tablets of euthymol or pasteurine will be found preferable to a mouth wash. They act as a germicide, relieve pain, and also relieve that disagreeable taste which is often a great annoyance to the patient. As

*Read before the Minnesota State Dental Association.
they dissolve slowly in the mouth they produce a continuous action which you do not get from a mouth wash. When possible, it is best to have the patient return to the office daily for two or three days after the extraction and spray the mouth thoroughly with 3 per cent pyrozone and follow it with a dilute solution of euthymol.

As a precaution to be used in case of heart failure during the administration of the anaesthetic, nitrite of amyl pearls (3 to 5 minims) and a hypodermic syringe loaded with sulphate of strychnia 1-30 gr. should be always at hand. By having the syringe loaded with 1-30 gr. sulphate of strychnia, one-half of it may be injected and if that is not effective the remainder may be used without the necessity of reloading the syringe.

Amalgam.*

By C. H. Stearns, D. D. S., Owatonna, Minn.

It would seem as if there was nothing new to be said on so old a subject as amalgam. I shall therefore not attempt to tell you anything new or old either as I should be at an utter loss for something to say should I attempt to do so.

There are so far as I know but two men who have attempted any scientific investigation. One of whom is Dr. Black, who has shown us what the change is which takes place in the cut alloy known as aging. He has also shown us how best to determine the crushing strain, and in so doing has discovered an unsuspected property, that of flowing under pressure. The other gentleman has conducted a series of experiments to show the change of form in setting.

This practically covers the real scientific investigation of the physical properties of amalgam. How little it is compared with what remains to be done I can perhaps show best by giving an outline of some of the work planned.

Probably the first step to be determined is the crushing strain. Next comes the flowage, and right here is a point that remains to be determined, whether the flowage is the same under intermittent pressure as in the mouth as it is under continued pressure.

There is strong reason to believe it is not. Next to be studied is change of form and change of volume while setting. Under these heads we have as yet not much of scientific value, as

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most experimenters have so far confined the two under one head as shrinkage and expansion. After these would come tests for expansion under heat and resistance to the chemical action of the fluids of the mouth. These are simply preliminary tests, but we must be able to make each of them with a reasonable degree of accuracy before we are ready to begin any extended study of amalgam.

As to the methods of making these tests. In the first you are all acquainted with the dynamometer devised by Dr. Black for the purpose. This, with its micrometer attachment, is admirably adapted to the work and with slight modification might be made to give the intermittent pressure, and thus do equally as well for the third test. The use of this appliance necessitates another. A die or mold for making the test pieces; as for an accurate study it is of the greatest importance that the test pieces be absolutely uniform, and for this reason the die must be as perfect as possible, of steel so hard that it will be proof against marring, and with a mirror like polish, and for some of the tests at least the die must be kept at a uniform temperature to avoid errors by expansion. The next test is one to which I with others have devoted considerable thought for some time past. In this, as the others, the die is the first requisite, but as the test for change of volume is such a delicate one it was thought best to increase the size of the test piece to a diameter of one-half inch.

We were next confronted with another difficulty, we had no instrument with which to make the test. I therefore devised one instrument, and another was suggested by Mr. Zelany, of the State University. Both are useful for certain parts of the work, but neither perfect.

My own instrument is based on the principle of the hydrometer. The ordinary instrument being modified by using a very small steel stem carrying the usual pan for weights and a small disk below it. In addition to this there is a pan with an opening through which the hydrometer may be passed. Near this opening is an upright post carrying a delicately poised needle which at the shorter end engages with the small disk or stem of the hydrometer, the longer one plays in front of a finely graduated scale. This scale may be an arbitrary one simply for comparison or can readily be arranged to show changes of volume of one ten thousandth. The weights used in the scale pan must correspond with the graduations on the scale.
To use this instrument the test piece is placed in the lower pan of the hydrometer. The pan carrying needle floated in a vessel of water. The hydrometer passed through the opening, the small disk engaging with the needle, and the whole balanced with weights placed in the scale pan. One advantage of this instrument is that it may be used for tests continued for some time, or for repeating tests at long intervals. The water bath in which the instrument is placed must be so arranged as to be maintained at an even temperature, and for repeated tests must be filled with distilled water.

The instrument suggested by Mr. Zelany consists of a short heavy test tube with a stopper closing it tightly. Through this stopper passes a very fine thermometer tube, having at the lower end a cup containing mercury, the top open. Through the stopper passes another small tube carrying a valve and regulating screw. In using, the test piece, wetted carefully to avoid air bubbles, is placed in the chamber, and the instrument is closed under water the tube passing through the stopper, allowing this to be done without pressure; the valve is then closed and the column of mercury brought to the required height with the regulating screw. This instrument is a very delicate one, as readings may be taken with a microscope. It must, however, be placed in a bath maintained at an absolutely uniform temperature, as the slightest variation renders the readings absolutely worthless. Either of these instruments may be used for making tests for expansion for temperature. There is need, however, of a more perfect instrument than either, and it is to be hoped that some genius will devise one.

The gentleman who made the tests for change of shape made his test pieces in the form of pencils, and studied the change incident to variations in the method of packing. There is need of much further work in this line, however, as we need some method by which the test pieces may be packed with absolute uniformity.

When we have by these methods or others, made exhaustive tests of the known alloys, as well as the different manner in which the alloys are made, and thus accumulated a mass of data on which to base our theories, we are ready to begin the real work of study and experiment to discover the ideal alloy.

Before we reach that stage there remains a vast amount of work to be done, and we must expect new obstacles to be continually arising only to be overcome by patient and painstaking effort.
I will not here enter on a discussion of any of the theories of the combinations of metals in alloys, as but little is known on the subject; the effect of alloys at present being known only by experiment, and our generation will hardly be able to see the subject fully covered.

The Articulation of Crowns and Bridges.*

By Louis Ottofy, D. D. S., Chicago, Ill.

Some time ago I read a brief paper on this subject before the Odontological Society, of Chicago, when I merely presented an outline of a new method exhibiting at the same time models of some practical cases. Since I have continued to practice the method and added improvements, I am convinced that the present general practices must be considerably modified to yield the best results.

The principles underlying the making of cusps for crowns and bridges, at the present time, presuppose the presence of perfect opposing cusps, and hence the market is filled with dies and "systems of crown and bridge work," all presenting perfect articulating surfaces to be used for crowns and bridges. Indeed, generally typical forms are selected for this purpose, and the cusps and grooves in these dies are most perfect copies of the best developed natural teeth. Now, then, what is the condition of a mouth requiring bridge work? In the first place, it is rarely that extensive work of this character is required in the mouth of persons so young, that the cusps of the opposing teeth have not been altered by attrition, and instead of finding opposite our perfectly made cusps for articulation perfect cusps to which to adapt the substitutes, we find worn cusps, and an altered articulation. In place of a regular arch we find some of the opposing teeth elevated from want of an opposing tooth for some years, we find other teeth depressed from the excessive wear to which they have been subjected on account of the loss of one or more teeth, on one or both sides of the arch. And instead of ideal, regular, even, unworn, opposing teeth we have to make counterparts for an uneven, irregularly worn surface. If for this purpose we have selected a number of ideal cusps we must so alter them as to reproduce the uneven surfaces produced by the natural wear of the teeth. What

*Read before the Hayden Dental Society, of Chicago, December 20, 1897.
object or reason is there in making a perfect cusp and then grinding and altering it, until it has no semblance to the original work?

The plan I have followed for some years, does not result in what may be called an artistic or natural effect, when looking at the result from the occlusal surface, but we secure a perfect, an absolutely perfect, articulating surface, and thus materially increase the efficiency of the substitute; for after all the most important object of any substitute is, first, service for mastication; second, esthetic effect. The band is fitted as usually to the tooth or root in the mouth, while a band may be made or partially finished upon a model secured from an impression of the root or tooth, the final fitting before soldering the band, should be done in the mouth. The band is made long enough to extend down to the opposing teeth so as to enable it to come in contact with all parts of the opposing teeth, after it has been ground irregularly to meet the requirements of the case. In other words: when a band has been fitted to a root, if it is examined, it will be found to have an irregular outline, that is the gold will follow the inequalities of the root, running up higher at one point, or bending in or out, as the root or tooth may happen to be shaped. In the method I follow, the other end of the band or tube, is also ground to follow the inequalities of the opposing tooth, so that if the band is placed upon the root, the open end will articulate all around with the opposing tooth. This is accomplished by leaving the band, when first made, unusually long, and then withdrawing one or all the bands in a plaster impression of the entire arch; a separate impression is then taken of the opposing arch, and the bands are ground down until the impressions can be fitted together, and placed in the articulator, and we have as a result a number of bands, all fitting the opposing teeth, but open at the ends. These open ends are, of course not as usual with the store made cusp, perfectly even, but they are very irregular. Then an impression in Mellotte's compound is taken, of the tooth opposing the open band; dies are made, a piece of thin pure gold is struck up to fit; then we will have a cusp which is the exact counterpart of the opposing tooth, which to the untrained eye, looks like a very poor excuse for a cusp, but when it is soldered to the open band, filled in to the required amount with solder, we have a crown which is an exact fitting one, for the case in hand, and which can generally be so shaped on the surface exposed to view, as to look nearly like a
crown made according to a certain ideal pattern; although, of course, the occlusal surface is never so "pretty." Facings are put in place in the usual manner. When a bridge is being made, the impression above spoken of, is taken with Mellotte's compound, of all the opposing cusps necessary (this can be taken from the model), and a strip of pure gold is struck up to extend over the whole length; it is then cut into pieces and each piece is used as the cusp for the corresponding crown or dummy. The result of such work is, that the bridge articulates perfectly everywhere, and I have placed a piece of wax between the dummy and crown cusps of a completed bridge in the mouth, and the opposing cusps and found it completely squeezed out by the exactness of the occlusion.

In some cases, where the opposing teeth have assumed different lengths, it is sometimes not advisable to make the dummies or crowns long enough to interlock at every point; in fact, the articulation is made so perfect by this method, that sometimes the patient cannot move the teeth in all directions on account of the interlocking of the teeth, and some of the longest points must be ground off, but even then we have the best articulating surface that can be made. As a rule I oppose the grinding of elongated natural teeth, because in so doing the crown loses its cusps and depressions, and we have a flat surface. This must be opposed, of course, by a flat surface, and flat surfaces are not suitable for the grinding of food. I recommend this method to the consideration of the members of the Hayden Dental Society, and assure them that they will be pleased with the results.

The Advisability of Devitalization, Banding and Removal of Enamel in Crown and Bridge Work.*


At a recent meeting of one of our local societies the discussion following an essay upon crown and bridge work drifted tersely into the subject of devitalization and removal of enamel, succeeding in eliciting many ideas of much varied natures, and apparently proving conclusively at least one thing, namely, that there existed a very wide and marked diversity of opinion along the line of this particular phase of a question that seems to me should be acknowledged and regarded as of specific and important mien.

*Read before the Chicago Dental Society.
Hence, gentlemen, the purport of this paper in which, permit me to say, I do not hope to present anything new, original or perhaps of decided interest, but more—granting your indulgence—with the earnest view and desire of gleaning from the discussion, which I hope may follow, the general and accepted theory of the profession with direct bearing upon the question; and mayhap of awakening in the minds of some the more or less pronounced and important consideration it should merit and warrant. Because, since the advent of crown and bridge work, there is in connection with its application perhaps no one particular aspect that is more exasperating and difficult, that requires so much undaunted patience, and perseverance, that is of more intrinsic importance, that is so woefully and wantonly neglected, and that creates expressions of more varied convictions, as I have learned, than does the consideration of the proper preparation of teeth and roots for the reception of permanent well adapted crowns.

And yet it is not my intention understand to dwell upon their individual preparation only so far as the restrictions and limitations of the paper permits of, purposely avoiding all reference to instrumentation, etc., and only aiming to adhere simply and briefly to principles.

However, in passing, I might say that to note the wide difference of opinion that seems to prevail and exist along this line, and among some of our best men, too, is somewhat surprising to me, for in most all of the various branches of art and science with which we are at all familiar, there are, I believe, given facts which are accepted, granted and maintained as facts, until they may be disapproved and replaced by more feasible theories and deductions.

This preamble, then, brings us to a deep sense of realization and to a careful consideration of our subject matter, because it is deemed of by far too much infinite consequence and importance to be or remain enshrouded in indifferent conjecture or doubt, being, to my mind, paramount among the most potent questions with which the practice, durability and longevity of crown and bridge work is confronted, involved or concerned, and upon which the same, in the nature of things, is dependent, namely, in the crowning of teeth and their proper preparation for reception of crowns—should they be invariably devitalized, or not? Should we resort to encompassing or encircling their necks with a ferrule or band
or not, and how much tooth structure or enamel (if any) should be sacrificed?

The first presents, of course, the most serious aspect; for surely no one would presume to assert that the indiscriminate or universal sacrificing of healthy, normal pulps is not a serious matter, and should not in accordance be treated with a maximum degree of conservatism, for the normal function, the vitality, and its preservation, of any organ in the human economy, no matter how minute and apparently insignificant it may be, warrants, justifies and even commands the broadest and the highest of intelligent consideration from any one desirous of pursuing a faithful, conscientious course.

Yet, with much deference to these conservative thoughts, the fruition of considerable experience and close observation (with especial relation to the converse of the proposition as adhered to and practiced by so many, and more especially since in the accepted literature and science of the profession the life or function of the tooth is not necessarily impaired or destroyed) impel and warrant me, I take it, in maintaining the following reasons why we should almost invariably devitalize.

The encompassing of a tooth containing a vital pulp with a metal cap and the intervening layer of cement hermetically isolates and excludes it from all normal external influences, such as temperature and nutritive secretions, upon the nerve and blood supply, thereby being the media of establishing an unnatural condition to begin with, from which it has been my privilege to observe and deduct its ultimate death is almost invariably bound to result. It is, I am confident, only a matter of time. Does not the very study of nature herself seem to make it reasonable and self-evident? Is there not always some manifested revolt, to a greater or less extent, against the disturbance of that condition which aids and promotes functional activity?

How often are we called upon to treat blind or even chronic abscesses involving roots carrying crowns, which have resulted from, and been the sequence of, the establishment of this same condition. Few, indeed, I will venture have not been oftentimes taxed to the utmost with this very aggravating state of affairs, and appreciate just how difficult they are to handle; and while it may perhaps be argued that when perchance such does occur, it is but a simple matter to secure access through the crown, from which
the canals may be reached and opened, the abscess successfully treated and cured, the apices of those tortuous canals eventually filled, and afterward gold foil packed into the opening until again closed imperviously.

The fallacy of such an argument is irrevocably manifest, for all will doubtless affirm with me that it is usually difficult enough to treat and properly fill the canals of posterior teeth, even with an abundance of good access. The destruction of the crown, then, is necessary to facilitate matters and assure us of anything near resembling a successful operation. Could we not the better and more consistently and conscientiously aim to avoid this probable ending by resorting to primary devitalization; and save ourselves, or some other dentist, and our patients, at least the possibility and prospect of a result of similar nature? The only argument that seems at all feasible in favor of crowning over live pulps, in general, if such it is, would, to my mind, be perhaps the equal chances of securing a perfect root filling, with the prospects of the ultimate death of the pulp. And yet such is even useless to an extent, for while we do not venture to think any one infallible, we, of course, infer that the work will be thoroughly done; and if we succeed in satisfying ourselves upon this point the patient can be then assured of the permanence of the result; while should we not feel sanguine of the success of our efforts we then have the blessed prerogative of either refraining from crowning, or of predicting the eventual outcome, each of which would, in a great measure, both sustain the reputation at stake and the confidence reposed.

And, again, if a tooth is sufficiently decayed, or caries extensive enough to warrant crowning, there is or has, very likely, at some time been more or less inflammation, which renders less liable its permanent vitality under those conditions. And, furthermore, in the preparation of a tooth that has little or no caries present, as is sometimes permissible for bridge work, it is, owing to its sensitiveness, almost absolutely impossible to properly shape it for the reception of an accurately fitting band; and even granting such as possible in some cases, would not the shock be oftentimes severe enough to superinduce a stage of inflammation sufficiently virulent to hasten or cause the destruction of the pulp?

While these convictions are reasonably clear in my own mind and justify me, I think, in advocating the pursuance at all times of a course that seems to offer the surest and most conservative
means of accomplishing the most gratifying results, it must be remembered that no general rule is applicable to all cases, and that only rare good judgment is the inevitable guiding star in instances demanding discretion and culminating in success. Indeed, we can conceive of some few instances where to devitalize would perhaps be unnecessary, such, for example, as pitted and malformed teeth, due to faulty enamel formation, and rendering such very favorable for the almost perfect adaptation of a crown without any preparation whatever, and also may it be permissible in cases of third molars whose natural shape, position in the arch, and absence of opposing or antagonizing teeth, render them favorable subjects, and yet while it is not my purpose or intention to be radical or paradoxical in these views, I can but acknowledge that I should almost invariably feel safer by devitalizing and knowing that even those roots were well and thoroughly filled.

And, now, to turn to the consideration of banding roots in crowning. "To band or not to band" was to me, for some time, a much mooted question, each seemingly presenting many virtues; however, a careful observation results perforce in the conclusion, that if care and good judgment results, perforce in the conclusion, that if care and good judgment be exercised in the adaptation of the band, and this, of course, means everything, that a root is the better prepared and restored to perform its function, is the better protected to withstand the ravages of continued force and strain, than if there be none. But before arguing in favor of a band, let it be understood that to begin with it must, and can be, properly fitted and adapted, and not used indiscriminately, irrespective of surroundings and conditions, for there are occasions when the use of a band is not desirable or perhaps impossible, such, for instance, as in the crowning of anterior roots, which have by the process of decay been broken down to, or below, the border of the alveolus. Here a crown without a band is indicated because of the difficulty in securing any purchase upon, or adaptation to, the marginal edge or peripheral border; and again, it is perhaps the wiser and better practice to refrain from banding oftentimes in cases of the anterior teeth of children. The tissues here being somewhat more vascular, and not so dense or firmly attached, are much more likely to be susceptible to recession from the slightest irritating influence upon the periosteum. But in the vast majority of cases a properly prepared root, with a well fitted band, is the only assurance and hope that we may safely permit ourselves to indulge in, for the permanence of the work.
The reasons for this are obviously apparent. First, as a means of securing a good purchase upon the root, relieving the post of some of the strain, and aiding in the stability of the crown; second, in preventing the occurrence of decay by hermetically sealing the end; and third, by avoiding the possibility of a fracture. Either of these would be almost sufficient in itself to justify banding, but when we can combine them there is certainly but very little room left for doubt as to which seems the better course to pursue. However, in this respect I wish to emphasize the fact that seldom, if ever, should any attempt be made to adjust and adapt a band to a root without first having taken the precaution of previously tightly packing gutta-percha around its edge; or, better still when applicable, to place a small band of the rubber tubing ordinarily used in regulating around it, allowing it to remain for a short time, not necessarily more than twenty-four hours; either of which will very materially facilitate the possibility of securing perfect adaptation by compressing the tissues and exposing the sides of the root, thus enabling one to see and know that the band is perfectly fitted.

If this precaution is observed, the band nicely adapted, with a smooth, rounding edge closely burnished to the root after mounting, forming as close and nearly imperceptible seam of union as possible, and passing just beneath the free margin of the gum without undue impingement upon the membrane. I think you will agree that we have avoided the exciting cause of the very common occurrence of the inflammation and gingivitis that can almost any day be seen around the necks of roots carrying crowns.

In continuation, we will refer briefly to the question of the removal of enamel in the proper preparation of roots whose destiny is to successfully carry well adapted collar crowns.

It is a matter of no small moment, and of some surprise to me, that so many persist in treating this with such a seeming and manifestly apparent indifference, and even contend that it is an unnecessary measure; and while I am willing to grant that it is indeed possible to sacrifice entirely too much tooth structure, am at the same time particularly desirous of maintaining that it is absolutely necessary to remove sufficient enamel in all cases to secure a diminution of the crown of a tooth at its largest and most bulbous proportions, equal at least to its dimensions at the cervix. Otherwise how would it be possible; by what known laws of
geometry, mechanics or physics could we expect or hope to obtain anything like a good close fit at this most vulnerable point? Can anything be more simple or reasonable? For if the diameter of the root or tooth is greater at any point occlusally from that to which the collar is to be fitted, the band must be large enough to pass over it. And if this be so, when it has been carried into position there must be a shoulder between its edge and the root which all the burnishing possible would not overcome, because there would be a surplus which could only be compressed by the application of pressure upon the entire circumference at one and the same time; and in consequence, granting the impossibility of this and the existence of this projecting edge or shoulder, it is in the natural course of things easy indeed to comprehend the ultimate result, so destructive to the health of the surrounding tissues and to the all important function of the interproximal space.

Dental Education of the Public.*

By Geo. H. Gibson, D. D. S., St. Louis, Mo.

In presenting this subject to you at this time for consideration and discussion, I do so, knowing that it has been under consideration for many years by our leading educators. But with all that I believe if we will only face the subject honestly, as it is presented to us in our everyday practice, we can get great good from this discussion.

As an introduction to what I may say on this subject, let me give you some of the reasons that prompted me to present this thought to you. For a number of years I practiced in a country town, and while I had my ideal of right practice, I did not seem to be able to carry it out. When I came to the city, I surely expected my patients to be people who thoroughly cleansed their mouths after each meal with prophylactic brush, floss silk and antiseptic washes, and who so carefully guarded the hygienic conditions of the oral cavity with hand glass and mouth mirror, that on the discovery of the least particle of decay they would be off to their family dentist, or that every six months or a year they would have their teeth carefully examined and all medical aid given, but I have not found it so. In my practice I find these considerations:

*Read before the St. Louis Dental Society.
That more than 85 per cent of my patients are driven to me by pain, and sometimes they stand that two or three days before they come, and I can safely say that a still larger per cent don’t know how to brush their teeth and keep their mouths healthy, and these are the two items that have laid such great weight on my mind and made me to think of the dentally ignorant masses that surround us in this great city; and then sometimes I wonder, if really, the dentists, professional dentists, if you please, are doing all in their power to instruct those that come under their care, about even the simple hygiene of the mouth. As dentists we are called doctors, and a doctor is a teacher, and if we are to make dentistry occupy its proper place among the liberal professions, we must see to it that the masses have some kind of instruction.

It has been argued that we ought to go to the public press as a means of disseminating this knowledge. All attempts of this kind have been failures. It often happens that the writer of the article wants his name and office hours printed in connection with the subject, and the chances are that if a worthy article was presented for publication, it would have such a headline as, “Views of a Tooth Carpenter,” and it does seem to me that the newspaper is the most ineffectual method of reaching the public with scientific truths, as you all well know that the average newspaper of to-day gets as far away from the truth as possible, and so dental knowledge coming through such a medium will not be believed by the reading public.

The public school as a means of education ought to be considered, as youth is the time to make lasting impressions on the mind. I believe the time will come (and I hope it is not far distant) when the pupils in our schools will have a book, or at least an addition to their book on hygiene, in which the subject of the teeth and their care are fully discussed, together with the importance of saving the deciduous teeth and the results of too early extraction, and I believe that this society as the leader of dental thought in this city, should begin such an agitation as will lead to such results as I have indicated.

While we are waiting for such a course of study in our public schools to bring about the desired results, I believe much can be done by the individual dentist by giving instruction while at the chair. I do not believe we ought to let a patient leave our office without having first told him how to keep his mouth and teeth in
a healthy condition, and if it is a mother, warn her about her children's teeth.

If we dentists are to get and hold the respect of our patients as we should, we ought not to allow them to dictate to us. What do you do when a patient presents herself and asks to have a tooth extracted that has only a simple exposure of the pulp? I have such patients often, and I persuade them, if possible, to save the tooth, but if they insist on having it out I simply tell them that I cannot do it, and they will probably have no trouble in finding some one who will. The young practitioner is too apt to look at such as a last fee as well as a last patient, but not so. The time will come when that patient will rise up and call me "blessed" and will send me a hundred times more practice than the fee that I failed to get. I believe the dentist ought to be the master of the situation at all times. I believe in the dignity of the dental profession, and we all ought to try to maintain it. I do not permit any of the members of my household to call me "Doc," and I know I frown whenever anyone else calls me that.

As regards the care of children's teeth, we ought to spend a great deal of time explaining to parents the necessity for such care and the importance of regular visits to the dentist, that the child's teeth can be carefully watched. I heard of a dentist graduate, sometime ago, who had a half day each week when he extracted children's teeth free. A few weeks ago an eleven year old child was taken to the charity infirmary in connection with one of our dental colleges to have a first molar extracted. They refused on the ground that the tooth could be made useful by a filling. The child was taken to a dentist graduate, who removed the tooth, for which malpractice he charged the fee of ten cents.

Now, gentlemen, it does seem to me that such practice is a disgrace to the dental profession.

In conclusion, let me urge upon all of us that we do not get so busy that we cannot find time to give some instruction to our patients while they are in our office. I also think that the teachers in our colleges could do much in this direction by an occasional diversion from the scientific to the ethical.
Dietetic Influences on the Dental Organs.*


It is a mark of respect, and I appreciate it, to have been selected to read a paper to the Hayden Dental Society on the occasion of its "Annual Social." With due consideration for the visitors, I chose for a subject one which I believed would be of interest to them, as well as to the members of the society.

The title of the paper may seem to indicate that the subject matter would be of a nature more appropriate from the pen of a physician, or one that should have been presented at a medical society; but I assure you in my proem that the article covers ground contained within the limits of the science of dentistry. The dentist has equal rights with the physician or surgeon in operations or treatments within the oral cavity. And if we were to practice our profession to the fullest latitude of the definition of dentistry, I fear we would be likely to give distant parts of the human anatomy attention. But it is my purpose to remain close to our occupation, and show how we as dentists can direct and possibly educate the general public up to an appreciation of the science of dentistry.

If we are supposed to be concerned with matters pertaining to the teeth, I for one cannot see why we shall not look after the diet of our patients, for what comes in closer touch with our work than food?

Diet, as we all well know, is the food and the drink taken regularly from day to day.

That our teeth depend largely upon our mental and physical condition none will at this late period of the nineteenth century deny, and that in turn our mental and physical conditions are most decidedly affected by our diet, all will agree; and in this chain of dependence we recognize that all organs or parts-of organs are influenced by the surrounding physiological circumstances, and these are acted upon primarily by the food we eat.

In the living organism the forces of destruction and renovation are constantly at work. Every action, be it mental or physical, necessitates destruction; and the tissue or part which has been affected must of necessity be restored or the waste would be greater than the repair, which would mean early decay and

*Read at "Annual Social" of Hayden Dental Society.
death. A wise arrangement in nature provides for the loss, and rebuilds the broken down tissues of the body continually. By this process of animal restoration, so far as weight is concerned, the body might be renewed several times in a week; but the pounds of food we eat are not all human nutriment. A considerable portion of that which we eat is innutritious, and though useful in various processes, is not destined to repair the losses of the general system. To meet these constant chemical changes two materials are essential, food and air; and during the first half of our lives the repair somewhat exceeds the waste, and our beings grow larger, stronger and heavier; while in the later portion of life the opposite force seems to govern our destinies.

Nutrition and repair have come to mean the same, and both are symbols of life. The rapidity with which these changes are carried on is far greater than is usually supposed. Paley, in his Natural Theology, claims that the entire living organism is renewed in seven years; but recent investigation has cast aside the mystical figure seven, and has substituted in its place the word "time." The time requisite to renew the body is placed at something less than one year. It would be absurd to fix a certain duration of time, since renovation of the body depends upon many factors, among which are age, occupation and climate. Changes take place more rapidly in the infant than in the aged, in the active more rapidly than in the indolent, in the warm climates sooner than in the cold; and again, the several organs of the body and their respective secretions do not all suffer the same changes, nor are they affected in a like period of time.

The fluids and secretions are often and rapidly replaced; the epithelial lining of the alimentary tract is wasted and repaired several times in one day; the muscular tissues endure well the force of retrogradation, the bones are very fixed in their composition and undergo the differentiation very slowly, while the dentine and enamel of the teeth suffer the least of all of the human economy, and are but slightly altered after fully developed. It is in this latter truth that we are especially interested, for we find that destructive metamorphosis far exceeds the constructive metamorphosis at least such seems to be the testimony, born out by the present as well as the rising generations. Since the teeth are, of all other organs of the body the least repaired physiologically it behooves
us to ascertain how best we can induce a healthy and perfect growth of these most important functions of life.

We have learned that the diet of motherhood has a powerful influence upon the embryonic dental tissue, and a class of foods which contain phosphate of lime, are a most congenial food promissory of excellent tooth structure, and the foods which are nourishing to the dental organs during embryonic life are also the foods which should be taken as nourishment during babyhood, childhood and youth; and it may not be amiss to add that a diet which contains elements of tooth structure should be freely eaten through the entire life. We subsist on two classes of foods, the one is in a solid and the other in a liquid form, and both are essential to health and longevity. There are a few products of our soil which are especially adapted to support life and keep the body in a vigorous condition. Among the solids which are possessed with the requisite elements of the teeth are wheat and rice, and among the liquids we find milk and water. Now it is all important that the teeth while yet in embryo should receive nutriment calculated to assist in constructing the several earthy components of the teeth. This truth needs to be more clearly impressed on the minds of all who are concerned in hygienic condition of the teeth. The initial development of these organs begins in early embryonic life and it must not be forgotten that the diet of the mothers largely contribute to the welfare of the child's teeth. Her foods should be of a very wholesome nature and especially impregnated with a sufficient quantity of phosphates and fluorides and carbonates which enter largely into the formation of bones and teeth; and the child subsequent to its birth should be fed on foods of like character, and the mother while yet nurturing the babe should continue her diet of earthy constituents. As the child grows into youth, a continued regard should be paid to the further use of foods freighted with elements which assist in forming perfect dentine and enamel. This diet must be continued throughout the period of dentition, if it is to be hoped that strong and effective tooth structure be developed. A diet of this nature might be kept up until the child is about twelve years of age, and heeding this truth, excellent results would follow.

After the teeth have fully erupted our diet has but a passive influence on the dentine or enamel; when once fully developed they are, while yet hidden in the gums, from the epithelial layer
and when the crown has fully erupted it is completely separated from all vascular tissue, and it is no longer dependent on the circulatory system; in consequence of which there can be no restoration of broken down enamel tissue. It may be stated as a physiological maxim, "there can be no constructive metamorphosis where there is no blood supply;" and since the enamel does not possess this agency of reproduction, its destiny is in the power of external forces.

The dentine is, however, in immediate touch with the circulation as it envelopes the dental pulp, and is supplied to a limited extent, with vascularity; yet there is no capillary circulation within the texture of the dentine, and it, like the enamel, suffers waste and decay without receiving the aid of the restorative functions of the blood. Nature provides, that in the event the enamel be worn down to such a degree as to disclose the dentine the living pulp is protected from the abuse of the outer world by minute granulations of dentine being deposited on the walls of the pulp chamber, thus sheltering the living pulp. These depositions of secondary dentine encroach upon the space occupied by the pulp and if the formation of new dentine is stimulated by irritation of the dentinal tubuli, and the formative process continues sufficiently long, the entire pulp chamber becomes filled with calcic phosphates. But the broken down dentine is never rebuilt at the point of destruction, the new formation being at the inner ends of the dentinal tubuli opposite to the wasting ends.

This irritation may be in the nature of cold or icy foods, such as ice cream, or the same may be caused by hot drinks or foods which many people indulge in too freely. Foods which are considerably colder than the human system or warmer should be discarded, since they not only irritate the dental pulp but frequently crack the enamel prisms.

I have endeavored to make these truths plain, and if I have succeeded it will have demonstrated to you the great importance of a proper diet during the period of dentition, since the tooth structure is perfectly developed prior to complete eruption.

Reference has been made to wheat as a suitable nutriment for building osseous tissue, but wheat is more especially adapted in the construction of perfect enamel. It has been suggested by Sir James Crighton-Browne, that "a specific cause for the increased dental caries might be traced to the present methods of preparing
our ‘wheat bread.’" When we carefully study this theory of weak enamel and our general dental debility, we are inclined to give his research considerable regard. Bread has for centuries been known as the "staff of life," and no doubt this food deserves this dignified epithet, especially when it is properly prepared for reception in the mouth. In the progress of civilization the coarser elements of wheat have been eliminated; the husk or bran has been cast aside as emblematic of barbarism.

This is essentially an age of "white bread," and "extra fine flour;" and it is a period therefore in which we are no longer partaking to anything like the same amount of bran that our ancestors did, and in consequence are deprived of the chemical elements which husks contain, namely: fluorine. It has been demonstrated that fluorine occurs in nature in very sparing quantities, and the only natural channel by which it can find its way into the human body is through the husks of grain, in which it exists in comparative abundance. Analysis has proven that the enamel of the teeth contains more fluorine in the form of fluoride of calcium, than any other part of the body. And fluorine might rightly be regarded as the peculiar characteristic element of the enamel, the hardest of all animal tissues. This being true it is clear that a liberal supply of fluorine, while the development of the teeth is in progress, is most essential to the proper formation of enamel, and that any deficiency in this respect must result in an inferior covering of the dentine. Our people at present have a dislike for all siliceous or gritty foods and are addicted to soft and succulent nutriments, which do not afford the teeth proper exercise, and the latter influence on the normality of the dental organs is of late attracting considerable attention. The teeth must be employed as instruments of mastication or there will be a systematic tendency toward their elimination; and if the circulatory system were in immediate communication with the enamel and dentine, there would be a marked effort on the part of nature to make them rudimentary. Hence the husks of grain, or foods which require a considerable amount of chewing exert an agreeable influence on the teeth; and flour which does not contain some of the portions of the husks or its immediate layer fails to supply fluorine to the growing dental germ, incurring feeble and imperfect health of the tooth structure. With a diminished power of resistance to adverse external influences, the teeth are predisposed to dental caries. The dense close fitting prisms of
the enamel are to the tooth what armor plates are to a modern war vessel.

Such is the direct or physiological influence of our diet on the dental organs, but food exerts an indirect or pathological influence which is fully as important for us to understand.

As an instance of this indirect effect, the disease known as dyspepsia affords us a good example, showing how our diet may act as an exciting cause of dental caries, many people suffering from this ailment; and in this country this difficulty has become so prevalent that in Europe it is seldom known by any other name than the "Yankee disease." Patients afflicted with dyspepsia invariably present soft and imperfect enamel and dentine. The cause is traced to the acidity of the stomach in dyspepsia. The acidity of the stomach is due to the diet, the latter being of a character which entirely exhausts the capacity of the gastric juice of the stomach; the foods usually inducing this trouble are pies, cakes, candies and other favorites of a so-called "sweet mouth." These foods lie in the stomach for a period varying from three to four hours and during this period fermentation sets in and an acid is formed. The gastric juice contains a large quantity of hydrochloric acid, and the acid resulting from the food ferment adds to the acidity of the stomach. The patient generally suffers from water-brash, flatulency or ptysis, and by this eructation the acid of the stomach is forced into the mouth and there completely bathes the dental organs whose outer armor cannot resist the action of acid, and the lime salts being dissolved, dental decay has been initiated.

But food may produce this acidity in the mouth, causing the same ill results as is effected in the instance cited. In acidity of the oral cavity we are most deeply interested, and any light that may be thrown on the causation and prevention must elicit our earnest attention. In describing this process it will be necessary to make a few explanations in order that this heretofore most difficult theory may be understood. The present population of the civilized world will never be able to pay the debt of gratitude they owe to Drs. Miller, of Berlin, Pasteur, of Paris, and Black, of Chicago, for their great discoveries made regarding the cause of the acidity of the mouth. The time and labor, say nothing of the financial loss which these great lights of science have sustained in their eager endeavor to wrest humanity from the ravages of decay,
the world will never know, since their humanitarion spirit has forbidden them from keeping an expense account.

The theories of dental decay have been numerous and even today the votaries of various suppositions have adherents. The facts as presented by Drs. Miller and Black cannot be classed among theories as they have so preëminently demonstrated the correctness of their finds, that their conclusions may safely be published in books of science.

The "germ theory," or the hypothesis that in the mouth there are minute living organisms which feed on tooth structure has been exploded by these conscientious investigators. That there are microorganisms present in the mouth, and many of them, the Miller-Black deductions do not deny; in fact, it is essential to their theory to claim the existence of microorganisms, for without the presence of these inferior forms of life the acid which is found in the mouth would not be produced. The long and varied course of experiments of Drs. Miller and Black to ascertain the nature and cause of this acid is interesting, but in this paper suffice it to say that they found the lactic acid was the result of the presence of microorganic life. There are a great variety of microorganisms, upward of five hundred different microscopic organisms; but there are but a few classes which are present in the formation of lactic acid in the mouth, and these are the streptococcus media and streptococcus parvus. And now the question arises, how do they assist in the production of lactic acid, and how does this liquid affect the tooth structure?

We have learned from the common school physiology that all organized life is made up of minute cells, and that these cells, be they animal or vegetable, must support life by appropriating suitable food to sustain its reproductive force; and that these minute living organisms secrete and excrete, and in consequence, there is given from its material existence a waste product. Different organisms excrete different waste products; and we learn that there are but a few organisms which throw off lactic acid, and among these are the two classes just named.

These microscopic individuals are very plentiful, but under certain conditions flourish to such an extent as to threaten human life. There are three circumstances which are especially favorable to the reproduction of these specific microorganic lives, namely, warmth, moisture and immobility; and there are also three prod-
ucts or elements which are necessary to insure a continuance of their life, and these are oxygen, sugar and light. These three conditions and these three elements are found in the human mouth. The microorganisms select the dental organs not as a food stuff, but as a convenient abode where the requisite circumstance promissory to their welfare exists. They do not feed on the enamel structure, as some theorists claim, but on the sugar and starch which enters our mouths in the form of food. They live on these elements, and sugar is a most favorite article of the streptococcus media and the streptococcus parvus; and the more sweet-meats we eat the greater is their supply of food and the more favorable to their further cultivation, and the more they multiply the greater is their waste product or lactic acid, and hence the more rapid the dental disorganization. When a diet is followed which contains a superabundance of sugar we invite dental caries, since we enlarge the colonies of microorganisms; and if we permit the food debris to remain in the interdental spaces, or in any out-of-the-way location, the patches of microorganisms left undisturbed by the toothbrush or a water bath continue to reproduce, and as the colony increases the waste product grows greater and stronger, until the lactic acid, by dissolving out the lime salts of the enamel, has made its ingress to the dental pulp, when we are awakened to our sense of duty and responsibility by the pangs of odontalgia.

The food has brought on this difficulty, since if it had not been present the lower forms of life would not have found a nutriment upon which to live; and not having propagated in large colonies, the lactic acid product would not have been in a sufficient strength to have attacked the enamel prisms.

Foods which adhere to the walls of the teeth are especially likely to induce microorganic activity. Candy, or any substance containing a supply of sugar and of a sticky character, clinging to the outer surface of the tooth structure acts as a food and a protection to the dental microorganism.

There is scarcely a thing which enters our mouths in the form of food which does not in some manner influence the teeth. The effect may be systemic or local.

Even the water we drink affects the teeth in a marked manner. Water which contains the basic elements of tooth structure exerts a most hygienic influence on the dental organs, and we are
wise when we observe this truth. It is a lamentable fact that the present rising generation employs many substitutes for water, such as coffee, tea, chocolate and other beverages, in the belief that a more worthy factor than water has been supplied; but when we carefully study the eventualities of these drinks, we learn that they fall far short of possessing the requisite elements of water. In truth, I believe it beyond the ingenuity of man to improve upon clear spring water, and permit me to state in connection with this, that any and all decoctions which we drink in the fond hope of avoiding common water, we get results less hygienic than is generally supposed.

The great difficulty with us is that we do not daily drink a sufficient amount of water. I am a firm believer in the theory that the Great Giver of all good has meant that the earth shall contain food and not medicine. There is hardly an ailment to which our body is liable, aside from those requiring surgical treatment, which could not be relieved and cured under proper care and the due knowledge, through the use of properly selected water.

I am certain that a decided improvement in the condition of our teeth could be inaugurated by educating our patrons to have the youth of the land resort to a liberal supply of fresh water. By this most simple and natural tonic, possessed of the cardinal virtues of tooth structure the wasting dental elements are builded. The phosphates, carbonates, etc., of the water are carried by the blood into the interior of the embryonic tooth and minute particles deposited where the waste or construction is in progress. But the water has a twofold influence on the teeth acting systemically as a builder, and locally as an antiseptic or cleanser. Using it as an irrigator it washes away the food debris from around and about the teeth and materially assists in neutralizing the lactic acid formed by the presence of microscopic life; and by diluting this most destructive acid it limits the caries to the most pronounced degree.

Water is an agent often freighted with matter of a poisonous nature, and thus brings elements into apposition with the teeth and their surroundings, resulting in great mischief. I refer to the lead so frequently found in the drinking water of large cities. Lead poisoning carries with it a long tale of injuries to the human economy, and the teeth are among the prominent sufferers. The dark blue line on the gingiva has become an established symptom of this disease. The irritation of the gums and their diseases affect the teeth to such an extent as to necessitate their extraction.
The great danger of using water drawn from newly placed lead pipes is an established fact. Lead is of the most soluble of the primary metals, and when taken into the system acts as a virulent drug. When pure water comes in contact with an untarnished lead pipe the water gradually corrodes the metal and soon holds an appreciable quantity of it in solution. When this takes place the water becomes an agent of human destruction. This is especially true when flowing from new lead pipes. Always permit the water to run for a few minutes before drinking; this admits of receiving water which has been in contact with the main water pipe which is generally made of iron or earthenware.

In many similar ways do we find that the water carries with it elements, which, when brought in touch with the teeth, causes distressing results. Some of the so-called mineral waters are so charged with iron that the teeth when bathed with it but for a few moments lose their lime salts and rapid disorganization immediately follows. These waters which hold in solution some formula of iron are known as Chalybeate or ferrous waters; possibly the wells of Sparta, Wisconsin, containing upward of 14 grains of iron to a wineglassful of water, are the most ferric in the world. No doubt this water is a valuable tonic in diseases indicating anæmia, but it exerts a decidedly ruinous effect on the dental organs.

Water is also freighted with lime and phosphorus which under favorable circumstances produce ill results about the teeth. The calcic deposit found on and around the teeth and commonly known as tartar, is largely the result of the saliva and oral secretions and is very much augmented by coming in contact with water containing calcium or phosphorus. Among the waters possessed of great quantities of lime and phosphorus might be mentioned the celebrated Bethesda waters, which holds in solution 17 grains of calcin to a wine glass of water. In drinking this water the deposition of lime on the teeth is very much increased and its presence brings about much suffering. The saliva beyond doubt is the agent which originates the deposition of calcium, but once a nucleus being formed, the earthy granulations rapidly agglutinate; and if when calcic waters are employed as a beverage, the lime particles readily accumulate and the deposit often increases to such a degree as to nearly close from sight the crowns of the teeth. The presence of salivary calculus upon the teeth is invariably pro-
ductive of injury. As the tartar advances the gums recede and the changes continue until the vascular tissues around the tooth have surrendered their dental function, and the teeth being robbed of their protection, gradually loosen, and are finally eliminated from their bony sockets.

Water has often incorporated with it an abundant supply of pathogenic bacteria, and when it is not distilled or sterilized brings there dangerous forms of life in contact with the dental organs and inaugurate a more rapid decay of all parts within their vicinity. Water is the usual cause of typhus, diphtheritic and other severe affections and the diphtheria is among the ailments which indirectly causes the wasting of the teeth, since during its ragings the microscopic life is so plentiful as to keep up a very strong acidity of the entire oral cavity and in consequence of which the teeth being constantly bathed with this acrid mucus, the lime salts are materially decalcified. The sordes which accumulates on the teeth during these fevers are very destructive to the tooth structure. Hence the water diet has induced malignant conditions decidedly unfavorable to the health of the teeth.

Thus we learn that water when the proper consistency is one of the most potent factors of health, and when taken contrary to systematic indications, becomes a power of destruction. This leads us to thoroughly study the composition and by our knowledge of it assist in preserving and rebuilding the animal economy. The greatest possible good will result from an investigation of this subject and I do not aim to exaggerate the benefits yet to come from this source when I say that in the near future hydropathy and dietetics should be a part of a dental student's curriculum to learn of the influence of diet on the teeth. If we are in truth to be doctors of dental surgery it is within our sphere to direct our patrons concerning their diet; we can do more for humanity by teaching them the principles of prevention, than by giving them the tortures of a cure.
Erosions as Found in the Orient—Cause and Effect.*

By C. L. Snyder, D. D. S., Freeport, Ill.

Erosion as known in dentistry is a loss of tooth structure, usually occurring on the labial surfaces of the teeth, and is peculiar, owing to the polished condition of the so-called cavity.

It is not my intention to dwell at length upon the etiology or pathology of erosions, but will endeavor to give you the facts concerning them as found in the orient, and if in the course of my paper, I may throw a ray of light on this yet obscure subject, I will not consider my time wasted.

In my early practice the sight of an erosion was anything but pleasing. Nothing worried me so much as to see a row of sensitive cervical cavities, knowing that my reputation or at least my good will depended upon putting them in shape without showing signs of nervousness or causing an undue amount of inconvenience to the patient.

It is said that practice makes perfect, and this is true in a sense. I am by no means perfect in the treatment of erosions, but the experience I have had with such cases gives me confidence, and I now prefer filling them to other than ordinary proximal cavities.

The first sign or symptom of an erosion is a slight groove or depression usually occurring on the labial surface of the tooth near the margin of the gum and frequently sensitive when touched by a steel instrument or some metal that has a tendency to produce a galvanic current.

The pain produced by the means just mentioned is extremely acute. I have had patients jump and shriek, showing signs of far greater pain than that produced by touching a live pulp. The saliva and mucus found near the affected parts is usually acid and in advanced cases a decided acid condition is not uncommon. There is also an odor peculiar to these advanced cases. I became so familiar with this that I could frequently diagnose these cases as soon as the patient opened the mouth. I believe the majority of cases in America are found on the central and lateral incisors. In Singapore the first bicuspids seem to be the first sufferers. These are followed closely by the cuspids and second bicuspids, then the incisors, and lastly the molars.

*Read before the Northern Illinois Dental Society, at Rockford, October, 1897.
The teeth on one side of the mouth may be affected while on the opposite side, the conditions are perfectly normal, but in the majority of cases erosions occur in pairs; that is, when the bicuspid on one side is affected, we look for the same condition on the opposite side of the mouth. In cases where the teeth are irregular, caused by a crowded condition of the arch, the teeth that have been crowded inward and do not come in contact with the lips, are seldom affected. A year or so after I became settled in Singapore I began to make a study of these cases. I found that out of one hundred patients that came to me for dental services fifty seven were suffering more or less with erosions. Scarcely ever did I find the perfectly healthy gum; the tendency was for them to recede and the unnatural exposed part of the tooth then became sensitive. The attacks seem to be about the same upon male and female. A great difference exists in nationalities, the English who are the worst sufferers are followed closely by the French. The Armenians seem to be affected equal to the English, but as they are comparatively few in number in Singapore, I cannot lay down any definite percentage. The high class of Malays and Chinese come next, while the Cooley class seems to be but little troubled.

One peculiarity of this complaint is that most Europeans never experienced any trouble before leaving their native land. The well-to-do, that is those who live high, seem to be the worst sufferers, especially the consumers of wine and other beverages. I do not mean drunkards, as drunkenness is seldom if ever seen in the orient, especially among the better class. I now began questioning my patients concerning their physical condition. I directed my inquiry more particularly as to whether or not they or their parents ever suffered with gout. I found that about 70 per cent were suffering with gout or were the offspring of gouty parents. I grew very enthusiastic over this investigation; I became satisfied that erosion was a manifestation of gout. After a time I found conditions that did not harmonize with my theory of erosion and gout, and I began to make further investigations, not only among people suffering with erosion, but more particularly with people who were free from it. Much to my surprise I found that many who had perfect teeth and whose gums presented a decided healthy condition, were among the worst sufferers of gout. I also found that the Armenians and Malays, especially the Armenians, who suffer severely with erosion, are scarcely ever
known, as a nation, to be troubled with gout. This did not agree with my theory and I scarcely knew what to think about it or tell my patients when they inquired into the cause of erosion.

Summing up these investigations; I came to the conclusion that erosions were peculiar to three conditions, i.e.: high living, especially consumers of wines; a gouty diathesis and climate.

There is no doubt but what the climate of that tropical island has more or less effect on the system in general, and this in a short time manifests itself upon the teeth.

It is my candid opinion that erosion is caused by an acid condition of some kind, peculiar to a physical condition of the system similar to that found in gouty subjects, and that this condition is due principally to the diet, is hereditary and is much hastened by a hot, moist climate.

There seem to be but two ways suitable for the treatment of erosion. In the early stage I have had excellent results by the use of nitrate of silver. I will mention a little device that to me was indispensable. First, secure a small silver wire about eighteen gauge, adjust it in a broach holder or some suitable handle, then by heating slightly over an alcohol lamp you can pick a small crystal of the nitrate of silver which will form a bead on the end of the wire; or better still, the nitrate of silver may be melted in a small platinum spoon easily made for that purpose, then by touching the melted mass with the wire, a sufficient quantity will adhere and may be carried to the tooth with safety.

Usually two treatments are sufficient, this of course blackens the cavity and is not a suitable treatment for the anterior teeth. In very sensitive cavities, I find that this nitrate of silver treatment applied several days before filling saves the patient a great amount of pain. In advanced stages there is nothing to do but fill or crown. I have had cases where the entire labial and one proximal surface had wasted away and another case where the cutting edge, together with the labial surface was affected so badly that crowning was necessary.

The last case mentioned was a Chinese woman of the high class. I have also covered the entire labial surface of the incisors with gold, but do not approve of this, as it is too conspicuous.

The secret of success in filling eroded surfaces is to cut away sufficient tooth structure so as to reach every possible affected part also to cut well up underneath the gum, so as to give no chance
for a recurrence. The rubber dam must always be used, and gold is the best filling material. Always allow at least a tooth on either side to pass through the rubber and see that the holes in the rubber dam are punched far apart. Ligatures should be put around the adjoining teeth, but never around the tooth to be filled, as it will only be in the way and prevent the clamp being pushed up to its place. I always slit the gum just over the tooth to be filled; this allows the clamp to be pushed well upon the root, without causing much injury to the gum. These little flaps will heal in a few days and come well down over the upper margin of the filling. It is always best to polish the filling after the clamp and rubber has been removed. A small piece of moist sponge held on the corundum wheel will keep the parts free from blood. I always use a small steel instrument with a notched point and with the use of this I manage to keep the gum well out of the way. The polishing may be completed by the use of pumice or any desirable material.

It seems to me very unsatisfactory to write on the subject of erosion, as we cannot name the definite cause of it. However, it is only by investigation and the imparting of the results of these investigations, that we may fathom the mysteries of our profession.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

The regular meeting was held in the Stewart Building, January 4, 1898, with the President, Dr. A. H. Peck, in the Chair.

Dr. H. J. Goslee read a paper on “The Advisability of Devitalization, Banding and Removal of Enamel in Crown and Bridge Work.”

The discussion was opened by Dr. G. W. Schwartz, who said: I wish to compliment the essayist on his paper. A great many papers are not on practical dentistry. This paper is one that interests every dentist here to-night, and from the fact that he has chosen a subject that to a certain extent is well worn and to which very little attention is paid, I think he is entitled to a special compliment. The importance of this subject cannot be overestimated, from the fact that it involves nearly all crown and bridge work.
Are we to devitalize, or are we not to devitalize? In all such work as crown and bridge work the removal of the enamel is almost always imperative. I consider that the removal of the enamel in all cases of crown and bridge work should be thoroughly done, and in trying to remove it from the teeth, in bicuspids especially, as for instance, lower bicuspids, where the contour is so decided that the removal of the enamel would so nearly encroach upon the pulp that it would be asking a great deal of the pulp to withstand the shock, and afterward carry a bridge that would be constantly irritating it, you could hardly expect a pulp to live. My clinical experience is that in the majority of cases treated thus death inevitably follows. The only cases in which I would try to preserve the pulps would be in cases of young children where I would try to crown to prevent progressive decay and let the tooth fully develop. It some cases it is necessary to crown to prevent the rapid destruction of the tooth. Those are the cases I would crown especially to prevent encroachment on the pulp. I would make this exception in some cases. Malformed and peg shaped teeth are almost always in a fit condition to be crowned without any preparation at all, and I certainly would not devitalize those, concurring with the essayist. In teeth that have lost their pulps from shock and having had blind abscesses, in attempting to go through these crowns or to remove the bridge to treat the tooth, I never feel I can be as successful as if I had devitalized from the beginning, because where I take care of a tooth I feel that I can do so aseptically, and after the pulp is dead and you have a periodontal irritation, it is almost impossible to get the tooth in as good a condition as it would have been had you not lost the pulp in this manner. For that reason, even though you may have access to get at the roots of the tooth as well as though you had devitalized it first, I do not believe you can ever regain the healthful condition that you would have had if you had devitalized from the beginning.

In regard to the banding of crowns, I must say that I do not band the anterior teeth as often as I used to do for single crowns, especially if I have a good, healthy root, because I do not like to go far under the gingival margin of the gum to fit bands. If it is possible to do away with the bands I always do so. If I have a good, strong root I try not to band the six anterior teeth, although a great many laterals I do band, fearing I might have fracture.
Strong central incisors and cuspids I crown invariably without banding. I prefer bands on other teeth except those mentioned. The reason I consider the importance of devitalization so great is because crown work always involves the interproximate space, and the most gratifying work I have done along this line has been the restoration of the interproximate space. To get a band fitted properly on a tooth that carries so much enamel, it might mean the tortures of death to the patient to try to remove it without devitalization, and sometimes, from that fact alone, I should devitalize, even though I would not expect to make as good an operation as if I had not devitalized. But, in my mind, devitalization is the correct thing in every case, if it can possibly be done successfully.

Dr. E. J. Perry: I cannot add anything to Dr. Goslee’s paper. I simply wish to emphasize what he has said. There is one proposition that he lays down, that I do not know whether is true or not. It is not clear to my mind. I have never thought of it very much—namely, that a live tooth, when covered with gold and cement and isolated from the outer world, hermetically sealed, without any thermal changes occurring to destroy the pulp, will cause the pulp to die. I do not know whether that proposition is true or not. I leave it to Dr. Black, who has, probably, some matured ideas on that subject. If the proposition laid down in the paper is true, even the crowning of pegged teeth or imperfectly calcified teeth for the purpose, as the last speaker has just said, of preserving the pulp, would result, of course, in death of the pulp. In general terms, I think it is an abomination to crown live teeth for purely mechanical reasons, although the reasons stated by the essayist may be good, that is, that the isolation of a tooth from its normal surroundings will, of itself, cause the death of the pulp. The life of a bridge, which is nothing but an assemblage of crowns, assuming that the bridge is constructed strong enough, depends entirely upon the abutments and the piers. If a bridge is constructed to carry more than three dummies, I predict its failure, sooner or later, unless it be the four central incisors resting upon the cuspids and jumping from the cuspids to the sixes; in that way there would be some hope of carrying the four central incisors, but not upon the cuspids alone.

Some years ago, at the Northern Illinois Dental Society, my friend, Dr. Taggart, got up and stated a hypothetical case to
this effect: If the other teeth in the upper jaw were gone and the
two cuspids and two sixes were retained and perfectly sound, how
would you fix the fellow up?

The President: What do you mean by the two sixes?
Dr. Perry: I mean the two sixth year molars, of course.
Dr. Johnson: What do you mean by that?
Dr. Perry: The two six year molars on the upper jaw.
Dr. Johnson: What teeth do you mean?
Dr. Perry: I do not mean the wisdom teeth nor the bi-
cuspids or incisors, do I? Dr. Taggart stated, at that time, that if
he were going to make a bridge he would devitalize and cut them
off. I made the remark that I thought he would have a good deal
of exposed nerve in doing it. I challenge any man to say that he
can make a good bridge in such a case out of that and crown those
four teeth alive. He cannot do it. It is not in the nature of
things. If he covers them with gold he will make an abominably
poor thing, if he has any degree of success whatever. If the teeth
were badly decayed and the pulps were dead or exposed, there is
not a gentleman present but what would instantly say he would
crown them. Why not resort to cataphoresis, which some of the
high priests of the profession have tabooed, and remove the pulps,
cut them off and make perfect crowns; then there is some hope of
permanent success. I endorse practically everything Dr. Goslee
has said.

Dr. Johnson: May I ask Dr. Perry a question—you will
permit it, will you?
Dr. Perry: Sure.

Dr. Johnson: Dr. Perry made the remark that it was an
abomination to crown live teeth. I will ask him if he makes it a
practice to crown dead teeth?

Dr. Perry: The doctor misquotes me. I said the practice
of crowning live teeth was an abomination. Everybody knows
that when the pulp of a tooth is dead, the tooth is practically not
dead. I will admit that. I stand corrected, so far as the state-
ment is concerned. It was merely technical. The doctor seeks to
down me on a technicality.

Dr. C. N. Johnson: I wish to make a plea for the use of cor-
rect terms. I believe the time has gone by when we should use
such terms as the six year molar, twelfth year molar, wisdom teeth
and dead teeth.
In regard to the subject of the paper, I think the principles laid down by the essayist are correct. He has made one or two exceptions to devitalization of pulps in crowning. He spoke of teeth that were malformed, where the enamel was still standing with parallel walls, and in those cases he would crown without devitalization. In a case where we have a condition of loss of the enamel, sometimes we find nothing practically but the dentine standing, even in a bicuspid. I have seen several such cases, and I recall one case in my practice where there were eight or ten teeth upon the upper jaw, and there was not enough enamel left to cover one tooth, and still the man gets along fairly well. The enamel has disappeared little by little and those teeth are standing. I have filled cavities in the dentine and the teeth are being saved. The dentine is exposed to the fluids of the mouth, and if called upon to crown one of the teeth I should not destroy the pulp. Again, in cases of recession of the gum in elderly patients with the occlusal surface of the tooth worn down, in some instances almost flat, so as to approach the position of the original pulp canal, with the pulp receded materially and the bell shape of the crown gone, if the walls are parallel, in a case of this kind I should not drill in to destroy the pulp. We never know how far to drill to reach the pulp on account of the recession. Those are the cases in which I would not devitalize. There is one other place in which I wish to make a plea for operators to avoid devitalization. This was emphasized in my office to-day. A gentleman came to me with a tooth that had been crowned some five or six years ago, an upper molar, and the crown had worn through on the occlusal surface. On removing the crown I found a medium sized cavity upon the distal surface of the molar, and the rest of the tooth in perfect condition. When a man crowns a tooth like that I hope he will not devitalize the pulp because the next man in whose hands it falls may want to fill the cavity and make a good tooth of it. I am afraid we see too much of that kind of crowning. I have an engagement with this man to put in a gold filling for him.

In the early days of crown work mistakes were made by attempting to crown too many teeth without devitalization of the pulp. We must remember the question in regard to the removal of enamel which came up. In trimming these teeth down, bell crown molars, especially if there is any inclination of the tooth; if we make parallel walls, so as to secure a perfect fit at the gingival
line, we not only have to remove the enamel but considerable dentine on certain sides of that tooth; we have to cut away enormous slabs in some instances. It would be folly in such cases to attempt to remove the enamel so that the band would fit perfectly without devitalization of the pulp.

Dr. George B. Perry: Dr. Goslee has given us an excellent paper, one of the best I have heard on the subject, being concise and well expressed. Several years ago in quite a number of instances I crowned teeth with living pulps, and so far as I know have had none of those cases returned to me or to any of my professional friends. I was careful to remove the enamel sufficiently to get parallel walls in order to fit the band correctly, and I tried to do it slowly, with the wheels well moistened and kept so. It did not give the patient much discomfort or uneasiness while the operation was going on, and when I had finished it was satisfactory, and has been, I believe, up to the present time. However, since that time I have found that many of my brother practitioners have deemed it necessary to devitalize, and I consider it safer to do so in the majority of cases. I should be careful in devitalizing and filling root canals, for in the preliminary steps much of the ultimate success depends.

Dr. C. N. Johnson: In answer to Dr. Perry, I will say that the cavity was on the distal surface, which was probably the reason the dentist hesitated to fill it. The enamel on the mesial surface was not disturbed, not ground the slightest particle. In restoring the interproximate space on the distal surface, I shall do it as in ordinary cases. I will say that even if the cusps were ground down slightly I could still make a serviceable tooth by filling.

Dr. Perry: Did the tooth have straight walls?

Dr. Johnson: No. The band did not fit. Bands put on in this way never do fit.

Dr. E. J. Perry: If the gentleman had devitalized the tooth and crowned it properly, as suggested by the essayist this evening upon proper principles, would there have been any of this trouble with it? Would it not have, been all right? The question of whether it should have been crowned in the first place or not, has nothing to do with the discussion. He put a cap over the tooth which did not fit and the case unconsciously fell into the hands of a competent practitioner.

Dr. G. W. Schwartz: Dr. Perry spoke about trying to save
teeth of young people by crowning, and said that I contradicted the argument of the paper. All teeth crowned over live pulps do not die, and all live pulps that are capped do not die. The majority of them do. A great number of pulps die when treated this way. It is not safe to do it on general principles, but suppose we do prevent the loss of the pulp of the tooth by crowning before it is fully developed in some of the exceptional cases, I think we are justified.

Dr. E. M. S. Fernandez: I think the ground has been pretty well covered, to-night, with but one or two exceptions, and one is, I would not advise the crowning of children's teeth under any consideration. If the first upper or lower molar is to be crowned in the case of a child, I would have it taken out and allow the second molar to come in the vacant place and fill the space before the child gets too old to undergo that reproduction. In crowning front or incisor teeth without bands, I think it is one of the greatest mistakes a man can make. It is the way the band is made and the manner in which the root is prepared for the band that the success of the work depends upon. It does not make any difference how well you adapt the surface of the crown to the ground surface of the root. I will leave that to Dr. Black and see if he does not say that within a short time, say one or two years, there will be decay and disintegration of the root tissue which is in contact with the crown. Everything will gather between the gum margin, the root edge and the crown edge, and it is bound to produce destruction. If you have a good strong root, it is a more important reason why you should band it, but I am not talking about bands two inches wide. It is a great mistake to make wide bands.

With reference to the removal of the enamel, there are some places where I would not remove it. For instance, in cases where a central, lateral or canine has been partly expelled from its socket and the root badly decayed. In such cases I would prefer to leave the enamel on the lingual surface for support and strength.

In regard to the destruction of the pulp, where bridge work is to be made, I think it becomes imperative to do so. It permits the use of posts for support and absolutely necessary strength for the work. Of course, when we come to talk about bridge work and the preparation of roots for this work, it is a large field, and I would not like to begin it at this time. In regard to crowning a
live tooth and deciding whether the pulp is going to die or not, it is questionable. In the case Dr. Perry spoke of, where the patient did not suffer very much from the removal of the enamel, it simply shows that thermal changes did not affect the tooth very much. If he had a case where the patient suffered a great deal during the removal of the enamel, he would find more or less constant pain after the crown was cemented.

Dr. Edmund Noyes: I am inclined to think that almost always there are exceptions to broad statements and general rules, as, for instance, to the statement that the ends of roots carrying crowns without bands will decay after a year or two. I happened to know personally that a near relative of mine carried pivoted teeth set in the old way with wooden hickory pins upon two or three incisor roots for thirty years before the teeth were lost or spoiled so that they would no longer carry the crowns. And in my own practice, which continued for a very considerable number of years before the banding of the crowns came into use, I constantly fitted pivoted teeth with platinum caps over the ends of the roots and set them with red gutta-percha. It was not usual to find any decay in the ends of roots thus crowned; on the other hand, the splitting of the roots happened very frequently, but I do not now remember a single instance since I began banding them. That to my mind and in my experience is a strong and positive reason for banding incisor teeth instead of fitting crowns without bands. It is possible that if the ends of the roots are made convex and the ends of the crowns concave, the liability of splitting will be greatly diminished, but that would not apply to the special case spoken of here to-night as one in which a band should not be put on, namely, a root decayed up to the alveolar process or near it. For then there would not be anything left to make the convex end of the root, and the danger of splitting would be as great as in any other case and the urgent need of a band quite as great. In my own practice I do not make any incisor crowns without bands.

Dr. C. S. Case: I would like to compliment the essayist upon the paper he has presented to-night, and I wish to say that I agree with him in almost every particular. The first question that he raised relative to the influence of crowns upon live pulps I wish to speak of briefly. In regard to the balance of the essay, relative to the removal of the enamel entirely for the purpose of banding the roots of the teeth, I believe is proper practice and the only way by
which one can succeed in getting perfect adaptation or a perfect joint between the border of the band and root that will prevent future inflammation. Relative to the influence of crowns covering living pulps: If the crowns of natural teeth were bell shaped, as has been spoken of here to-night, and it was absolutely necessary to remove the enamel in order to fit mechanically perfect an artificial crown to a natural crown that would withstand the wear and tear of use, then it would be a different question, but it happens to be a fact that natural crowns are not bell shaped, taking the circumference of the crown from the occlusal portion to the gingival margin. I happened to know, for in my practice I crowd on to natural teeth from one to fifteen or twenty bands daily. I know how closely the bands fit when they were started on to the crown, and that they continue to crowd on harder and harder until they nearly and oftentimes quite reach the gingival margin; then the constriction commences. If you are going to carry the border of the shell crown below the margin of the gum, I say by all means devitalize those teeth, because in order to get a perfect fit beyond the border of the gum you must take away nearly, if not quite all, of the enamel. But there is another way of fitting hollow gold crowns on teeth by which they do good service, and I have fitted many of them, and that is by carrying the border not under the gum nor to the gum, but leaving a space between the margins of the gum and the border of the crown that may be kept thoroughly clean, and at that point is really the largest circumference of teeth. This reference to the use of shell crowns applies only to the posterior teeth, that may be required for bridge abutments and otherwise when nearly all the natural crown is intact. (Here Dr. Case went to the blackboard, drew a lateral view of an upper bicuspid and one of a lower bicuspid to illustrate the point of the largest circumference of teeth.) I have crowned teeth for many patients where the borders of the bands have been carried not quite to the margin of the gum, covering the natural crowns entirely, without any of the enamel having been removed, with the exception of a slight portion at the mesial and distal surfaces so as to decrease the occlusal diameter, that the band or crown could be more easily adjusted. It would not surprise me if I had hundreds of those cases in my earlier practice, and the teeth have remained alive in a large majority of instances. But had I removed all the enamel to crowd the crown beyond the border of the gum, I believe in nine cases out
of ten the influence of the band, the cement, etc., would have destroyed ultimately the pulps of the teeth.

Dr. J. H. Prothero: The question has been raised, to-night, as to what causes the death of the pulp. Dr. Goslee, in his paper, mentioned a probable cause, and others have also referred to it.

There is one factor not mentioned before, that should be considered, I think, and that is this: the preparation of most teeth for crowns requires the removal of a large amount of enamel from the crown of the tooth, leaving quite an area of dentine exposed to the action of the cement used in setting the artificial substitute. Cement is, in many cases, irritating to tissue. It must, therefore, contain something that is an irritant.

If any of you will take the trouble to analyze most any of the cement powders furnished by the dental supply houses, you will find traces of arsenic in them, and, in many cases, you will be surprised at the large amount present. There are, probably, one or two exceptions to this statement. The cement furnished by Dr. Ames I have not analyzed, and cannot say if it contains any; and one sample, obtained from a supply house, contained only the faintest perceptible trace.

Any one, who understands Marsh's test, can satisfy themselves as to the correctness of this statement.

Care should be taken to eliminate all arsenic from the testing apparatus before beginning the experiment. Then add the cement powder dissolved in H Cl, and place the porcelain slab over the flame, and, with the exceptions already stated, I have never failed to get a brilliant mirror of arsenic on the porcelain.

The question arises: Does not the arsenic in the cement cause death of the pulp, in some way—by irritation, perhaps—in those teeth that are largely denuded of their enamel? The ends of the tubuli are exposed, and it might act readily through the dentine.

I recall one case, in which arsenic was applied to the upper bicuspid tooth, free from caries. The tooth was extremely sensitive to the bur, so the opening was only extended beneath the enamel on the occlusal surface. The application remained in the tooth one or two days, when the patient returned, and it was removed. As the tooth was still sensitive, and the patient wished to leave the city for two or three weeks, an application of Black's 1,2,3, was placed in the tooth and patient dismissed. When she
returned, the tooth was black as your hat and the pulp was dead. If arsenic acts so readily through so much dentine, why is it not possible for the arsenic which is present in the cement to cause death to the pulp in these cases?

I heartily endorse Dr. Goslee's paper. It is along the right line. I think we should devitalize in almost all cases. Of course, there are exceptions, most of which have been mentioned to-night.

In case of peg shaped teeth, where it is unnecessary to remove the enamel, the pulp need not be devitalized, since thermal changes or deleterious substances in the cement will, probably, not disturb it in any way.

Dr. Ames in reply to Dr. Woolley: Although I have never carried out the Marsh test to ascertain the presence of arsenic in cement powders, I have no doubt that it is present in more or less minute quantity in all such powders. Arsenic is always present in commercial zinc, commercial zinc oxide, and is liable to be present in the acids and other chemicals used in effecting solutions and precipitations in making the powder by the wet process. In the powders made by the dry process, viz., vitrifying the commercial oxide by heat and then grinding (the so-called vitrified cement) I can see that there is much greater opportunity for arsenic to be present in the finished product than with those made by the wet process in which there is opportunity for precipitating and filtering out all the arsenic present.

I have not seen in my experience the wholesale death of pulps under oxyphosphate fillings which I have often heard described. It may be because I have not myself employed the so-called vitrified cements and have not happened to fall in with many cases in which such had been used. In my experience, troublesome teeth which had been crowned when containing vital pulps have come to me with the pulps alive and hypersensitive and needing to be devitalized rather than already dead, as would be the case if arsenic in cement were the cause. There may be dire results from some carelessly prepared cements, but if so it has been my good fortune not to have used them. I do know that a good oxyphosphate can be used with great freedom in the filling of cavities without causing destruction of the pulps, so I am inclined to look further for the cause of the inflammation which brings about the death of the pulp in the cases under consideration. There has seemed to me to be that low order of irritation and inflammation
which causes pulp calcification of the nodular kind giving the typical consequent neuralgia and calling for devitalization. This irritation may come from thermal changes, but it sometimes appears to be localized at some point just beyond the edge of the band and beneath the gum margin; at least extreme sensitiveness is manifested in that region. One cannot prospect much with these cases to get at the causes, since relief by devitalization is so urgently called for.

The paper covered admirably the general proposition that entire crowns should not be placed upon teeth containing vital pulp. It was a paper for the younger members, and a valuable one for them, I consider. Those having made crowns and bridges for ten or fifteen years have come to learn of these matters. There should seldom be a necessity for crowning a tooth with vital and healthy pulp, except to make it an abutment for a bridge, and then the difficulties of preparation nearly always call for devitalization as a first consideration.

As to the question: "To band or not to band?" Would go farther than the essayist who, I think, said that a root, having decayed far beneath the gum, he would not band at that point.

Dr. Goslee: I believe I said decay to the border of the alveolus.

Dr. Ames: Well, if decayed to the border of the alveolus, involving any amount of the periphery, I would trim away to get a slight grip on the edge. If this condition existed to only a very slight extent, I would be satisfied by carrying my band well up to this edge.

Dr. J. G. Reid: I think the essayist read his paper for the purpose of getting a general expression of opinion from the members as to certain points that he brought out, and particularly the question of the desirability of devitalizing teeth, banding or not banding, and the removal of enamel from the teeth. I believe the devitalization of teeth should be done almost universally. I believe, too, the removal of the enamel from teeth should be a universal procedure; likewise, the banding of teeth should be universally observed. The essayist referred to a similar paper which was read before the Odontographic Society, a few months ago, at which time there was difference of opinion as to the advisability or non-advisability of doing what he has stated, and I believe that is the reason why he embodied it in the paper to-night.
Dr. G. V. Black: I would have preferred not to have entered into the discussion, this evening. The discussion has been interesting, but has surprised me somewhat. I was interested in the presentation of the paper; the thoughts were clearly and tersely expressed. I know the habit has been to destroy most pulps in teeth upon which crowns or abutments for bridges are placed, and that, generally, it is the correct practice, I have not the least doubt. In most cases I have done it, myself, but I do not think the pulp of a tooth dies because it is supporting an artificial crown or the abutment for a bridge. I believe a tooth with a living pulp is better and safer in supporting a crown or an abutment for a bridge; I would always prefer to have a tooth with a live pulp in every position if I could get with safety to the pulp. But the fact is this: When we have properly prepared a tooth as an abutment for a bridge or to receive a crown, it is generally so mutilated as to endanger the life of the pulp; for that reason, the pulp should be destroyed. While the discussion was going on I ran over in my mind the cases I have had. I thought of one case, in which I put on five crowns and six abutments for bridges in one mouth, all of the teeth having living pulps. The original one of these abutments was upon a tooth with a dead pulp. After five years the root of the tooth, the pulp of which was dead, was so absorbed that it was broken; then I moved the abutment of a tooth with a living pulp, and it is about five years since, without any complaint. Now, in every case in this mouth every particle of enamel was removed from those teeth that were used as abutments.

Dr. E. J. Perry: What was the age of the patient?

Dr. Black: When the work was first done the patient was about fifty years old. I have put on bridges over abutments with living pulps in much younger patients. I have also found a good many cases where, after beginning to cut the teeth, I have hesitated and stopped and applied arsenic and destroyed the pulp, because I found I would cut into the dentine considerably and had found great sensitiveness. I would do this precisely as I would do in filling. If I have a very large area of dentine exposed and a tooth hypersensitive to a great degree, perhaps I would devitalize it before I proceed to prepare for the filling. The conditions I would deem such as to endanger the pulp. I would do precisely the same in preparing abutments for bridges or crowns, not that the
covering of the tooth, as has been said, necessarily destroys the vitality of the pulp, but the mutilation of the tooth in the preparation destroys the vitality of the pulp, or brings about conditions such that the pulp will die. It is a matter upon which we should exercise care and judgment. We cannot mutilate teeth in every mouth and have the pulps live. In other mouths we may do so to a certain extent. It becomes a matter of judgment in each individual case. In most cases for crowning the tooth is so decayed that it is necessary to remove the pulp. I have capped quite a number of pulps and put shell crowns on the teeth. I have never had a single one of the pulps die, so far as my knowledge of them goes. I have done it, however, only in cases that I felt was safe just as I would do in capping pulps under fillings, using precisely the same principles, the same judgment in one case as in the other. As a matter of fact, for a number of years past, I have had more pulps die under fillings where the pulps were not exposed than in cases in which I have capped exposed pulps, perhaps because I have risked more in cases where the pulps were not exposed that I would be willing to risk in capping. I think this is the correct principle; that we should observe these cases carefully, study the conditions, and if the mutilation of the tooth in preparation be such as to endanger seriously the pulp we should destroy the pulp. But if the conditions are favorable for the continued health of the pulp we should consider that the tooth is stronger, it is better, and the conditions more favorable for long usefulness; if the pulp is alive, we should try and save it where our judgment dictates that we can do so safely.

Dr. G. W. Schwartz: Just a word or two. Dr. Ames called attention to the fact that he differed with me about the banding of roots. I do not wish to go on record as saying that I do not band the anterior teeth, because I band a great many more than I leave unbanded, from the fact that I do not have as many good strong roots as I do weak ones. I said I did not band the good strong healthy incisors and cuspids, and I do not.

Dr. E. M. S. Fernandez: I wish to say a word or two in regard to the remark made by Dr. Noyes about a patient who had worn pivoted teeth for thirty years. That case was certainly an exception. We sometimes have teeth saved by poorly made fillings, but such is the exception and not the rule.

Twenty-four years ago I began making these so-called pivot
teeth but found them very unsatisfactory in many respects; one great trouble was the splitting of the root, caused by the moisture expanding the wooden pin used to retain the porcelain crown in place.

Dr. Goslee (closing the discussion): I feel very much gratified indeed at the discussion my paper has elicited, but I want to emphasize one point that I made, which has been discussed considerably and upon which I would differ to some extent with some of the gentlemen, and that is as to the cause of the death of many pulps under metal crowns. I believe the presence of arsenic in the cement as being a cause of death of pulps is a good point. But also believe that the placing of a metal crown around a tooth containing a vital pulp and the intermediate layer of cement is many times the cause of the ultimate death of the pulp, because of its isolated and unnatural condition.

I quite agree with Dr. Black in saying that we must consider these matters conservatively. But he says he would do it as conservatively as he would cap a pulp. When we cap a pulp we do not establish the same condition that we do when we crown a tooth. I think we have an altogether different condition, and it is that point I want to bring out. While I am convinced of it myself, I am willing to abide by the opinions and conclusions of those for whom I have great respect and in whom I have great confidence.

Relative to the point brought out by Dr. Prothero with reference to the powder of cements containing arsenic, I know nothing about it. That may be, and it is evident from what Dr. Ames has said that the arsenic is in the cement and may be a partial or one cause of the ultimate death of the pulp. We oftentimes see pulps die under plain ordinary cement fillings, and that would be an indication of the probable presence of arsenic in the powders.

Dr. Woolley: You have not considered malocclusion of an abutment for a bridge, and I would like to ask whether that malocclusion would not cause death of the pulp sometimes when the tooth is crowned.

Dr. Goslee: That seems improbable, for in the preparation of roots the malocclusion is corrected where the work is done properly.

Dr. Fernandez mentioned the point of extraction of the upper or lower six year or first molars. I want to take issue with him on that point. I think that would oftentimes cause decided irregu-
larity of the teeth, and I see no good reason for taking such grounds. Sometimes it is permissible to remove the lower six year molars where they are badly decayed, but it is seldom advisable to remove the uppers, according to my mind.

With reference to the points made by Dr. Johnson, I was well pleased with them, and especially with his remarks pertaining to the crowning of teeth in elderly patients. The condition he speaks of does exist in those patients, and oftentimes we are perfectly safe in crowning over those pulps, leaving them just as they are. They become to a certain extent atrophied or dried up in a measure, so that the apices of the roots are closed, and after this condition occurs we will have no ultimate trouble. We all know that cases do occur where the pulp dries up and we never have any trouble; the foramen being closed, the infection which would result in an abscess never occurs.

Some one, I believe it was Dr. E. J. Perry, spoke of crowning cuspid teeth and swinging in four incisors. I want to say that it is seldom I would expect two cuspid teeth to carry the intermediate four incisors. Only in one condition would I place such a thing in the mouth, and that is where we have a direct or end to end occlusion, because the outward force in mastication would work these cuspid forward every time, if they carried four incisor teeth, and the result would be quite an extensive space sooner or later between the cuspid root and the first bicuspid tooth.

With reference to the removal of enamel I have been misstated once or twice by some of the gentlemen who have discussed my paper, as to how much or how little I would take off on the sides, whether it be on the labial or lingual, or approximal. I deem it necessary to remove enough to reduce the dimension of the tooth itself down to a point equal to the dimension at the cervix. It does not make any difference whether you take off all the enamel and a great portion of the dentine, or whether you take off only a portion of the enamel. It is only necessary to bring the diameter the same as the diameter at the cervix.

With reference to the banding of anterior teeth, I gave my reasons for banding almost universally; but there are instances, in anterior teeth, that I do not band, aside from those I did not speak of. The more I use the particular method I am going to refer to now, the more I become impressed with it. The great trouble in banding is in the causing of inflammation. The
primary trouble is in securing perfect adaptation. I have made a crown by using a semilunar band, making the floor thin, soldering it on, cutting away the band on the labial just enough to take in the gingival line of the gum, so that the facing can be placed as near as possible to the end of the root, against which the floor can be burnished nicely. In this way we can get perfect adaptation of the floor and avoid the irritating influence of the band; its use is confined, however, to very strong roots.

Dr. Case brought up a point with reference to partial crowns that I deem advisable to speak of. I have made a great many of them, myself, and I want to make this point: that where the teeth stand alone in the arch I often make them and would often use them as an abutment for a bridge; but seldom would I do so where they approximate other teeth. I use them seldom there because of the difficulty of avoiding interfering with the interproximal space and contact point, which would be the means of causing a favorable point for the accumulation of food. Where the teeth set close together I rarely use such a crown; where a tooth stands by itself I oftentimes do, and consider it good practice.

MINNESOTA STATE DENTAL ASSOCIATION.

Dr. C. W. Nutting read a paper on "The Building of Small Contour Fillings with Gold. (See page 77.)

DISCUSSION.

Dr. I. C. St. John: Mr. President, and Gentlemen of the Association: I am not prepared to discuss this paper, as I do not think I fully caught all of the doctor's points he wished to make, and I do not fully understand the drawings. In the first place, I think I would criticise his preparation, because I would never attempt to fill a cavity like that without cutting it lower and getting an anchorage below here. (Specifying on the drawing.) That is, getting an undercut in here. (Illustrating.) I should criticise that in this way: those teeth gradually break, and, even though he leaves a fair amount of enamel, it grows weaker every day it is used, and the time will come when it will chip off and become defective, if he does not lose his filling. Of course, I cannot go into the subject without getting my preparation, and I have no way of illustrating it here. I cut a groove something like this. (Illustrat-
ing.) It gives a good body straight down to the incisive edge of the tooth. He also shows the corner cut away. There is so much to the subject, there are so many modifications to be used, it is very hard to illustrate, as the doctor said. He might have an idea that he might follow out, but the cavities are so different that it is hard to lay down an explicit rule for all of them.

Dr. Reid: Taking No. 8 (of the drawings) as an illustration, what would you do in a case of that kind if you were to carry out your principle of preparation in restoring it?

Dr. St. John: I do not know that I ever saw one broken down in that way. If there was so much of it decayed I would go over into the solid part and preserve as much as I could.

Dr. Reid: Suppose you get hold of a patient who objects to using any more gold?

Dr. St. John: If the corner is broken off it is better, and it looks better to bring the curve down here (illustrating) and making more of a curve.

Dr. Reid: If they would not hear to anything different what would you do?

Dr. St. John: I would try to talk my patient into seeing it as I saw it. The subject is one of great importance. The best preparation is hard to determine. It is hard to determine what the best preparation is in every case. I think the doctor would get a much better filling by cutting out this portion of it. (Illustrating.)

Dr. Reid: I want to ask some questions of some of these fellows here who know more than I do. We take as an illustration this, for instance (Fig. 9). On this point of cutting down to the enamel I agree with him. You take this class of teeth that show a great amount of enamel here at both points, more than they do at any other; now I want some of those fellows who talk about cutting this cavity here to tell me how much they gain by it? Because if you cut there you carry it so far up the lingual surface that from this point here—well, I want to know how much you are doing it?

Dr. Wedelstaedt: Mr. President: I am not a member, but I would like to demonstrate this matter. We have got to take into consideration the various kinds of cavities. What is decay? What is the cause of decay? That is the principle that has to be considered in a case of this kind. From 1835 to January, 1897, there have been continual contentions as to what was the cause of
decay. In 1835 Dr. Robertson said that decay or caries was caused by an acid formed by the decomposition occurring at the exact spot of the decayed point. From that time until January, 1897, there were continual contentions among dental practitioners in regard to this one point. To-day, take any intelligent body of men, in this or any other State, and ask them what causes decay, and the answer will be, it is caused by acid saliva. If it is caused by an acid, why does not that enamel melt down? It generally takes place between the teeth at the proximal surface. This being the case——. But first let me say that I enjoyed the paper very much, and also the good humor of the man who read it. I have seen quite a number of cases of this kind, and after an observation of six or seven years I have found decay of this kind is caused by an acid, the acid formed by decomposition. The cavity should be cut lower, cut down so that the gingival margin is covered with healthy gum tissue all along. I do not like an operation of that kind, for the simple reason that a man has the greatest success in filling teeth if he prepares his cavities in as simple a manner as possible. To-morrow you gentlemen go and examine the fillings you have put in. Where this starts below at that angle (indicating) you will find a weak point there. I don't care if you curve that angle that much (indicating) that stress is generally from sixty to eighty pounds, and even if the stress is only forty pounds the effect would be the same. A young woman opens her mouth and comes down with forty pounds, so (illustrating) suppose I put a little curve in there (indicating) so we have a pretty good angle, I tell you those fillings have got to come out. Dr. Cushing some years ago taught me a new method, which I believe is known as "Cushing's method." I changed it a little, because it is too hard a method to use. I do away with that and make it a simple cavity, but cutting the enamel right off five-hundredths of an inch, getting my anchorage in here (indicating), that makes an absolutely simple cavity of it, and you do not break your back and tire yourself out in filling it. And five-hundredths of an inch—a millimeter or a millimeter and a half—of gold does not cut much figure. You have got something there that will last, and that will last much longer and you can do it in a good deal less time than you can make a filling of this kind. (Indicating.) Dr. Reid asked what you gain by it? I am afraid of a filling of that kind because it weakens the enamel. There is liable to be a breaking
down there. (Indicating.) A man came into my office some time ago and insisted on having the first molar out. I looked it over with great care and tested it, but it did not respond at all; there was no difference between that and the other, and I advised him not to have that tooth taken out. I asked him how long it had been going on, and he told me, and he said “I want you to pull that tooth out.” I looked at the second bicuspid, and then I happened to strike the central incisor. He jumped, and said “Hold on, that’s it; I thought it was the other one.” He took out a cigar, and I happened to remember that he was an inveterate smoker and that I had noticed he always bit off his cigar with that tooth. I put on a rubber dam and opened that tooth, and a long stream of pus came out. That merely shows what stress will do. He had broken the connection of the pulp with its nutritive supply. If we get stress enough to do that we get stress enough to break the enamel. We must take the stress into consideration at all times. We do not study it enough. There are not enough dynamometers. Now you observe other people, observe the occlusion. When we take into consideration——. A man came into my place the other day and shut my dynamometer at 350 pounds. Dr. Black’s has been closed at 270 and 340 pounds. Dr. Clements makes 250 pounds and laughs. I trust, Dr. Reid, I have satisfactorily explained the question.

Dr. Reid: Yes, that’s all right; cost you two dollars.

Dr. Owre: I would like to ask Dr. Wedelstaedt if it was the pressure that severed the connection between the pulp and the nerve proper. It seems to me the continual irritation might have something to do with it.

Dr. Wedelstaedt: I think it is the sudden jar. In shutting the teeth in cracking nuts there is a sudden jar, and I could not say positively whether it is the irritation or the sudden jar, but I should say it was the sudden jar.

Pres. James: Are there any others who can give us some light on this subject?

Dr. Nutting: I would like to have Dr. Weeks give me a rap.

Dr. T. E. Weeks: I cannot add anything, except to hit harder. (Laughter.)

Dr. Nutting: The doctors have all got this business wrong; they don’t understand it. (Great laughter.) I wish I were an
artist, I could demonstrate it; if I were in my office I could do it anyway. In this margin here (indicating) there is no cutting whatever. One man spoke of the continual wearing; we have an occlusal surface with the gold filling, it will not do it. I do not know that I make this very plain to you. With this process of work I have not had a single failure; I have not had a single failure in three or four years' practice. I did before. I do not know what the reason is.

I have nothing else to say. I thank you for the hearty discussion we have had so far, and I assure you I have received some benefit from it. (Applause.)

Pres. James: We will now pass this subject and next listen to an essay by Dr. Stearns.

Dr. C. H. Stearns: Mr. President and Gentlemen of the Association: It is with the greatest reluctance I arise to attempt to give you a paper on this subject. In the first place I was only called a short time ago to prepare this paper, and had only a few days in which to do so, but I have always believed it to be the duty of every member of this society to do what he could for the benefit of this society and to help things move along, and therefore I consented to prepare a paper. The more I studied the subject the more I wished I had not. I succeeded in finishing the paper just before I was called out.

Discussion.

Dr. T. E. Weeks: Mr. President and Gentlemen of the Society: It is not my habit to offer an apology when called upon to discuss a paper, but I will simply state that I cannot, under the circumstances, discuss the paper very extensively, as I have had no correspondence with Dr. Stearns, and only saw the paper since this afternoon. I have not had an opportunity of asking him any questions.

I conclude, from Dr. Stearn's paper, that his sole object was to write something that might stir up an ambition on somebody's part to enter into some investigation of amalgam. In the first place, Dr. Stearns is misinformed, as we have with us a gentleman who has made a considerable investigation of amalgam—Dr. Wedelstaedt. Dr. Wedelstaedt assisted Dr. Black in his investigations, and has conducted considerable for himself; and one thing that strikes me as peculiar, that any man who conducts an investi-
gation of amalgam becomes horribly disgusted. The first thing to do is for every one who is at all interested in this subject to study closely what Dr. Black has pointed out. We should study what Dr. Black has given us, and it is no small study to do that, as I have found. I have not begun to master it, although my study has been supplemented by personal contact with Dr. Black on several occasions, which was supplemental to my reading of what he has written. We must, as far as possible, master what he has done. There is no use in treading along the same path. Try to go into side issues, and into something different from what we have been accustomed to. If each one observes carefully and scientifically the samples of amalgam that come into his hands, and how he uses them and with what result, or even careful clinical observance, and noting the results of such observations, and giving them at such times as these in our meetings, we gain an interest, and we would gain some information in regard to this very interesting problem. I, for one, have been benefited by Dr. Black's investigations, because I know I am making better amalgam fillings to-day than I ever did before, and I think if every one would follow this course of study and observation, we certainly would be doing better work than we did in the old haphazard way. So far, there has been a practical application of the scientific investigations that have been made, and I wish we might have further operations and investigation by a large number of our society, so that next year, when we come together, we may have something to report of material progress, be it ever so little, for every little helps. I can only close by emphasizing, if possible, Dr. Stearns' evident intention, in what he has written, to incite in us some effort in this direction, or, at least, a closer study of what others have done.

Dr. Stearns: Just for the sake of correcting, perhaps, a mistake, I want to say, in speaking of this subject of amalgam, I confined myself entirely to the investigation of the physical properties of amalgam; and, in speaking of the men who have done work, I spoke of those who had accomplished distinctive steps or results, and had made discoveries. There are men innumerable who are at work on the subject, and I hope we will see many more at work in the future than we have at present. It is a subject that is well worthy of any amount of investigation. That is what I wished to say; I did not wish to say that none of those men whose names
have been mentioned were in the work, because I know many, myself, who are doing excellent work.

Pres. James: The subject is before you for discussion. Tell us all you know about it.

Dr. Wedelstaedt: If nobody else is going to talk amalgam, I am going to talk amalgam. Mr. President, and gentlemen: This is a subject in which I am very greatly interested, as some people know, and it is something that every man here is interested in. The paper read is an excellent one and showed great thought. I wish to compliment the gentleman on his paper. I think it would do every man good to hear it, but there is one thing that will come out in next month’s Items, a paper I read at Atlantic City on this subject, to which I would like to call your attention. There was talk about amalgam at Atlantic City, gentlemen, a talk I will not forget as long as I live. It was a talk, gentlemen, that was very interesting. Some very able men took part in the talk; I was not one of them—it was some one else. In the line of experiments conducted by the New Jersey Society, which I have done some twelve to fifteen times since, two things have been discovered; that is, the larger the cavity in the tooth, the larger the amalgam plugger should be, as the amalgam is pressed into the cavity. The largest amalgam plugger that will go into that cavity wants to be used to compress the amalgam. Amalgam does not want to be worked to death. For instance, if the size of the test filling were three and one-half millimeters, I could use a three millimeter point. I made experiments—quite a number of them—with a one millimeter point in a cavity that was three and one-half millimeters in diameter. I used fifteen blows, and made each filling of three pieces of amalgam. (Some one stop me, if I string this out too long.) I take three pieces of amalgam, using fifteen blows for the filling, each piece receiving five blows. The amount of stress used was 13½ ounces in this series of experiments. The next was 30, the next was 45, using a 13½ ounce blow of the mallet. I changed the blow to 11 ounces, using 45 blows; one millimeter was the diameter of the plugger; I think I can show you, just in a second. (Writing computations on the blackboard.) 15 blows gave a flowage of 21.10 to a 13½ ounce blow, and the crushing stress was 665 pounds. 30 blows gave me 18.46 flow, and a crush of 653 pounds. With 45 blows there was a change to 42.81 flow, and 473 crush; that was a one millimeter sized point. There is a
good deal of contention as to whether the plugger should be smooth or serrated. It is all the merest bosh. Anybody that knows anything about it knows there is no difference in the use of a smooth or a serrated plugger. There is no difference, whatever. Any one who has made any experiments in this way will know the amount of force required in filling. Let us get the 2.11 ounce blow. I will give it here. (Writing figures on blackboard.) 76.43 flow, crush 320 pounds; the next one the flow was computed 100; the next the flow was 83 and the crush 103. There is no use saying anything about this amalgam question, whatever, after a table of this kind. It shows you at once what influence stress has on it; it shows the difference between compression and chopping the mass all to pieces. If you are going to use a little point, one millimeter or three millimeters, you do not want to use too many blows, and the number of blows depends on the flowage you will have and the crush you will have. It does not do to increase that, for the simple reason that when you come to thirty blows you have a complete flow, with a crush of 103 pounds, and it will give you a complete flow inside of two minutes. Dr. Flagg said to me, "You cannot show me a man that can bite 200 pounds." I said, "Dan Jones, come over here;" and he bit 250 pounds. I do not know whether Dr. Flagg saw the dynamometer. I will merely state to you that fifteen blows of 2.11 ounces, with a three millimeter plugger point, makes this same amalgam flow at 5.5 and a crush of 900 pounds. This is not hearsay—this is an absolute and scientific truth. My friend, Crawford, tells me that a "scientific truth is common sense made up of fact." Now this is all in the same line from beginning to end. I spoke about steel tubes, steel test tube fillings. You need not tell me. What is the diameter? 3/8 inch. What sized blow do you use? I don't know. What force do you use? I don't know. What do you know? I don't know. I merely give you the results of these experiments—merely to show you what a two millimeter sized diameter will do with different stress. It is the same right through—there is no difference. It goes from 900 to 83; it goes from 900 to 43 as the general average. To demonstrate that amalgam will crush at 43: If we use large cavities in our steel test tubes, we must have a machine to register the amount of that force. A man comes in and says, "I know all about that thing." In a few months he says, "I know less than than I did then." I commenced on this sub-
ject in 1893. I worked on this and have ten thousand fillings in my office, and they are not worth five cents. The other day a man came into the office and asked me, "How much force do you use in making those fillings?" I had eight thousand in my office, and I never tested any more after that day.

I hope this may stimulate some of you to a further study of this subject. It is something that is most interesting. I am very glad to have discovered this amount of difference it makes in the filling. I do not know that there is anything I can add to this subject. I wish others could be stimulated to the extent that they would go into this thing and labor as others have labored. We cannot labor like Dr. Black labors. He is a perfect demon for work. He is at it early, and he is at it late. He does not know his patients when they come into his office. I would labor with him till midnight, and the next morning I would get down at eight o'clock and find him at it again. I asked him what time he got down. He said, "Oh, at three o'clock."

I thank you, gentlemen, and hope there is something in this you can get some information from.

Dr. T. E. Weeks: I think if it does anything it emphasizes one point, the necessity of knowing what has been done before, and of being careful in order not to do what Dr. Wedelstaedt has done, the one thing needful left out, making a certain number of experiments, and then find that the one essential point was left out. We have the experience of these gentlemen who have made many experiments, and we must not go blindly to work without knowing what they have done before. Dr. Wedelstaedt has had the advantage——

Dr. Wedelstaedt: Pardon me, one moment, doctor. One thing I ought to have brought out. It was the necessity of further investigation, before many men go into this subject, of a steel matrix in experimenting with this amalgam subject as a business. I may be wrong in my determination as regards this, but I have a letter from Mr. Metcalf, of Pittsburg, who is the greatest authority we have in the world at this time on steel, and Mr. Metcalf has written me once or twice and said that steel is almost as sensitive to atmospheric changes, to thermal changes, as mercury. I observed that Dr. Stearns laid particular stress on that one point of keeping an even temperature. Now I want to tell all those interested in this subject something. The Western Electric Company
make an alloy from which the heat coefficient is completely eradicated. I have tried for eighteen months to get some of that metal, but they will not give me any. I was going to have this a great secret, but they will not give me any of this alloy, and if they will give some to any one else, or sell any of it, we may get some further information, but until that time comes some one will have to go to work and improvise a material from which the heat coefficient is removed; but we will have black ditches around our amalgam fillings that we make in steel cavity blocks, whether we keep the temperature at 98 degrees or not. I believe I was the one who discovered the black ditch around the steel cavity blocks, and I am very certain I had my temperature at 98 Fahrenheit, still I had black ditches. The rest, when they saw them, said, "Tell us how to get rid of them." We have been trying for a long time to get rid of them. There are many things in this world that are easy to get, but it is hard to get rid of them. I throw this out for the information of those who desire to work on this subject. I do not want to get in on the ground floor alone; I want to give some one else a chance.

Pres. James: Do not let this interesting subject go without a full discussion of it.

Dr. Wedelstaedt: I will ask the members if they understand the terms "flow" and "crush?" There was a good deal of question in my mind as to what that "flow" and "crush" was. I would like to know if everybody here knows what is meant by it. It is surprising to me, the testing of the flow of amalgam. It is shortened under stress, and you all know, I think, how the crush is obtained.

Dr. Hoff: What practical use are you going to make of that?

Dr. Wedelstaedt: We draw this fact from it, that there is a difference between putting on amalgam by hand pressure or compression. For instance, if we use thirty blows it gives me the same amount of crush. Hand pressure gave a flow of 8.07, mallet force, using thirty blows, gave 8.04; almost the same. It merely shows how sensitive the amalgam is.

Dr. Hoff: How do you account for the difference in the ratio?

Dr. Wedelstaedt: I tell you frankly, I do not know. If you will tell me why amalgam changes, perhaps I could tell you.

Dr. Nutting: I would like to ask Dr. Wedelstaedt what force he prefers, hand pressure or mallet force?
Dr. Wedelstaedt: It depends wholly on circumstances. If I work on upper teeth I prefer the mallet, if on lower teeth I prefer hand pressure.

I do not wish to say it; I do not know what harm it will do me. I am loyal to the country I was born in, and I am loyal to the State in which I gain my livelihood; but I want to say that whatever advances will be made in this work will be made in the West. We have got to make that advance here in the West, and it will be made here and at no other place. The boys who are being educated at your western schools are going to take up this subject and follow it along. It is never going to be done in the East; any good ideas which they have got they are going to keep. A man in the East wrote a book without a single experiment in it, and he said, "What business had Dr. Black to poke up this amalgam business and go into it? Who is Dr. Black, anyway?" (Great laughter.) (I know the reporter is taking it down.) I want to tell them there is a man in the West who does not give a rap. I know it will harm me, but it is all the same.

Dr. Hoff: I simply wanted to say that I am very glad of having had the opportunity of hearing Dr. Wedelstaedt to-day and seeing those figures, and I think he and Dr. Black are on the right track, and I want to wish them God-speed. What he said about the East and the West is all right, but I think all those things will adjust themselves and we will win out in the end.

As I sat there thinking, when Dr. Wedelstaedt made those figures, my memory carried me back to an old friend of Dr. Reid's, Dr. Birney, of Cincinnati. We had this subject of amalgam up for discussion at the meeting of the Mississippi Valley Dental Society. They hauled it over all the afternoon, and every one said it was the fault of the manipulation. Finally this old gentleman got up, he was nearly eighty years old, had practiced for fifty years, and related a case of a man who was then fifty years old, and for whom forty years before he had filled a tooth with amalgam. He said the filling was there the same as on the day he put it in. Then he gave us the circumstances. The boy came into his office with the toothache; it was a buccal cavity. The boy would not let him touch it. He took some cotton and pliers, but the boy would not let him put the cotton in the cavity; then he mixed a little amalgam, put his finger on the gum and told the boy he would fix it all right, and he said he put that amalgam on
Perhaps it had rated; young heads. When months not about Dr. Wedelstaedt is going to bear Dr. Birney out in his experiment; we must not use much pressure, but use large instruments. Some day I hope we will know all about amalgam.

Dr. Wedelstaedt: Perhaps after he put that amalgam into that tooth it was immune from further decay. I am sure a body of intelligent men like this would be afraid to fool around with amalgam in that way. Now these points I have been giving you, to-day, in regard to amalgam, are entirely new. I do not ask you to take my word for the thing, in regard to the large sized cavity. I merely state that these are the results of the experiments. I do not know any man in the United States that is following it. I am applying it in practice. I suppose to-day I have the largest amalgam pluggers in the country, since I first discovered it three months ago. When I brought in my three millimeter points a young man said: "What are you going to do with them?" When I brought in my five millimeter points, they shook their heads. A man does not need anything larger than a five millimeter, but occasionally a six millimeter point comes in very handy; but one to five millimeter points are the average a man ought to have. It does not make any difference whether they are smooth or serrated; the only difference is, the smooth points are apt to slip; but it does not make any difference which you use. There may be a trifle in favor of the smooth points, but that trifle is so trifling it should not be taken into consideration. As I said before, there was a great hullabaloo made at one time in that respect, and a man would be condemned who used a serrated point on amalgam. Twenty years ago they did not know anything about serrated points, I never saw one. It does not make any difference what you use.

We have got to remember that this is not the work of one man. It would be just like one man taking the contract to build one of those magnificent structures we see nowadays and attempt to erect it all alone, without the assistance of anybody else. One man could not do that work alone. We must have others to labor with us and we must labor with them. We cannot erect any such building, stone upon stone, line upon line; one man cannot do it—you have got to have many men.
Dr. Reid: Did I understand you to say you use your three millimeter diameter plugger in one case and one millimeter diameter in another? You say you use a fifteen ounce blow with a one millimeter point. Would you use your three millimeter in the same cavity? Will you get necessarily the same amount of resistance at the end of your three millimeter plugger? Do you get the same amount of force? You get enough in one case, in the other you do not. I claim the resistance is less in using that three millimeter plugger; you are not using the same amount of force, from the simple fact that you have got three times the surface. That makes a difference. You get a greater amount in one case than you do in the other.

Dr. Wedelstaedt: It was for this very point I labored to get up an interest in this subject, so as to get you out to help me. That is exactly what we wish.

Dr. Reid: He has got the heart, I have got the brains. (Laughter.)

Dr. E. B. Weeks: Dr. Wedelstaedt has told us to use large pluggers—as large as we can in each cavity. Can he tell us how we can approximate the correct blow?

Dr. Wedelstaedt: No, sir; I cannot answer that question. It depends upon the amalgam you use; it depends on how you use it; it depends on the size of the pieces you use, and the size of the cavity you put it in.

Dr. French: How are we going to get a 2.11 ounce blow?

Dr. Wedelstaedt: If that man ever finishes making my dynamometer I can tell you. I hope he will get through before we have another State meeting, and then we will come up here and find out all about it. When you are down to St. Paul come in and see me. We cannot tell anything about it now; there are so many dynamometers to-day we cannot tell anything about it until I get one finished.

Pres. James: It is getting rather late, but if there is any-one else who wishes to speak on this subject we will give him a chance. If not, I will ask Dr. Stearns to close.

Dr. Stearns: I will close this discussion by saying a few words only. In the discussion of this paper there was one thing brought out which I had been in hopes would be brought out. We have got something now, something that we did not know before. I was in hopes somebody would say something on another point I
had been very much interested in, and that is change of volume. I was in hopes I could get somebody to dig into that subject and give us a few pointers. I have been racking my brains for several years on that point.

Dr. Wedelstaedt: I think there is no change except in copper amalgam; that is the only one. You know these experiments were only started in 1893.

Dr. Stearns: Each one of these experiments, as the doctor reminded us, having made about 8,000 fillings and then having to throw them away, each one of these experiments depends upon something else; they are interdependent. We cannot reach any definite conclusion, or anything of any great value, until we have got all of these things, and determined the next step required, some system by which we can actually determine the change of volume. It seems to me this is the step we will have to study next. I hope some of the worthy geniuses here will construct an apparatus that will be more successful than anything we have been able to construct yet. We have been able to get something that will do approximately but not exactly.

Wednesday Afternoon.

The meeting was called to order at two o'clock by President James, the roll was called by Secretary Cruttenden followed by the reading of a paper by Dr. F. C. Todd on "Some Relations of the Oral Cavity to the Eye, Ear, Nose and Throat."

DISCUSSION.

Pres. James: The paper is now open for discussion. I hope we will be prompt in the discussion of the papers this afternoon, as we are liable to have a long drawn out session, there being considerable business to transact before we close.

Dr. Brown: Mr. President: This matter of adenoid vegetation and irregularity of teeth has occupied my mind a good deal. During the last two years I have been experimenting with it in this way. I have believed that possibly where operation for adenoids is not indicated, instead of waiting what would be deemed a proper time, to spread the arch, having in view the reduction of the irregularity of the teeth in that way. Until the permanent teeth have erupted I have been putting in a little appliance to widen the arch in younger children, because I believed I could give them an opportunity to develop and widen the breathing space, and I am
satisfied if we can do that the air will take care of the vegetation to a considerable extent. That is my theory; I have been at it only two years, and I have no results to base my theory on. I would like to ask Dr. Todd what he thinks about it.

Dr. Todd: I do not think the vegetation would disappear of itself up to a certain age. It seems to have a tendency to disappear along the age of puberty, and it is probable that in very few cases it entirely disappears, but we find it present in adults in catarrhal trouble, nasal and pharyngeal catarrh. However, I think the widening of the arch would very probably prevent the flexion of the nasal septum.

Dr. Brown: I believe the disappearance of those adenoid vegetations is due to the general increase in size of the parts, and the greater demands upon the breathing apparatus, and better circulation, and I think, instead of waiting, if we widen those arches a little as they are growing, without regard to the teeth which will come later, we will not only help the condition of the teeth, but also cause the vegetation to disappear.

Pres. James: Are there any others who would like to discuss this paper? I am sure Dr. Todd would be glad to answer any questions you might wish to ask.

Dr. Reid: I see we have Dr. Harlan, of Chicago, with us. I move that the courtesies of the floor be extended to him; we would like to hear from him.

Pres. James: It is common custom to extend the privileges of the floor to visiting members of other societies, and we would be very glad to hear from Dr. Harlan at this time.

Dr. Harlan: Mr. President: I did not hear very much of the paper, and I do not know exactly the drift of it; I only heard that part relating to adenoid vegetation, but I think the idea suggested by Dr. Brown, with reference to the expansion of the arch is a good one. I think the expansion of the arch would have a slight tendency to give the child a better opportunity to take the air, but how that would affect the enlargement of the passage in the nose I do not see, because we want the air to go through the nose in order to warm it and moisten it, still it goes through the mouth and has a tendency to further contract the cavity.

The gentleman said something about rupturing the mental
artery in extracting a tooth. That is a rare occurrence, because it is usually posterior to the cuspid teeth.

Every one will remember the discussion that took place some years ago with reference to pulpless teeth causing earache, and it ended, as those discussions usually do, in the preponderance of evidence and numbers as against the theory that pulpless teeth necessarily were a factor in producing earache, because with the then standard of antiseptic surgery, aided by what we now know, it makes it an almost absolute certainty that the pulpless teeth may be rendered sterile and the roots of the teeth filled so well, so that there is comparatively little earache or pain in the ear due to pulpless teeth. It is never the roots of the pulpless teeth; it is the deposition of foreign bodies at or near the apices of the roots of the teeth that causes this disturbance, and we are able to detect them much better than formerly, so that has gradually disappeared.

The other parts of the paper I did not hear, so I will not take up any more of your time.

Dr. T. B. Hartzell: Dr. Todd is an old friend of mine, and we always have differed somewhat in regard to the education in medicine of dentists, and I was very much pleased to hear him offer such excellent advice in regard to the medical education of dentists. He laid the premise that it was not necessary for dentists to be medical men, and then he made one of the neatest little arguments I have had the pleasure of listening to for a long time, why a dentist should also be a medical man. It is undoubtedly true that many, a great many of the most painful disorders about the mouth and those originating in the oral cavities have come from some condition of the teeth, and he brought out and pointed out the fact for our notice that it is an indication if we do not have the medical knowledge to recognize those conditions we will be distinctly unable to benefit our patients. Now patients of that kind are a great deal more numerous than we imagine. They come in cycles. Sometimes we have none for a period of months, and then again for a period they come quite frequently. A great number of those cases are difficult to diagnose, cases in which the patient is suffering pain, and you do not know whether the pain is due to one thing or another. You cannot make the diagnosis if you do not have the knowledge necessary to recognize those conditions. I will just mention a single case that will serve as an illustration.
in this matter, which shows that every dentist should be as much of a medical man as possible, and be able to diagnose those conditions of which Dr. Todd speaks. This one case I wish to bring to your notice was that of a woman about fifty years old. Her teeth had been extracted several years ago, and she was wearing upper and lower plates; but about her forty-second year a wisdom tooth erupted, a right inferior wisdom tooth. The dentist who made the plate, instead of extracting the tooth, filed out enough so it would accommodate the tooth, and in the course of time the tooth became decayed, and the nerve exposed, the pulp became devitalized. That patient suffered from neuralgia of the heart for five years; the pain was the most difficult to alleviate, and opiates had to be resorted to to give relief. The patient was subject to severe pain in the tooth, but no connection was recognized between it and the neuralgia of the heart. The patient went to the dentist and had the tooth removed, but she obtained no relief. Finally she came under my notice, and by the aid of a probe a piece of root was located. When the root was removed it laid bare the inferior maxillary nerve; I could lift it right up. Every time that tooth became inflamed it pinched that nerve and caused pain; that pain was transmitted or reflected to the pneumogastric nerve, and the result was neuralgia of the heart. The cavity gradually filled and is now almost full. There has not been a single symptom of neuralgia of the heart since. If the man to whom that case first came five years ago had been able to diagnose it correctly, five years of suffering would have been saved to that patient. Dr. Todd’s paper bears right on that position, that we all ought to know as much as we can of those cases; get as much medical knowledge as we can, and surgical too. I admire the paper very much.

Dr. Reid: I would like to ask Dr. Hartzell a question. In diagnosing that case, was it a physician who made the diagnosis?

Dr. Hartzell: Yes, sir.

Dr. Reid: Then I think it is very necessary for a physician to have a dental education. (Laughter and applause.)

Dr. Hartzell: The diagnosis was really made by two men—the attending physician and the dentist. The physician gave the chloroform, to remove the tooth, and I presume, the diagnosis rested with the physician, although they both agreed that that was the trouble.
Dr. French: I have a little illustration that will bear on this question. I think one of the great essentials—the great essential in the practice of dentistry or medicine is to be a thorough diagnostician. I may know all about the effects of medicines, but I may not know anything about their application in certain diseases. Unless I know what is the trouble, I hardly can treat the disease properly. Now, I will give you an illustration that is somewhat similar to that of Dr. Hartzell’s. I remember, a few years ago, when there was a craze for local anaesthetics, I got hold of a local anaesthetic and used it on a patient, and I was successful. The lady went home delighted, and I was delighted. About a week or ten days later, a neighbor came into my office in a great hurry and said: “Do you know that Mrs. So-and-so is in a very bad condition?” “No;” I said, “I had heard nothing about it.” He said: “She was at your office, a few days ago.” I said: “I remember the circumstances, and I was very happy over the results.” He told me her face was in a terrible condition; she could not swallow anything, and her family were really alarmed about it. I asked: “Who is her family physician?” “Dr. So-and-so,” he replied. “Why,” I said, “he is my family physician. What does he say about it?” “He says it is the result of your extracting those teeth,” he said. I did not let the grass grow under my feet, to get hold of that patient. I wanted to know where I had made the mistake. I hastened over there, as quickly as I could, because I was very anxious to see the patient. I found her in a fever, much excited and very much alarmed. I took along my odometer to open the jaws; I thought I would make a diagnosis and find whether it was the result of my operation, or not. I got my mouth mirror and looked at the place where I had extracted the teeth, and found a healthy granulation. I said: “French, you are all right.” Then I pressed my questions, found out what I wanted, and went back without giving any information. I got hold of my family physician, and I said to him: “Doctor, you are mistaken about the trouble with Mrs. So-and-so. It is a well developed case of quinsy; you go over there and give her the proper treatment, and your patient will be all right.” She came out all right, and I have used that local anaesthetic, without any bad results, five or six times since.

Dr. Brown: I think Dr. Harlan misunderstood the question in regard to my theory, so far as widening the breathing
space is concerned. My own idea is, that the widening of the arch in those young children will reduce the tendency of flexion in the nasal septum, which is generally marked in those cases, and I believe it will give the turbinated bones a little more room. I believe I can demonstrate it.

So far as Dr. Hartzell is concerned, I do not like to throw any cold water; but there is this thing to be remembered in all nervous conditions, that people of an epileptic tendency are apt to be neurotic. In cases of epileptics almost after any operation, there is, after a time, a cessation of the attacks; but, by and by, they come back again; so, those who are accustomed to treat such patients, do not lay any stress at all on the fact that such a patient ceased to have any attacks, because they might or might not return. Dr. Hartzell may have had a case of reflex pain, and it may have been neurotic to that extent. There is a very strong feeling, in the medical profession, that reflex pain is a myth; of course, we can hardly be expected to agree with that, because we have such plain demonstrations; but, at the same time, the argument is many times on the other side, and we should not be too premature in announcing a reflex pain and claim to have cured it.

Dr. T. B. Hartzell: I would like to state for Dr. Brown's benefit that I know the history of this family for four generations, and there is not an epileptic in it. There was not the slightest possibility of it.

Pres. James: Are there any more who wish to take part in the discussion of this paper? If not, we will hear from Dr. Todd in closing.

Dr. Todd: Just a word in explanation to Dr. Harlan in regard to the point he and Dr. Brown were discussing in relation to the reflected septum and the consequent narrowing of the nasal cavity. That is a point that has been thoroughly proven, and I think was first taken up by Dr. Delavan, of New York. You can see how it can take place when you consider how the superior maxillary arches press upon the septum and bend it to one side or the other; sometimes it is so completely flexed that there is partial or total occlusion of one nares. Then we know that those reflected septums produce hypertrophy of the bones, and for that reason it seems to me that Dr. Brown's point is a good one, that widening of the arch while the bones are so pliable and thus reducing the depth of the arch.
In regard to the point that Dr. Reid and Dr. Hartzell were talking about, I agree with them both, and I want to make that point emphatic, that some knowledge of dentistry is very valuable in medicine, and a knowledge of medicine is very valuable in dentistry. There is a great deal of knowledge gained in dentistry which is of no value whatever in the practice of medicine, as there is a great deal of knowledge gained in obtaining a degree in medicine which is of no value in dentistry. We are apt to overlook a good many points, and for that reason it is profitable for us to have some knowledge of both branches.

I thank you for your attention and the interesting discussion.

Alumni Clinic—Chicago College of Dental Surgery, January 19, 1898. (Reported by H. J. Goslee, D. D. S.)

The annual clinic of the Alumni Association of the Chicago College of Dental Surgery was held at the college, on January 19, 1898. It was a most successful clinic in every way, the attendance was large with quite a numerous representation from out of town members. This is especially encouraging, and we hope they will come again.

In the evening a banquet was held at the Leland hotel, in which all who participated enjoyed very much.

The following is a brief synopsis of the clinics:

Dr. C. S. Case. Irregularity complicated with cleft of hard and soft palates.

This subject was on exhibition at the last clinic and was an interesting case of what can be accomplished under proper direction.

It certainly illustrated Dr. Case's ability to move a tooth bodily, root and all, for in this case the lateral and central incisors were moved fully their own widths to bring them into the median line.

The most wonderful result, however, was achieved in the improvement of the patient's speech. By means of a soft rubber obturator attached to the gold plate the patient was enabled to enunciate the most difficult words distinctly, in fact more distinctly than a great many who had the pleasure of hearing her.

Dr. Case drew particular attention to her pronunciation of the
sibilants, which was perfect. Dr. Case certainly deserves great credit for the work he is doing in this line.

Dr. Aug. De Trey. An exhibition of "solila" gold and instruments.

Dr. De Trey showed some very beautiful specimens of what can be done with this gold which is essentially a crystal gold. It differs, however, from ordinary crystal gold, in that it may be bent many times without breaking—does not crumble.

It seems to possess the properties of cohesiveness and malleability to a remarkable degree and makes a very hard and dense filling. It also makes a good combination with tin for deep cervical cavities.

Dr. De Trey also showed some instruments particularly adapted for use with this gold. They are very large with ball points resembling very much the Royce plugger with a continuously rounded serrated point.

With this gold and these instruments Dr. De Trey claims a great saving of time can be made and a perfect result accomplished.

Dr. C. P. Pruyn. Approximal cavity beneath the gum.

Dr. Pruyn illustrated a method of placing the rubber dam in extreme cases of approximal decay. The cavity operated upon was a deep mesio-occlusal in the inferior first molar; cocaine was applied locally and the hypertrophied gum between removed freely. An orange wood wedge was then inserted between the two teeth, almost if not quite to the process. The rubber dam was then applied, one hole in the rubber passing over both the molar and bicuspid beneath the wedge.

Absolute dryness was secured and the cervical margins thoroughly exposed.

Dr. E. Ma Whinney. Root filling.

Dr. C. T. Gramm. Soft gold, with burnishers and right angle mallet.

Dr. Gramm filled a lower first molar, occlusal cavity, using hand pressure and a right angle mallet of his own invention, which was attached to the hand piece of the engine. The result was a very rapidly inserted beautiful filling.

Dr. L. E. Custer. Electric oven.

Dr. Custer exhibited his improved electric oven in which he baked several crowns. This oven is larger than the previous ones and is so constructed that it does not burn out.
Dr. C. N. Johnson. Models of prepared cavities.

Dr. Louis Ottofy. Transplantation.

The case is that of a girl sixteen years of age, with the left superior incisor almost completely destroyed—nothing remaining but a few splinters of the root. The other anterior teeth were in good condition. The operation of transplantation was especially indicated in this case. The root was removed January 15, and the patient dismissed without further treatment. Three days were purposely allowed to intervene in order to enable the natural process of repair to commence, that the new tooth should be placed in position under favorable circumstances.

A suitable root was then fitted into the socket, a Logan crown selected, the proper articulation secured and the crown mounted with cement on the root. The apical foramen was filled with gold foil. The joint between the crown and root was cut out and undercut and filled with gold which, when polished, made a perfect joint.

The tooth was then placed in position, an impression taken of the transplanted tooth and each of the immediate neighbors, dies made and a cap of 24 k. gold, gauge 33 or 34 struck up. The tooth was then removed, thoroughly cleansed with castile soap and water and placed for a few hours in any suitable antiseptic solution—in this instance euthymol.

The socket was then washed out with carbolized water. The tooth was then pressed into position, cap cemented on, putting the cement into the parts fitting on the adjoining teeth only.

The patient was advised to wash the parts with a camel’s hair brush and an antiseptic.

Usually the cap is left on about two weeks, at the end of which time attachment has taken place and at the end of two or three months the tooth is firm in the socket.

Dr. J. W. Slonaker. Extraction under nitrous oxid anaesthesia.

Dr. Slonaker gave an interesting clinic in extraction with the patient under the influence of nitrous oxid. He extracted fourteen teeth under one administration.

Dr. C. N. Thompson. Device for preventing deformity after excision of one-half of the inferior maxilla.

This was one of the most wonderful exhibits at the clinic. The patient, a lady thirty-four years of age, on account of a tumor
had had the right half of the inferior maxilla removed. Dr. Thompson having been called in by her physician and having previously taken an impression of the parts, from which he constructed a rubber interdental splint to be worn until the wound healed. Three weeks later the wound being healed, Dr. Thompson applied the temporary appliance to enable the patient to use the fragment of the jaw. Bands were placed on the superior cuspids and right superior molar for anchorage. These were united by a bar which extended from cuspid to cuspid and from right cuspid to right molar. Upon this bar was fitted a rolling and sliding hinge. From this a bar extended to the inferior left and remaining cuspid. Upon this a band had been placed and a tube attached with a ball and socket joint. The tube was made to slide over the bar extending from the superior maxilla. With this attachment the jaw could be moved up and out, down and forward, the opposing muscles were prevented from pulling the fragment in, and the teeth were accurately occluded when the jaw was closed.

This appliance was worn six weeks when it was found that the muscles had become sufficiently trained to work without it.

The deficiency was then supplied by a partial lower plate which was firmly attached to the remaining teeth of the lower fragment and so made as to fill out the face.

The patient uses the jaw quite naturally and except for the line left by the incision there is no deformity.


In constructing a cap for a root upon which he intends to mount a porcelain crown, Dr. Ames makes it of very thin platinum thereby being enabled to get a more accurate fit. This cap is afterward strengthened by a solder composed of platinum and gold.

For soldering the parts of the cap together he uses a solder composed of forty parts of the platinum and sixty parts gold. For strengthening the cap he uses a solder composed of twenty parts platinum and eighty parts gold, which is flowed on the sides and floor of the cap until the desired stiffness is attained. Both these solders will stand the heat of fusing Close body.

Dr. Garrett Newkirk. Management of deciduous teeth.

Dr. Newkirk filled a cavity in the inferior deciduous first molar, using a combination filling of cement and amalgam, lining
the cavity with cement and finishing the main body of the filling with amalgam.

The doctor displayed great tact in handling his young patient.

Dr. W. T. REEVES. Porcelain inlay.

The cavity, a mesial approximal in the left superior central incisor, was prepared without undercuts, with, as near as possible, parallel walls. No. 60 platinum foil, fully annealed, was then burnished carefully into the cavity, getting as accurate an impression as possible. This served as a matrix and was then partially filled with Close body and was ready for the first baking. Up to this time no particular pains were taken with the margins. After the first baking, the foil with its contained porcelain was reinserted into the cavity and the excess of foil carefully burnished over the margins.

It was then carefully removed, filled a little more than full to allow for shrinkage and submitted to the final baking after which the platinum was stripped off. The cavity was then given a slight undercut and the inlay cemented into place. The result was very beautiful and artistic.

Dr. D. C. BACON. Filling, using Watt's crystal gold.

Dr. Bacon inserted a disto-approximal filling in the left superior lateral incisor using Watt's crystal gold, with hand pressure and the pneumatic mallet. A perfect filling very rapidly inserted was the result.

Dr. G. T. CARPENTER. Restoration of gum tissue.

When asked what can be done for receded gum tissue when caused by pyorrhoea or other causes most of the profession would answer practically nothing. Dr. Carpenter claims a great deal can be done. All dentists have, at one time or another, noticed large approximal cavities completely filled with gum tissue. Other irritative causes will sometimes cause an excessive development.

These conditions caused Dr. Carpenter to experiment along this line, with the result that he has concluded that irritation properly administered would cause the gum to be reproduced.

In the models shown Dr. Carpenter used a gold band around the tooth, the lower edge of which was roughened. This created sufficient irritation to cause new granulations.

The whole was protected by a vulcanite hood which was held in position by clasps passing between the teeth. With proper
treatment and the coöperation of the patient Dr. Carpenter is confident a great good may be thus accomplished.

Dr. E. J. Perry. Cataphoresis.

Dr. Perry illustrated the use of cataphoresis in obtunding sensitive dentine. The cavity was cervical on the inferior right second bicuspid and was extremely sensitive. Dr. Perry used the Browning apparatus and induced complete anaesthesia in nine minutes. He used a saturated solution of cocaine.

Dr. F. E. Roach. Bridge work.

Dr. Roach exhibited some specimens of bridge work with removable facings, which were quite a novelty in their simplicity and adaptability. The doctor exhibited a beautiful anterior bridge in the mouth which illustrated, in the central incisor, the use of a gum tooth to fill in excessive absorption.

The facings used very much resembled straight pin rubber teeth, the heads of the pins dovetailing into slits in the hollow backing and being permanently fastened by cement or gutta-percha and easily replaced if broken.

Dr. H. R. Sackett. Regulating by ligatures.

Dr. Sackett illustrated by several cases what might be done in this work by knowing how to apply ligatures of seagrass line and silk. His results were very gratifying.

Dr. J. S. Bridges. Open faced crowns.

This was a radical departure from the ordinary open faced crown as a support for a bridge. In this method the lingual of the tooth, to be operated upon, was cut quite freely away, to give a flat base for the crown, and an impression of it taken in gutta-percha—the tray being made of a thin strip of metal. The tray with its contained gutta-percha is forced high up on the tooth—up under the free margin of the gum. When the impression has sufficiently hardened it is then removed and invested in plaster, tray and all, and a Mellote's metal model run up. To this model heavy pure gold foil is burnished to an accurate adaption when it is carefully removed and invested in investment material. To the back of the foil is then sweated clasp metal to the desired stiffness.

By this procedure it is claimed accuracy of fit, great strength, saving of tooth structure and no exposure of gold are attained.

Dr. C. J. Sowle. Accurate method of fitting Logan crowns.

The tooth to be crowned is ground below the level of the gum all around, convex labio-lingually. The canal enlarged to accom-
modate a Logan pin. A temporary pin, long enough to reach to occlusal edges of the adjoining teeth, is placed in the canal and a plaster impression taken which withdraws with it the temporary pin. A Mellotte’s metal model is run into this impression. This gives an accurate model of the end of the root with the temporary pin in correct position. The pin is then withdrawn which give direction and location of the root canal.

To this metal model a Logan crown can be accurately and quickly ground up.

Dr. T. W. Brophy. Oral surgery.

This clinic was conducted by Dr. Brophy in his usual thorough and able manner and was very instructive to those who had the pleasure of witnessing it. There were a variety of cases but the principal operation was the removal of a large malignant tumor of the antrum. This necessitated the excision of almost all of the left half of the superior maxillary bone. At the time of the operation Dr. Brophy had not determined the character of the tumor but thought it was a sarcoma.

As the clinics are a weekly occurrence a great opportunity is presented the students to become proficient in oral surgery, and they should consider themselves fortunate in having so efficient a teacher as Dr. Brophy.

Dr. R. C. Brophy. Cast aluminum.

Dr. Brophy has made this work a study for a number of years, with the result that he has evolved an entirely new method of casting aluminum dentures, which is much more simple than the ordinary method and is positive and reliable.

In giving his clinic Dr. Brophy used his utility furnace, his own invention, which works equally well with kerosene or gasoline — and may be used for porcelain work and soldering as well as for casting aluminum.

Such a furnace would be useful to dentists not having the advantages of gas and electricity.

Dr. H. J. Goslee. Gold plating.

Dr. Goslee exhibited his electroplating apparatus which is run by a single cell storage battery instead of the ordinary primary battery, and which affords quicker, better, more effective and less troublesome results at an expense of but little more than the old style, which is so trifling that all dentists could easily do their own plating. Many specimens of regulating appliances, crowns, bridges
and porcelain work where gold plating is advocated and desirable were shown.

Dr. E. L. York  Bacteriological exhibit, and exhibit of photomicrographs.

Dr. York showed a very complete exhibit of photomicrographs of normal histology and of pathology.

These were mounted for use in the stereopticon to be used in connection with the lectures in the college.

He also exhibited some prepared stained sections of artificial caries showing the structural alteration due to the presence of microorganisms.

These with his cover glass preparations of organisms found in putrescent pulp canals, made up a clinic well worthy of mention.

**PROGRAMME OF THE ISAAC KNAPP DENTAL COTERIE, OF FORT WAYNE, INDIANA.**

October 7—Office of Dr. Johnson. Paper—Local Anaesthesia, H. A. Duemling, M. D.  Clinic—Crystalloid Gold Filling, Dr. Johnson.

November 4—Office of Dr. H. C. Sites. Paper—A Perfect Filling for the Posterior Teeth, Dr. Sites. Clinic—Painless Extraction of Teeth by Injection without the use of Cocaine, Dr. Porter.

December 9—Office of Dr. Viberg. Paper—Amalgam in Combination with Cement, Dr. Viberg. Discussion, Dr. Hartman.


January 20—Residence of Dr. Shryock. Special meeting. At this meeting papers are expected from honorary members.

February 10—Residence of Dr. Waugh. Paper—Prosthetic Dentistry, Dr. Waugh. Discussion, Dr. Mungen.

March 10—Residence of Dr. Mungen. Paper—The Relationship between Dentists and their Patients, Dr. Mungen. Discussion, Dr. Coyle. Paper, Dr. French.


May 12—Office of Dr. Mason. Paper—Our Opportunities, Dr. Mason. Discussion, Dr. McCurdy.

June 9—Residence of Dr. Hartman. Paper—Inflammation of Tooth and Bone Tissues, Dr. Hartman. Discussion, Dr. Mason.

July 14—Residence of Dr. McCurdy. Paper—Dental Associations and Report from the Tri-State Dental Meeting, Dr. McCurdy. Discussion, Dr. H. C. Sites.

October 13—Office of Dr. E. F. Sites. Paper—Cure of Acute and Chronic Alveolar Abscess, Dr. E. F. Sites. Discussion, Dr. Viberg.

November 10—Office of Dr. Rabus. Paper—Amalgam, Dr. Rabus. Discussion, Dr. Waugh.

December 8—Office of Dr. Coyle. Clinic, Dr. Coyle. Paper, Dr. Porter.
The Odontographic Society of Chicago.

The Odontographic Society of Chicago has completed its programme for the tenth anniversary clinic, to be given February 21 and 22. In like manner, as the Chicago Dental Society's Clinic last year, the work is divided between the two large dental colleges of Chicago. The programme consists of seventy-four clinics, and four papers and an exceedingly interesting and instructive time is confidently anticipated. Several entirely new things will be shown. The Palmer House has been selected for headquarters and the banquet on the closing day (February 22) will be given there.

We urge the members of the profession generally to attend, as arrangements have been made to accommodate a large number. Cancel your dates and be with us.

Hydronaphthol as a Mouth Wash.

In looking over the list of useful drugs, the above seems to fill the bill for a constant chief ingredient of a local cleanser.

R. Hydronaphthol .............................................. 3i
Oil of cassia .................................................. min. x
Alcohol ......................................................... 5iiss
Rose water ......................................................... ad. qs. 3xvi

M. Sig. One teaspoonful to half tumbler of water.

This will be found quite effective as an oral cleanser. It should be used in all cases of inflammation of the gums after the removal of calculus, and it may be injected into suppurating pockets.
whether around the roots of the teeth or not. We prefer it diluted with warm water about 103° F. It is useful to allay the pains after extraction of teeth. It may be injected into the antrum very much diluted, about one part to 200 of warm water. It is stimulating and disinfecting. The wearers of bridges and plates will find this extremely useful as a cleanser and as a soother of an inflamed mucous membrane.

Denver, Colorado.

For the first time in our professional life we had the pleasure of visiting the above city during the month of January. We found it a beautiful city of a hundred and fifty thousand inhabitants, with a dental population of one hundred and thirty. There are two dental colleges located in the city; both are well equipped and are doing good work with, however, only a limited number of students. The schools are well located and the rooms are light and cheerful.

The men of Denver are all up-to-date dentists, with all the modern improvements in their offices and we found them busy, hard working, useful citizens.

The climate and the atmosphere are both conducive to health and good work.

They are expecting to entertain many dentists from Colorado and adjacent States during the meeting of the American Medical Association to be held about the 7th of June. Any one in search of health or pleasure will find a warm greeting from our confrères in Denver, and also a good meeting for professional intercourse in June.

DOMESTIC CORRESPONDENCE.

Letter from New York.

City of New York,
Borough of Manhattan, Feb. 7, 1898.

To the Editor of Dental Review:

Dear Doctor:—The past month has been so replete with dental happenings that unless one is an enthusiast or zealous enough to be actuated by predominating professional sensibilities, he has been constrained and content to absorb some of the dental pabulum offered and neglect the remainder.
If it were all of the character as rendered by the Second District Dental Society at the meeting which took place in Borough of Brooklyn, the evening of January 10, (upon which occasion the First District Society of this State and the Central Dental Association of Northern New Jersey, visited and were the guests of the first named society)—if all essayists were as tedious as was Dr. W. A. Price, of Cleveland, Ohio—dental gatherings would lose their charm.

Not that Dr. Price's subject, which was a treatise upon the "Foundation Principle of Dental Cataphoresis" was disinteresting in its entirety, but the one hour and fifty minutes that were consumed in uttering the treatise, aside from the almost like time given to discussing the subject was too much. His mathematics and equations and decimals had a confusing effect even to those who were required to follow all closely for the purpose of responding by discussion, and too, the hundred and so listeners.

The most impressive deductions from his paper was the fact asserted that cataphoresis developed in its energy, heat, which subsequently changed to electrical energy. That has been the opinion of the writer for some time, since his personal experience with the current.

Let me tell you it is vastly different which end of the instrument (cataphoric or any other) you are at. It seemed quite certain in my case that the pulp must succumb, but fortunately I can produce evidence of its vitality. It has produced skepticism as to the wonderful claims vouched for by some. When it becomes necessary for another dental operation, and should the gentleman operator ask whether he should make the operation more comfortable, I will be inclined to say as did the gentleman from the suburbs, when asked by the dentist who was about to extract a tooth, "whether he would have gas," "Nope," said Si, "We don't know nuthin' about gas up our way, you'd better give me kerosene."

In all Dr. Price's "90,000 ohms," "ampereage," "milliamperage" and "pain limit" together with a specimen of wood which weighed .0038 part of a grain (which was attested to in Germany. How we do like to roam abroad for "exact science.") was obscure.

When the doctor got almost through he startled most all by remarking that he had hoped to make some definite conclusions,
and finally shattered his whole beautiful edifice which he had consumed two full hours in constructing for us by becoming confidential.

He called it an "example," but it demonstrated pure carelessness which he said had occurred several times to him.

It was in the application of the current in cataphoresis to large buccal cavities in molars where the pulps were apparently exposed, only to find that he had been playing on the skin of a red apple.

Dr. Morton, of New York, one of our cataphoric celebrities, said that the current passes directly through the long axis of the tooth and laterally through the tubuli. That the heat element was very important. He advanced problems which he made the society a present of:

If it takes a given length of time to obtund by one method, why has not guaia-cocaine good qualities?

What is the force which drives the drugs? Molecular, or is it electrical or decomposing?

Dr. Gillette, of Newport, R. I., admitted being confused by the decimal equations, etc., but spoke very well of the practical side of the question.

Dr. Rhein, of New York, was too contradictory to follow intelligently, but attempted to convey the idea that cataphoresis softened the structure of the tooth so that excavating became easier.

Dr. Meeker, of New Jersey, had had a good time listening, but was not prepared to discuss.

Dr. Ottolengui, of New York, said that he was not a medical electrician, nor a cataphorecian, but attempted to reach the truth from a dento-legal standpoint. Somehow he became inextricably cornered, and admitted it, and said when he found that the case he had better sit down.

Dr. Price concluded the remarks by defending himself capably, but again kept the majority too long from the excellent collation which awaited down stairs, by resorting to diagrams and discussion of the contents of the dentinal tubuli. He was quite sure there was no softening of the dentine as advanced by one speaker, but thought there may be something in the possible "movement of septics" ahead of the current.
Of course the doctor was accorded a unanimous vote of thanks.

The following evening, January 11, at the Academy of Medicine, in the borough of Manhattan, a meeting was called by the First District Dental Society, for the purpose of discussing business. "A question on irregular proceedings." It is sufficient to state here for the benefit of our sister societies that it is well to introduce any and all business in its regular order, as prescribed by the by-laws of respective societies, otherwise one may be accredited with taking undue advantage of some member or members who may not be present early in the proceedings. The outcome of such irregular procedure for the First District Society is that they are without a treasurer, the gentleman who performed that function feeling it incumbent to resign.

The New York Institute of Stomatology held its regular meeting at the residence of Dr. J. Morgan Howe, in Manhattan Borough, at which the eminent Charles Steadman Bull, M. D., specialist on diseases of the eye, read a paper on "The Connection of the Diseases of the Eye and Diseases of the Teeth," which was pronounced by those who spoke to the paper to be one of the most valuable contributions to our dental literature.

We never heard such an array of ocular and dental disturbances, most of it reflex, one dependent upon the other.

To those who cherish dental professionalism as the paramount profession, it is always, and this was a special occasion for, rejoicing to record the recognition of the older profession, of our worth.

Dr. Bull's paper demonstrated what can be accomplished by research, both original and through reference to literature published relative to his subject.

Our dental literature is overflowing with contributions, but what a vast number of writers simply reiterate what has been published ages ago. Will the time ever arrive when those who can will avail themselves of the dental libraries at their disposal before entering upon, what might be, great work?

The doctor cited cases of total destruction of the eyes due to pathological dental conditions, due, as a rule, to long continued neglect of the teeth. Glaucoma was occasioned by dental disease; in fact, he has established the rule to look to the dental organs almost the first thing for diagnostic indications of ocular disturbance, and to refer to the dentist.
A few days subsequent to this meeting of the Institute of Stomatology a great event in its history occurred, its second annual dinner, given at Delmonico's new Fifth Avenue establishment.

The institute was honored by the presence among its guests of such eminents as the Hon. Seth Low, of Columbia College, Horace Deming, Prof. H. F. Osborn, of Columbia College paleontological fame, E. B. Merrill, Dr. George S. Allen, Dr. Horatio C. Merriam, Dr. Andrews, of Cambridge, Mass., Dr. Potter, Dr. J. Morgan Howe and many others.

The Rev. E. Wampole Warren opened with prayer, followed by Dr. E. A. Bogue, the newly elected chairman, with his opening address in which he dwelt upon the evolution of the dentist from the "bleeder," etc. The doctor demonstrated how pleasingly he can discourse when he is in the humor.

Of course, those "lay people" (for even those "honorable" gentlemen are only such) had to poke fun at the — damned stomatologist with his "weapons."

One remark made by Mr. Seth Low upon "Education" was a remembrance from Lord Dundreary. "No doubt but that you can pass the examinations, but can you sustain them?" What a world of significance in that remark, and how frequently we find it applicable.

Another reference was made to "Surgery," in which the practice during the preceding century regarded the wound as the great enemy, but when he learned that he was the enemy, then true surgery was born.

Mr. Deming called the Institute the Greek Letter Society. He adopted a devious course in speaking to his subject "Professional Atmosphere and Morals," and proved quite an elaborator. Many thought he was "lost" several times, but he made a "grand finâlê."

He likened trade unto war, with the elements of physical courage left out.

In business "money talks;" in the professions "noblesse oblige."

Dr. Andrews advocated for the specialist a thorough medical education first, then education in the specialty he may choose after.

The theme "Independent Journalism" was spoken to ably
by Dr. Potter, Dr. Geo. S. Allen, Mr. Merrill and Dr. J. M. Howe, and a tirade was raised against alloy formulae with holdings and nostrums. They prevent true professional growth.

This dinner was by far the most representative given since the famous Kingsley affair some years ago at the Hotel Brunswick.

Unfortunately all the speakers from Philadelphia, Drs. Jack, Pierce and Truman, through illness or otherwise failed to attend, and thus the occasion was deprived of some good thoughts on dental education and the newer—independent journalism.

At the meeting of the Central Dental Association of Northern New Jersey last month, Dr. J. Foster Flagg was to talk on "Napkining."

He was there in full force, but started out after Dr. Black's scalp. He pulled his hair (in a vocabular sense), and then he went after the American text-book of operative dentistry. Showed up how they had used those things he brought into and gave to the profession, and they did not give him credit for same.

He said they were "climbing above us" (that we may more distinctly see their rails). In "napkining" he had a manakin, whereby he demonstrated how easy it was to keep the mouth dry, "And suppose you can't keep it dry" said the doctor, "then fill it wet."

In talking of the components of amalgams, he said that gold was the most undetermined of any ingredient in an alloy. He was positive that "it does no good." The doctor showed up "Fellowship-alloy" of the Dental Protective Supply Co. as containing 5 per cent of copper, almost as much as those "fearful copper alloys" we dread to have return to us.

At the annual meeting of the Alumni Association of the New York College of Dentistry, it was shown that the faculty of their Alma Mater were in favor of organizing an association within the college, and designating that association as the Alumni Association of the New York College of Dentistry, so to forestall any possibility of having the faculty steal a march on them by incorporating the association they may organize and foster. The old association applied for a charter, which was issued last week, and now they are a full fledged incorporated body, with "the laugh on the faculty."

The papers publish to-day an account of one of our friends "missing."
Dr. J. C. Condict, of New Brunswick, N. J. He left his office on Saturday afternoon about two o'clock, leaving several patients awaiting his attention in his reception room, and has not been seen since.

He is about 30 years old, of light complexion, blue eyes, of medium build and weight, and has light side whiskers.

He wore a pair of steel gray trousers, black vest and mixed brown sack coat, dark blue overcoat, black derby hat with mourning band about it, russet shoes and overshoes.

To-day we received a shock in the notice of the death of Dr. Charles W. Meloney, one of our most respected practitioners.

Hardly more than three weeks ago he was one of the partakers at the board of the Institute of Stomatology, where some pleasant exchanges of courtesies took place between us. Pneumonia was the immediate cause, so it is stated. The doctor resided at Tarrytown with his family from which place he will be buried.

Most sincerely,

The "Boroughs."

FOREIGN CORRESPONDENCE.

Villa Ruheleben Davos-Platz, Switzerland, December 31, 1897.

Dear Doctor: No doubt you are familiar with the circular letter, copies of which were sent to all the deans of the dental colleges, to the president and to the officers of the N. A. D. F., dated December 28, 1897. This was an official communication from ten graduates of American colleges practicing in Basel. In spite of its character and wide distribution, and of the fact that it presented undeniable facts in proof of irregularity or irregularities in the admission of a Mr. Stauber, of Basel, to the University of Maryland, we have received no satisfactory explanation as to why he was admitted as a matriculated student thereof on or about October 28, 1896, after having just been refused by Dr. Foster, Dean of Baltimore Dental College, on account of his application having been made too late to allow of his matriculating or entering any class. At the time the Maryland University claim to have issued papers to Mr. Stauber, he was on board ship on his way to America.
The letter we received from Dr. Gorgas, in reply to our numerous inquiries, contained much prevarication and even direct contradictions. At first we could get no reply at all from him, although we prepaid a cable reply as to Stauber's position in the university. The whole matter of this candidate's admission was irregular, and we do not consider the action of the faculty in taking him a few weeks before his graduation from the Senior class and placing him in the Junior class was any satisfaction for having admitted him to the former at all. We demanded copies of the certificates which the young man presented, and which, in the judgment of the faculty, entitled him to enter the Senior class as a matriculated student as well as an explanation as to why his name appeared as such on the books of the university, while he was still on his way over; but these we have been unable to obtain. If we had not taken such energetic measures in protesting against his admission, he would have graduated early in the year, and thus added another disgrace to the American diploma cause.

Now, I would suggest, as a means of avoiding the too numerous cases of foreigners entering the advanced grades in American colleges, and thus lowering the status of the American diploma, which is proudly owned by so many American and foreign dentists in Europe, who have honestly earned the right to it, that at the next meeting of the N. A. D. F., some action be taken to appoint examiners in each foreign country. These should be known to the association as men capable of deciding fully and finally as to the qualifications of young men from their respective countries, who propose to take an American degree.

Each foreign applicant for admission to an American college, who applies by letter, should then be referred to the foreign examiner for his own country, whose duty it shall be to look into the matter of the candidate's certificates, qualifications generally, and to report to the association the result of his investigation in each individual case.

If after such precautions had been taken, any foreigner, who had been considered unfit by the foreign examiner of his country was found attending as a matriculated student any reputable college in affiliation with the N. A. D. F., the blame could be placed where it was due, and the college accepting such an applicant could be called upon to give reasons for its action. As it is, there is no means except through the catalogues of the dental colleges,
for foreign applicants to find out the requirements, and they therefore go shopping to the different colleges to see where they can get the most advantageous terms.

We were glad to see that the N. A. D. F., although it does not appear to have done anything in the Stauber affair, has taken action in appointing a committee for the purpose of inquiring into the requirements of European dental colleges and of examining the qualifications demanded by them for admission to the practice of dentistry, in order to compare same with American requirements. We hope your committee will act in unison with those in Europe interested in reforming the methods of admission to American dental colleges. Dr. E. Grosheintz is chairman of our committee, and will soon furnish to Dr. Barrett all the information we can give in this matter. I, as president of the A. D. A. of Switzerland, am very much interested and will give you all the desired information I possess.

If the requirements of the N. A. D. F. were lived up to such cases as that of Stauber could not occur, and each college should investigate the certificates of every applicant, through a fully qualified translator, to satisfy themselves as to their true worth. Such is the feeling among the educated Swiss dentists against the methods of American graduation, that well earned diplomas are not honored any more than those secured "in absentia" or with a few month's absence from Europe. As we wrote you in our letter from Basel, we find young men, holding American degrees, claiming the proud title of doctor, and the still prouder one of American dentist, who do not know ten words of English; and it is high time that this crying shame, as well as the equally disgraceful one of altogether bogus diplomas, in the traffic of which Philadelphia is the hotbed, was brought to the notice of the home colleges. Nearly all the irregular graduations have occurred in Philadelphia, and the most notorious vender of bogus diplomas came to grief not long ago after having sold his wares for $12 and upward, for a number of years.

The A. D. A. of Switzerland, which was formed this fall by fifty American graduates, being interested in this matter, can and will give you any particulars desired by your committee. Its members are much pleased to see that American colleges are raising the standard steadily; and we know that in matters of practical education they are far ahead of anything organized here so far. If the
MEMORANDA.

N. A. D. F. will but carry out the suggested reforms the American diploma will have a greater value in the eyes of Europeans than it ever had before.

Hoping that you will personally interest yourself in this matter, and do what you can to get a definite settlement of the Stauber affair, I am, Yours to command,

L. C. BRYAN.

MEMORANDA.

Ernest Hart, the editor of the British Medical Journal, is deceased. He had occupied that position since 1866.

Dr. Henry S. Chase of St. Louis, is dead. Dr. Chase was one of the oldest practitioners of dentistry in St. Louis.

The full programme of the Odontographic Clinic, February 21 and 22, is out. Look it over and come to the meeting.

It is now called the Pacific Medico-Dental Gazette of San Francisco. Dr. Frank L. Platt will continue to be the editor.

Dr. H. C. Wood is the new editor of American Medico-Surgical Bulletin. Dr. R. G. Eccles continues as associate editor.

The third annual banquet of the New Orleans Academy of Stomatology was given Wednesday evening, January 26, 1898, at five o'clock.

Dr. J. G. Van Marter, Jr., is located in Savannah, Georgia. Dr. Van Marter, Sr., formerly of Rome, Italy, is now in Tacoma, Washington.

If you are desirous of going somewhere this winter, you can go to St. Augustine, Florida, or come to Chicago. You will be sure to be entertained well in either place.

Dr. W. B. Van Vleck, of Hudson, New York, died recently in that city. He was the father of Dr. Chas. Van Vleck and was during his whole life a practitioner in Hudson.

Colorado Springs, the Eden of invalids, has more than twenty dentists. While there a short time since we had the pleasure of greeting Drs. Sinton, Baker and Chamberlin.

Dr. B. A. McGee, of Denver, has suggested the use of 50 per cent sulphuric acid and full strength chromic acid as a mummifier of pulps. The specimens he showed us seemed to be perfect after eight months.

The B. J. D. S., or the Blue Journal as it is sometimes called, has one or two sneers at the late Dr. Evans which true or false are not in good taste, nor do we believe that the profession in Great Britain will endorse them.

The Odontological Society of Chicago, meets at 6.30 P. M., the third Tuesday of every month at the Victoria Hotel.

J. G. REID, President.
E. R. CARPENTER, Secretary.
DENVER DENTAL SOCIETY.

President, Dr. Wm. Smedley; Vice President, E. R. Warner; Secretary, L. S. Gilbert; Treasurer, J. S. Jackson—officers Denver Dental Association. Meets second Thursday of each month. Thirty-five members already with more to join.

The Indiana Dental Journal made its bow January 1, 1898. Dr. Geo. E. Hunt is the editor, and it goes without saying that he will make it a success. (Wonder if he was the Geo. E. Hunt who got married in Chicago the other day). If so, we extend double congratulations. There is a field for more journals in the United States and the two latest the American Dental Weekly and this last venture are both very newsy and interesting.

The other day we were in Omaha. Omaha has a flourishing dental school and many wide awake dentists. During our brief stay we called upon Drs. Nason and Nason, H. W. Shriver, W. N. Dorward, A. P. Johnston, J. C. Whinnery, Dr. Latey, F. N. Conner, C. E. Smith, W. H. Sherraden and H. W. Allwine. If we had had more time all of them would have seen the editorial visage. Omaha is the next meeting place of the National Dental Association of the United States.

ACUTE CORYZA.

The following formula is recommended in the Allg. med. cent. Ztg., to be used as a douche in acute coryza.

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<td>Ichthyol</td>
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<tr>
<td>Ether</td>
<td>1.0 (20 m.)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>1.0 (20 m.)</td>
</tr>
<tr>
<td>Water</td>
<td>150.0 (5 fl. oz.)</td>
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THE SOUTHERN DENTAL ASSOCIATION—BRANCH OF THE NATIONAL DENTAL ASSOCIATION OF AMERICA.

First annual session to be held in the Ponce de Leon Hotel, St. Augustine, Florida, commencing February 22, 1898, at 11 o'clock A. M. Committee of Arrangements, S. W. Foster, Atlanta, Georgia; C. H. Frink, Fernandina, Florida; S. Ewing Smith, St. Augustine, Florida. The Florida State Dental Society will meet Monday, February 21.

FORMULA FOR INK TO WRITE ON GLASS.

<table>
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<th>Ingredient</th>
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<tr>
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<tr>
<td>Borax</td>
<td>75 &quot;</td>
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<tr>
<td>Alcohol</td>
<td>300 &quot;</td>
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<tr>
<td>Fish glue</td>
<td>40 &quot;</td>
</tr>
<tr>
<td>Methyl violet</td>
<td>2 &quot;</td>
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</table>

By volume. The ink is indelible, and very easily applied to the surface of the glass.—Sci. Am.

DENTISTS GIVE A BANQUET.

The Denver Dental Association gave a banquet at the Brown Hotel in honor of Dr. A. W. Harlan, editor of The Dental Review, published in Chicago. The Doctor is spending a few days in Colorado. He acknowledged the compliment last night in an eloquent speech. Every man at the table delivered a speech or told a story, and it was not until after midnight that the festivities came to an end. Among those present were Drs. P. T. Smith, W. E. Griswold, Warner, Gilbert, Hall, Watson, Finn, Smedley, Chambers, Frazier, Jackson, Porter and Harlan.—Denver Paper.
The dentists of Denver are doing all they can to forward the success of the next meeting of the A. M. A. in June next.

PREHISTORIC DENTISTRY.

George Byron Gordon, the explorer, contributes an article on "The Mysterious City of Honduras" to the January Century. The article gives an account of recent discoveries at Copan. Mr. Gordon says:

"No regular burying place has yet been found at Copan, but a number of isolated tombs have been explored. The location of these was strange and unexpected—beneath the pavements of courtyards and under the chambers of houses. They consist of small chambers of very excellent masonry, roofed sometimes by means of the horizontal arch and sometimes by means of slabs of stone resting on top of the vertical walls. In these tombs one, and sometimes two, interments had been made. The bodies had been laid at full length upon the floor. The cements had long since molded away, and the skeletons themselves were in a crumbling condition, and gave little knowledge of the physical characteristics of the people; but one fact of surpassing interest came to light concerning their private lives, namely, the custom of adorning the front teeth with gems inlaid in the enamel, and by filling. Although not all of the sets of teeth found had been treated in this way, there are enough to show that the practice was general, at least among the upper classes, for all the tombs opened, from their associations with prominent houses, seem to have belonged to people of rank and fortune. The stone used in the inlaying was a bright green jadeite. A circular cavity about one-sixteenth of an inch in diameter was drilled in the enamel of each of the two front teeth of the upper row, and inlaid with a little disk of jadeite, cut to a perfect fit, and secured by means of a bright red cement."

DENTAL PATHOLOGIST.—LETTER FROM THE SECRETARY OF THE TREASURY, TRANSMITTING A COPY OF A COMMUNICATION FROM THE SECRETARY OF WAR SUBMITTING AN ESTIMATE OF APPROPRIATION UNDER THE HEAD OF "SALARIES, OFFICE OF SURGEON-GENERAL," FOR ONE DENTAL PATHOLOGIST.

January 11, 1898.—Referred to the Committee on Military Affairs and ordered to be printed.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY.

WASHINGTON, D. C., January 10, 1898.

Sir:—I have the honor to transmit herewith, for the consideration of Congress, copy of a communication from the Secretary of War, of the 8th instant, submitting an estimate of appropriation under the head of "Salaries, Office of Surgeon-General," for the fiscal year ending June 30, 1899, for one dental pathologist, at $2,000 per annum. Respectfully yours,

L. J. GAGE, Secretary.

The Speaker of the House of Representatives.

WAR DEPARTMENT.

WASHINGTON CITY, January 8, 1898.

Sir:—I have the honor to forward herewith, for transmitting to Congress, an estimate ($2,000) of appropriation for "Salaries, Office of Surgeon-General,"
required for the use of the War Department for the service of the fiscal year ending June 30, 1899.

Very respectfully,

G. D. M'KLEJOHN,
Acting Secretary of War.

The Secretary of the Treasury.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE.

WASHINGTON, January 7, 1898.

Sir:—In compliance with your indorsement of the 6th instant, I have the honor to submit the inclosed estimate for one dental pathologist to the Army Medical Museum, and invite your attention to the note of explanation relative hereto.

Very respectfully,

GEO. M. STERNBERG,
Surgeon-General United States Army.

The Acting Secretary of War.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1899, by the office of the Surgeon-General of the Army:

OFFICE OF SURGEON-GENERAL.

Salaries, Office of Surgeon-General:
One dental pathologist (submitted) ... $2,000.

Note.—The thirty-fifth annual meeting of the American Dental Association, in line with other national associations of specialists, adopted a resolution formally recognizing the library of the Surgeon General's Office and the Army Medical Museum as the national museum and library of the dental profession of the United States, and appointed a committee to cooperate with the officer in charge of the museum and library in enriching its stores of dental literature and museum specimens. This resolution making the library of the Surgeon-General's Office and the Army Medical Museum the place of deposit of contributions from the dental profession of the country was favorably considered, and a department of normal and morbid anatomy and physiology of the teeth has been organized. Quite a number of valuable and interesting contributions have already been made to the museum, and the library has been increased by donations of books, essays and journal literature pertaining to the subject of dentistry. Through the chairman of the committee of the American Dental Association having this matter in charge, I am informed that it is the wish of the Association to have attached to the Army Medical Museum a specialist, well versed in the anatomy, physiology and pathology of the teeth, who shall receive, prepare and properly place on exhibition such specimens of morbid and normal anatomy and pathology pertaining to the oral cavity as may be contributed to the museum, and who may also be charged with the preparation of models and apparatus used in mechanical dentistry, for the purpose of illustrating surgical and dental procedure in treatment of deformities and diseases of the mouth and teeth. That such an appointment would be of the greatest value to the dental profession and to the general public is beyond question, and it would do much to place the profession of dentistry fully within the line of attainments and advancement of the general science of modern medicine and surgery by the exact determination of the anatomy, histology, pathology, physics, and dynamics of so important a part of the human system as the mouth and teeth, as well as affording a ready and most valuable means of instruction to the dental profession, to teachers, students and investigators. I would respectfully state that I am heartily in accord with this desire of the American Dental Association, and strongly recommend that an annual appropriation be made, not to exceed $2,000, to procure the services of a competent specialist, well versed in the anatomy, physiology and pathology of the teeth, to be designated as dental pathologist to the Army Medical Museum—

The power and influence of associated effort is recognized in all the callings and occupations of human industry and thought. The expression "in union there is strength" finds a verification in the multiplicity of organizations which embrace a large share of the peoples of the civilized world. People associate themselves for the accomplishment of that which could not be done by them in their individual capacity.

The world is moved by association. While it is true that some things have been accomplished by individual effort, it is equally true that the great movements of the world have been carried on by a union of forces, even in the most simple callings of life. People associate themselves for the accomplishment of their proposed objects. This is true of those in professions as well as in other callings and occupations. Religious as well as secular workers and thinkers throughout the world have their organizations. Physicians of all schools and specialties have brought this means of improvement and usefulness to a very high state of activity. Dentists not less than any others have brought into operation, tested and proved the benefits and value of cooperation.

Dental societies began to be formed about fifty-eight years ago. The first step in this direction was in the establishment of the pioneer organization, the American Society of Dental Surgeons. Though two attempts prior to this were made, they were not successful. The American Association of Dental Surgeons

*Read before the Odontographic Society of Chicago, February 21, 1898.
was the first of any special importance. This organization had a varied career of about sixteen years when it disbanded. Though it was short lived, it proved that organized effort might be utilized as an instrumentality of great good, and as an agent to promote the growth and prosperity of the profession. It demonstrated some valuable points to be attained by association, and as clearly indicated some points of danger, which should ever after be avoided. In both these respects it accomplished valuable service. So promptly and generally was the value of associated work recognized that other organizations were from time to time established.

The Virginia Association of Dental Surgery was formed Dec. 12, 1842; the Mississippi Valley Association of Dental Surgery Aug. 13, 1844; the Pennsylvania Association of Dental Surgery Dec. 14, 1845; the Society of Dental Surgery of the State of New York Nov. 17, 1847; the American Dental Convention Aug. 2, 1855, and the American Dental Association in 1859. From that time onward State associations have been organized until every State and Territory in the Union, with possibly one or two exceptions, has its State dental society, and each city of a few thousand inhabitants or more can boast of its dental society, and some of the larger cities have two or three organizations. So great is the importance of association work now regarded that no one of any reasonable professional ambition can afford to stand aloof from or refuse participation in it.

Association work is being utilized by dentists in a higher degree than in any other profession. There are three organizations of national character, viz.:

2. The National Association of Dental Faculties.
3. The National Association of Dental Examining Boards.

The special work of these need not be specified here. In addition to these there are four district associations. These are so distributed as to embrace the entire United States and are directly auxiliary to the national society. Then comes the State societies as above specified, and in addition to these the societies of still more local character, namely, those of cities and larger towns and some country districts. While the work of each of these organizations have some objects in common, yet each has some special work for its object. All alike are interested and engaged in the promulgation of the science of the profession, yet there are specific
phases of the work that fall to the individual bodies, that it is not feasible for others to assume.

The national society has an outlook over the whole field of the profession in this country, and should suggest, and aid so far as possible association work throughout the whole profession. It also with propriety may and should suggest and devise in regard to the educational work of the profession. It should also deal with all questions of the profession of a general and national character.

The four district societies are immediately auxiliary to the national, and in addition to scientific work may take up and deal with more practical matters, adapting their work more particularly to the needs of that part of the country where they are located.

Every State has its special society. The work of each should embrace as much of scientific and practical matters as possible. In addition to this it should have cognizance of, and guide so far as it may the dental legislation of its own State, and see that the laws are executed and that they accomplish the wise purpose for which they were enacted. This is a work devolving solely upon the State societies, thus maintaining a good professional standard in every portion of our country.

Every State should have an interest in the educational work of our profession and may properly make suggestions in regard to it. A large portion of the States have one or more colleges and the interest of these is so out-reaching, that it should enlist the interest and the consideration of all bodies whose influence might be helpful.

Associations still more local in character than those just mentioned, namely, those of large and small cities have their functions in the main in the development of the science and art of the profession. This is done by the presentation and discussion of subjects through papers and addresses with clinical work, which may embrace all the operations and processes in practical dentistry. Formerly it was thought to be impracticable to combine the scientific and practical or clinical work in one meeting. This, however, by the recent development is shown to be incorrect. It has been found, as is demonstrated on this occasion, that the study of the science of the profession and its application in practical work, are not incompatible, even though presented on the same occasion. In this respect the dental profession in its association work has
outstripped any other profession. The medical profession does not to any extent attempt practical work. There is nowhere presented outside of the dental profession, an equivalent to the practical work done in our clinics.

The first presentation of clinics in our profession was made about the year 1859 in the Indiana State Dental Society at Indianapolis. The late Dr. William H. Atkinson, of New York, and Dr. P. G. C. Hunt were the active workers in this, one of the first public clinics. This mode of instruction in our profession is one of rapidly increasing utility. It is the means by which every new and available device and invention is brought to the attention of the profession, so that the attainments in the profession are made a common possession of all who will receive. This work is being done more and more perfectly as time goes on. The facility and methods of communicating are constantly multiplying and increasing, so that all who desire to make available the highest and most valuable improvements, discoveries, and methods may do so.

In the past the question has often been asked, what benefit is to accrue from attendance on dental societies? The statements already made will somewhat answer this question, but there are other advantages that may be named; of these, the social feature is not one of the least. Before associations were much in vogue members of the profession stood apart, they were isolated, little or no fraternal communication, noncommunicative, absolutely reticent in regard to their methods and modes of work. In many instances a marked hostility existed. There were, of course, a few exceptions, but fifty years ago the condition here indicated was the rule. Dentists were suspicious of each other and stood antagonistic. By association this condition has been cleared away, and now a vestige of it scarcely anywhere exists, indeed does not at all exist, except with those outside of association influence. If nothing more than this had been gained, it is worth far more than all our association work has cost, it has made friends of those who were unfriendly, it has made co-workers of those who were widely separated, and in a more or less degree hostile; but more than this has been accomplished, it has been the medium of communicating the best thought and the best knowledge and the best work in our profession, to those who were needy, in bringing them up to a higher standard of appreciation and attainment in the work and thereby
securing to those who were suffering from disease a better and more efficient service.

A broader knowledge always promotes a higher standard of professional character. As a result of broader attainments and broader views, objectionable methods and practices are avoided and ignored. Every one brought under the influence of healthy association desires to be ethically upon a level with his fellows, and so avoids the pernicious practices that are so common with dentists outside of association influence. The hateful system of quackery that barnacle like attaches itself to the dental profession is all outside of dental association.

Association is not only helpful to those who are deficient in attainments, but is beneficial as well to those who have been more favored and those whose attainments are larger. They are constantly growing under such influences, so that there is much benefit in various directions.

Another influence exercised by association is that upon the literature of our profession. Almost the entire periodical literature comes from these organizations. Very little indeed is produced by others than the membership of societies. A record of the proceedings of these bodies finds its way to our journals, so that association exercises wholesome influence over not only the journalistic, but the textual literature of our profession. Indeed our literature would have been meager indeed but for the influence of association. They have in some sort exercised a censorship over it. Every one in the country engaged in journalistic work is a member of some association. All the educational work of our profession feels the influence in very a marked degree of dental association. No dental college could afford to ignore this influence, no dental school could exist and prosper with the influence of association in opposition to it.

For the position and status enjoyed by the dentists of the country we are indebted to dental societies, and largely to State societies. It is their special work to give attention in this direction. In the increase in number of organizations and the efficiency of the work there is a prophecy of a grandly growing future for our profession, and a clear indication that it shall grow stronger and higher and more efficient in meeting the wants of an enthralled and suffering humanity.
THE APPLICATION OF HEAT IN DENTISTRY FOR THE DESTRUCTION OF PATHOGENIC GERMS.*

By Dr. J. H. Woolley, Chicago, Ill.

A tooth that is infected with a putrescent pulp needs the most powerful antiseptic agents we can find for the destruction of pathogenic germs, one which at the same time is nondestructive to the tooth structure and tissues in the apical space.

In the study of this subject, we wish to discover the best methods of applying antiseptics. When the pulp of a tooth dies, and reaches the putrescent state, the canals and intertubular spaces are filled with fluid exudates that are thrown off from that pulp, and the whole tooth thereby becomes infected. Our aim should be to free the tooth of these poisonous exudates previous to medication. In doing so we can treat by direct medication the tooth structure, canals, and intertubular spaces, where microorganisms find their habitat. Otherwise treated, it is as unscientific as it would be for a surgeon to dress a wound without previously sponging the diseased part to remove all foreign substances. In the latter case, as in the former, the direct action of the medicine would be attained, and necessarily a more rapid restoration to health of the parts afflicted. To attain the best results, then, we will have to rely upon heat to aid us in the treatment of this class of teeth referred to. Heat can be used in the following manner: After applying the cofferdam, and removing all vestige of the putrescent pulp, we can follow with the root canal drier. Upon its introduction into the pulp canal, a hissing sound will be heard, proving the presence of moisture. This process must be repeated until the hissing sound ceases. The tooth then is thoroughly desiccated, and is now ready for direct medication. Proceeding further, we introduce our antiseptic dressing into the pulp canal, and by capillary attraction the medicine is carried into the intertubular spaces. The tooth then receives the benefit of direct medication, thereby saving time otherwise used in continuous treatments.

Another important point gained is that heat not only desiccates the pulp canal, but is an active agent and aid to antiseptic medicine by way of lessening the virulence of pathogenic germs.

Let me digress a few moments, Heat has always been a

*Read before the Odontographic Society, of Chicago.
purifier, and its application as a germ destroyer has played so important a part in many directions that the attention of scientists has been called to this agent. It has been said that the action of cold, although it does not destroy; yet it arrests the development of microorganisms. In the preservation of food, cold will preserve it for a long time in a good state. Heat, on the contrary, destroys microorganisms. So much value has been placed upon this agent as a germ destroyer, that among those to give it a due consideration were the members representing the council of public hygiene of France. They studied the question of the antiseptic action of heat, a report of which was given by Grancher and Gariel, and they reported unqualifiedly in favor of steam heat under pressure as a powerful agent to destroy pathogenic germs. Steam under pressure is the most efficacious, between 112° C. and 115° C., because it destroys germs most resistant after fifteen minutes. Hot air and overheated steam are considered of less value. Even raised to 130° certain germs are not affected, though the heat is prolonged to thirty minutes.

In the summing up of the experiments made by the commission, they found that the one disinfectant above all was in the use of moist heat, raised to the temperature of 110° to 115°; but it is not applicable to all circumstances.

In connection with the above subject, on following out upon the same line, let us briefly consider some bacteriological experiments with heat, not unmindful of difficulties arising out of such work. I am under great obligations to Dr. Cook for his careful, thorough and painstaking experiments. Also to Dr. C. A. Francis, of the Physical Laboratory of the Chicago University, who has rendered great aid.

Dr. Cook's experiments upon seventeen teeth reports unqualifiedly in favor of direct medication. To use Dr. Cook's own words: "The first consists of taking two freshly extracted teeth, preparing them as for filling—one I dehydrated with a root drier, placing in each tooth three (3) drops of Dr. Black's 1-2-3. I then made cultures of anthrax bacilli, plating them out in the usual ways. The desiccated was placed in Plate No. (1) one; the one that had not been dried was placed in Plate No. (2) two. On Plate No. 1 no colonies appeared, only at the edge of the plate, and they soon died out. But Plate No. 2 I was able to make only
a few cultures on. On Plate No. 3 there was a luxuriant development.

"Another experiment I made in the same way, only using formaldehyde as a disinfectant. I found in the tooth that had been desiccated and placed in Plate No. 1 there was no development, while on Plate No. 2 there were scattered a few colonies, but could not transplant. I carried these experiments on, numbering about seventeen in all, using the various antiseptics that can be used in the mouth."

Dr. Cook further says: "There is no question in my mind that desiccation facilitates very materially the disinfection of the teeth. In fact, I am inclined to believe that a tooth can be thoroughly disinfected with the root canal drier, without antiseptics at all, but as yet I have not experimented sufficiently to say definitely in regard to it. I found that when a tooth had been dried or disinfected as well as it was possible with the heated broach, a culture of the various mouth bacteria was put in the tooth, that, as soon as the culture media in which they were, had been used up they became very much attenuated."

There is no other way than by such experiments cited to prove that heat plays an important part in the destruction of microorganisms, and also the desiccation of pulp canals previous to their being filled.

There are many, I am well aware, who still use cotton and other absorbents to desiccate pulp canals. There are also some who dehydrate these canals by what they term "substitution"—that is, trying to displace the moisture by winding cotton around a broach, and saturating the cotton thus wound with antiseptic oils, and passing this broach up and down into the canal, with a hope to remove the moisture by displacement. This, to my mind, is misleading, uncertain and an unreliable method of desiccation.

A word as regards that ancient method of filling pulp canals with shreds of cotton. It is claimed by those who practice in this manner they meet with success. To my mind, this method is unscientific; for to be absolutely certain of the best results these canals must be sealed up solidly, filled to their entire length, and the apical foramen closed as well, preventing the egress of any microorganisms that might otherwise find their habitat there.

To sum up what is most needful in this work: First, personal cleanliness, instrument cleanliness, and the asepticizing of the
cofferdam we use. Then comes heat to aid us in direct medication, and a hermetically sealed root, and you need not fear anything but the best results.

To the young men in the profession, I would say a word. Seize any opportunity by which to develop scientific facts. Work on special lines; work carefully, accurately and thoroughly, and, above all, intelligently; get your data; compare your notes from time to time; gain all the light you can, and hold to your beliefs, not dogmatically, but with ever-growing willingness to learn, to gain new light and knowledge.

INCIDENTS FROM PRACTICE IN GERMANY.*

BY FRANK S. BUCKLEY, A. B., D. D. S., CHICAGO, ILL.

My subject, as first announced, included incidents from practice in the Orient as well as in Germany, but I found it impossible to do justice to both branches of the subject in a single paper, and have therefore omitted all mention of the year spent in practice and sight-seeing in Syria and Turkey. I also feel that this paper should not take too much time, but leave ample opportunity for the other papers of the evening and their discussion.

You will wish to know why I went to Germany and how it came about. I would reply that for several years I had greatly wished to go abroad and spend two or three years, as far as possible, in general study and travel, and with this end in view had written first to Dr. Sylvester, of Berlin, and then to Prof. Miller. Both alike replied that it was out of the question to expect to succeed abroad alone, and that the only way was to obtain a position as assistant to some American dentist with a good practice.

Nearly two years later came the invitation from Prof. Miller. Dr. Abbott, his father-in-law, had died in the meantime, and the resulting practice was too large for one man.

I doubt not, one reason for my good fortune was that I had studied for several years in the same college, the University of Michigan, from which Prof. Miller received his first degree, that of bachelor of arts, and one or two members of the faculty were good friends to us both. Also the kind offices of Dr. Taft doubtless helped Prof. Miller to decide.

*Read before the Chicago Dental Society.
Arriving in Berlin late in June, 1890, I was destined very soon to be left entirely alone for three months, with foreign manners, customs and language and a foreign practice, while Prof. Miller came home to America, to Ohio, for the summer.

I will not take time to relate the experiences of those first few months, of the hard work on the language, when, although prepared by previous study to read, I found that it was quite another matter to converse fluently; of our experiences in an ultra-German pension or of my initiation into the student life of the university; but I will at once speak of the conditions of practice in Germany. These are characteristic of the German people, thoroughgoing and exact, and must be rigidly complied with.

The degree of Zahnarzt, or tooth doctor, is carefully protected. Only those who have completed the "Gymnasium" course, corresponding to our ordinary college course, may enter upon the study of dentistry, and the degree can be obtained only after three years of study in a German university.

Any one may hang out his shingle as Zahnkünstler or Zahntechniker, meaning tooth artist or tooth mechanic, but not as Zahnarzt, or tooth doctor.

This title is to-day worthy of much respect. Since the establishment of the dental department of the University of Berlin, some seventeen years ago, its value has steadily increased. Several universities now have similar departments, and the number of graduates with definite clinical experience is large.

German dentistry is rapidly advancing to a high place and much of the credit for this advance is due to the American Dental College, through the earnest work of Prof. Miller and others who have introduced the American clinic and advanced American methods. The day has passed when the sign "American Dentist" is enough to insure success, for the German people are now better able to discriminate between good and bad dentistry.

The Zahnkünstler plasters teeth with copper amalgam and cement, fills cavities over dead nerves and drills a hole into the root just beneath the margin of the gum—to cure an abscess! But I verily believe that we should not lay such malpractice at the door of the Zahnarzt.

I will give you some of the characteristics of Prof. Miller's practice with some methods not common in this country, and a few
incidents from practice which may prove interesting by contrast and suggestion.

The office and home were in the same apartment on the second floor in a building not far from the central portion of the city, but yet in a residence district. No sign was used, or, indeed, needed, and the new patient must be supplied with the address.

This would naturally be the case, as Prof. Miller's patients were largely from the nobility and the wealthy classes. Fees were of course high, and you will be interested to know that bills were usually mailed but once a year, on January 1, but they were also usually paid.

Appointments were short, patients generally preferring to come often rather than endure long sittings.

This naturally points to the fact that large contour gold fillings were not an every day occurrence.

The request is nearly always made for a filling which will not show; and this leads to the practice of inserting cements and porcelain and glass fillings in the anterior teeth.

American dentistry is slowly overcoming this prejudice against gold, but Germans change slowly and reforms are not as readily effected there as here.

This leads me to speak of the extreme sensitiveness of many of the Germans to pain. I have seen a military officer, of undoubted bravery, tremble as I approached him with my instruments, while the perspiration came out in great drops on his forehead.

A lady residing in Vienna preferred to make several trips to Berlin merely because she believed she was saving herself some pain as a result. Many instances might be cited showing especial appreciation where care was taken to relieve pain, and one of the chief qualifications (in the eyes of the patient) was a delicate touch.

One patient, Prince ————, was so grateful that he offered me his photograph, and in the letter accompanying it he expressed his feelings as follows: "I hope you will receive this small remembrance as a signe of my thankfulness for the kind and patient way you treated me, trying to hinder pain as fare as ever possible." Another, a Polish count, wrote me shortly before I left Berlin as follows (you will observe his Continental English): "Yesterday Countess ———— told me you were going to Constantinopel. I
only hope you are still in Berlin. Please let me kindly know, as I would like to have my teeth got right by your capital hand.

Yours,  Count ____________

Another patient, a Russian princess, was so closely identified with the court of the czar as to also be extremely afraid of intrigue, assassination, dynamite and what not, and I was compelled to operate for her without my assistant in her private room at the hotel.

Her unusual suspicion and fear hampered me to such an extent that I was obliged to make three visits before I succeeded in inserting one gold filling, and you may be sure that filling was an expensive one for her, as it ought to be.

There are some materials and methods used in Germany in which I think you may be interested, and while I do not hope to bring to your attention much that may be of direct practical value in practice, I trust there may be a helpful suggestiveness in this brief study of foreign practice.

In Prof. Miller’s practice much tin and gold was used. This was an inheritance from Dr. Abbott and is a very valuable material in the posterior teeth. I will not take time to describe it, especially as I can refer you to two articles easily accessible in the Newberry Library; one by Dr. Harlan in the Independent Practitioner for 1885, and the other an abstract with translations by Dr. James Truman of a pamphlet by Prof. Miller on “Tin and Gold as a Filling Material.” This pamphlet has, I believe, not been translated from the German.

Glass fillings do not find favor in this country, but are much used abroad, and when skillfully fitted and inserted are much more permanent than entire cement fillings, and are very difficult of detection. The late Dr. Evans, of Paris, was very partial to a porcelain filling made from a porcelain tooth of appropriate color and shade and fitted to the cavity, usually on the buccal surface. He showed me one case in his own office, and I have seen others of his cases in Berlin. Dr. N. S. Jenkins, of Dresden, wrote me some time ago that he expected this winter to give to the profession a perfect glass filling; but a letter from C. Ash & Sons, of London, informs me that Dr. Jenkins has not yet introduced his glass filling, but he is still working hard at it to perfect it in all details.

Dr. Jenkins, since the death of Dr. Evans, is the oldest Amer-
ican practitioner on the continent, and is greatly esteemed and loved by American dentists abroad.

In 1891 he was appointed one of the royal counselors at the court of Saxony, a very great honor to himself and to the profession he represents.

Prof. Miller has had made a smooth broach similar to Stubbs' broaches, but untempered, with which he very deftly inserts treatments in fine root canals nearly to the apex of the root. This he does by winding cotton loosely about the broach and drawing the broach out, leaving the cotton in the canal.

They are not to be found at the depots here, but Stubbs' broaches may be used in a similar manner by drawing the temper. Cotton was used by Prof. Miller and Dr. Abbott (son of the old Dr. Abbott) for filling root canals, but although I have seen many cases where it was successfully used, I never rely upon it for permanent fillings.

I find it, however, very valuable for testing doubtful cases, saturating with oil of cinnamon or cloves and sealing with soft gutta-percha or cement, using, however, some other antiseptic in the anterior teeth.

I might say here that since my return I have settled down again into our distinctive American methods of operating, believing that as we have the opportunity it is our duty to guide and control the patient to a large extent in the selection of materials which shall insure a permanent result.

Lastly, I desire to present to you as strongly as I may a soft cement for covering treatments to relieve sensitiveness and septic conditions, and especially for covering nerve paste where the cavity extends beneath the gum margin. This is "Fletcher's Artificial Dentine," for capping exposed nerves and filling sensitive teeth, and may be found at Justi's, and I doubt not at S. S. White's, if there should be a demand for it. I have endeavored to ascertain its composition, but find that the Buffalo Dental Manufacturing Company, who handle Fletcher's materials, have never been able to get it. Prof. Miller has mentioned it in his articles, and uses it constantly. It is very soft, and can be made to flow into a cavity over the nerve paste without the slightest danger of pressure. You are absolutely certain that no arsenic can reach the gum or pericemental membrane.

It is invaluable for capping slightly exposed nerves. I am
much surprised to find that this preparation has not become well known and appreciated in this country. I wrote C. Ash & Sons recently, asking them to ascertain if possible the composition of this cement. Only this morning I have received a reply, inclosing a letter from Mr. Thomas Fletcher, of Warrington, England, manufacturer of this preparation, who gives its composition as basic sulphate of zinc. Not certain that I was much wiser than before, I took the letter and a box of the cement to Dr. Ames, who very kindly consented to analyze it, and I have asked him to present the result of his analysis himself later on.

It has occurred to me that while Prof. Miller is widely known in bacteriology and antisepsis, he is not so well known as an every day practitioner and man. And as I have been in close personal and professional contact with him during a period of two and a half years, I feel it to be a privilege to be able to state that he is a thoroughgoing dentist, working from three to four hours every morning at the chair—rapidly, faithfully, successfully. He is a very careful, painstaking operator who keeps abreast the advances made by the profession, and is educating his German patrons up to a higher appreciation of the value of gold in preserving teeth.

Young Miller was studying physics and chemistry in Berlin when he was attracted into the study of dentistry by Dr. Abbott. He took his D. D. S. degree in Philadelphia in 1880, his M. D. degree in the University of Berlin in 1884 and was soon after teaching in the university. In 1893 he received the title of Ausserordentlicher Professor (extraordinarius), a very great honor to an American citizen. His now famous demonstration of the bacteriological origin of caries appeared in 1884, you will remember, and thus early in his practice he began to do the work of a practitioner, professor and investigator, and thus his day of work was divided, three or four hours at the chair, three hours in college, including his lecture three times a week, some two hours in his bacteriological laboratory and in the evening study and writing.

But twelve years of this incessant work dragged him down until in 1895 he was unable to think a thought or write a letter. He is now somewhat improved in health.

He is one of the most cordial and lovable of men and is highly esteemed by all who know him well.

It is so short a time since the death of Dr. Thomas W. Evans,
of Paris, that I judge a few words about him will have an especial interest.

I first met him at the World’s Medical Congress of 1890 in Berlin. He was interested in some practical cases which I had the privilege to treat and of which I sent reports to him and to Dr. Jenkins, of Dresden, for several weeks. At the banquet I had a conversation with him and some months after he called upon Prof. Miller and myself at the office.

Two years later, in June, 1892, while in Paris I called upon Dr. Evans, and he showed me some of his own work, explained some of his methods and then invited me to ride home with himself and Mrs. Evans, who usually rode down to the office about five o’clock to ride home with her husband.

It was principally during the long conversation after dinner that I learned the following interesting facts:

Dr. Evans began practice in Paris in the year 1848, and thus had practiced nearly fifty years at the time of his death.

The friendship of the Emperor Napoleon probably began his wonderful practice in royal families, which continued to the last.

I was shown a letter from the Princess of Wales requesting Dr. Evans, if convenient, to come to London some three weeks later, when the princess would return from her visit in Denmark. Another from the Queen of Holland, who wrote to offer a painting to Dr. Evans “as a slight testimonial of her esteem and regard.” The painting was in oil and was the queen’s own work, and as I observed later, was only one of many such gifts in his art gallery.

While riding upon the avenue the carriage of the Queen of Spain passed us, and it was very evident by her manner that she regarded Dr. Evans as a very good friend.

At the marriage of the Princess Victoria, in Berlin, Dr. Evans was an invited guest at the palace of her mother, the Empress Frederick, who had been his patient from childhood. And so on I might speak of many other royal personages who were his patients and friends.

How was this unexampled eminence attained? I believe, by his sturdy honesty, rare sincerity and great tact, together with his unusual power of helpful friendship. I am glad to be able to add that these rare qualities were the fruit of deep religious conviction. This was the source of his great and good life.

Dr. Evans was a Quaker, and also his saintly wife. They lived
in gay Paris, but their home was a pure American home. Their lives were simple and true, their sympathies went out to the poor and needy and the amount given in time and money to deserving persons and to philanthropic enterprises was very large.

His honesty and faithfulness were beautifully shown by his retention of the name of Dr. Brewster on his sign in the Rue de la Paix. "Brewster & Evans" it remained to the last, simply because he had promised it.

Again, when abandoned by all, the Empress Eugenie fled to his house for protection, he risked his own life to save a friend in distress. In the Franco-Prussian war Dr. Evans spent $350,000 of his own money and one whole year of his life managing the "American Ambulance and Sanitary Commission." It may be said in passing that hygiene and sanitary conditions were a life study, and in the Crimean war and later in our own Civil War Dr. Evans rendered very great service to wounded men.

His book on this subject has had great influence throughout Europe in bettering the sanitary conditions of camps and hospitals.

This great mission to the wounded of the Franco-Prussian war was undertaken as an American, for Dr. Evans never gave up his American citizenship, and as a neutral and noncombatant, he braved in person the dangers and perils of many battle fields, to save the lives of wounded men.

As a neutral he was able to enter within the lines of both armies and served German and French soldiers alike. Ah! the blessings that were, and ever will be showered upon him for his Christlike devotion to suffering humanity.

After the war, as an American citizen, he at last accepted at the hands of the General Assembly of the French Republic that which he had several times declined to receive from the emperor, the decoration of "Commander of the Legion of Honor." Time would fail to enumerate the other decorations received from the emperor of Germany and other monarchs.

Much might be said of Dr. Evans' beautiful home in the Avenue Malakof, of "The Lafayette Home for American Girls," costing $1,500,000, of the simplicity of his office appointments, of his extensive literary work.

I have indeed but touched upon the characteristics of these three illustrious members of our own profession, Dr. Evans, Prof. Miller and Dr. Jenkins, whose lives and work have brought to
us as dentists so much of honor and distinction, but I doubt not Dr. Harlan has some interesting reminiscences of his numerous visits abroad and from his personal contact with these standard bearers of American dentistry across the water.

I must already ask your indulgence for the length of my paper, which, however, does not claim to be complete or symmetrical, but only to relate a few incidents and present a few impressions.

I thank you for your kind attention.

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**The Need of Local Coöperative Dental Protection.**


Mr. President, Members of the Chicago Dental Society: In inviting your attention to a subject dealing with the business interests rather than the theoretical or practical sides of dentistry, I do so because at the time your committee communicated with me, requesting some contribution to the year's program, I was giving some thought and study to the problem of how best to evade the impositions of the dishonest and improvident, in my own practice, without offering offense to the worthy applicants for professional services and thereby causing other losses; and upon the spur of the moment, as I were, I selected this topic upon which to write.

Upon more sober reflection, and in the shadow of a theme without any literature whatever, I may say that I have had my regrets, and condoned the impious act of attempting to write upon a question which possibly may not interest all.

In presenting what I may, it is done with a feeling of the urgent need for active reform in this one direction, and only with the single thought that, perchance, much good may result from a free discussion. It was but a few months since that your essayist was reading an article, copied from an Eastern journal, on the "Longevity of Man" in the various vocations of life, including the professions.

This article purported to have been based upon statistics covering a period of thirty years, recorded in the Massachusetts Bureau of Statistics of Labor.

The average age at death of the statesman, clergyman, lawyer physician, and dentist; the farmer, mechanic, laborer, teacher, and, other vocations was given, and varied from sixty-eight years to
forty-three years; while the average age at death of the dentist was there recorded at forty-five years, and with a single exception was the lowest average age at death in any vocation of adult life.

In corresponding with the Superintendent of Vital Statistics for the State of Massachusetts, and with leading actuaries east and west, as well as consulting the United States census reports, I have been unable to verify these statistics; but Dr. Ogle, a celebrated English statistician, in his latest mortality calculations, based on English census returns, states the lowest death rate in any vocation to be that of the clergy—their average age being close to sixty-eight years.

Second he places the legal profession, and includes the statesmen, their average age at death being about sixty-four years.

Farmers and gardeners also die at about this same average age. Physicians come next, with a good average of fifty-eight years, while those following occupations requiring cramped, constrained positions, or who are subjected to excessive work, mental or physical, as for example, silk weavers, lace makers, and possibly the shoemaker and dentist, the mortality rate is very much higher.

The deductions to be drawn from such statistics and reports are quite apparent, i. e., that the arduous labor, the severe physical and nervous tension resultant from long operations, often repeated by the busy practitioner, together with the confinement incident to exclusive office life, tend to shorten the years of the dentist's usefulness.

He should ever keep before his mind that first law of nature—self-preservation—and husband all his energies; but how few do this.

It is also quite as apparent from the foregoing that at about the time the average dentist has secured his professional education, and by dint of hard work and many sacrifices, earned the amount sufficient to repay the obligations incurred during his student life and to properly equip an office he is either incapacitated by failing health, or by reason of advancing age, from reaping very much of the fruits from his toil.

The stock in trade or capital of a professional man is not alone the office equipment and material which he may use in conducting his business, but rather the long years of patient toil, study and expense necessary to fit him for practice, or, if you will, the
technique, education of brain and muscle which makes the services of the successful practitioner valuable to his clients.

Not the least valuable item on the inventory of the dentist's stock is his precious moments—sixty of which make an hour—for every one of which he should receive compensation when reserved for patrons and the appointment is broken without reasonable notice—and reasonable notice is not one minute or one hour.

The fees charged should, therefore, be reasonably commensurate with the foregoing facts and the substantial character of the service rendered.

As a class, doctors are acknowledged to be poor business managers, and not far sighted beyond the ken of their daily routine. At the operating chair and the sick bed their judgment is keen, but beyond giving their best thinking powers to their patrons and matters of a professional nature their keen perceptive faculties seem to fail them, and their surplus earnings, if they are so fortunate as to have them, are often invested in rosy tinted schemes, and trusted to the management of others, where conservative business men would hesitate to place them. The result is losses which can never be regained.

If there be an individual in any avocation of life, either commercial, agricultural or professional, who deserves just remuneration for his services or a comfortable competency in his old age, I assert, and all present must agree, it is the dental practitioner. For, in addition to all the intimate relations and attentive services of the medical practitioner, do we not advance quite a large proportion of cash to each patron in order to render our services?

It is a notorious fact that in all great metropolitan centers like Chicago, quite a large percentage of the population, comparatively speaking, is made up of impecunious persons, either of the improvident or dishonest class, the one contracting debts without thought of how the bills are to be met, and the other class with only the one intention of getting something for nothing.

None of us have objections to the gratuitous treatment of the worthy poor at the free dispensaries or the dental clinics, and most of us willingly and gratuitously contribute to the comfort of many of our unfortunate patrons and friends each year, but we should draw the line at impositions.

Heretofore each victimized practitioner has considered impo-
sition to be one of the inevitable results, and while he has prob-
ably never allowed himself to be imposed upon a second time by
the same individual he has never lifted a finger in protection of
his professional brothers, while the same dead beat has continued
to practice his evil art whenever necessity demanded.

It is not an alluring prospect which confronts us as we scan
our accounts from year to year and note, with dissatisfaction, that
we have been victimized by from six to ten new imposters within a
twelve month.

The average annual tribute which I have personally paid this
fraternity for the ten years last past is trivial indeed, and yet it
amounts to $1,200 for the term.

Admitting the proposition, as we must, that as a profession
we have no adequate protection against the dead beat evil, the
question naturally arises, why not?

The chief reason would seem to be a lack of earnest coöpera-
tive organization, in the management of which the profession at
large has the utmost confidence.

The benefits to be derived from coöperation, or the associa-
tion of any number of persons who act conjointly for their common
good, are well understood, and no better illustration can be
cited than the Dental Protective Association, under the able
leadership of Dr. Crouse, of this society.

The large commercial interests, both wholesale and retail, are
protected by inflexible credit systems and reliable information fur-
nished by well-known commercial agencies.

During the past few weeks the real estate brokers and rent
collectors of this city and St. Louis have been actively agitating
the formation of a rating department to be conducted by the real
estate boards—for the sole purpose of protection against dead
beat tenants.

The retailers of contracting and building supplies have an ideal
cooporative organization in this city, and furnishes protection to a
large membership, including all departments of supply in this
trade.

The physicians of New York City are organized.

The physicians of Chicago chartered and organized the Phy-
sicians Business Bureau some three years since, and have an
admirable scheme for coöperative protection, which has practi-
cally been inoperative, chiefly because by far the larger portion of
the profession has been indifferent—only one hundred and fifty joining the bureau out of a profession numbering three thousand.

The medical and dental professions in Philadelphia are furnished adequate protection by a private agency with whom they cooperate.

These facts illustrate that in other avenues of industry, as well as in our own, to some extent, there is organization for protection.

The two organizations, the methods of which the writer has familiarized himself, seeming to embody the most desirable features, are the Philadelphia Physicians and Dentists Bureau of Information, and the one furnishing the protection for the retailers to the building trades in this city.

Their modus operandi is the same, in the main, and is as follows:

There is a central organization with a nominal membership fee, the members signing an agreement not to furnish information to any one, whomsoever, and to consider all reports as confidential.

The members report names and addresses of all irresponsible parties who have failed to settle their accounts after due diligence on the part of the creditor.

The central organization furnishes an annually revised list of names, without comment, and advises each subscriber or member that the name of no responsible person is to be found in this list. Monthly, quarterly, or semi-annual report of names is required, and additional lists mailed as deemed advisable.

Whenever a delinquent settles an old account it is reported that he has redeemed himself, and the name stricken from the list. These two associations differ in but one point. The latter one, on having a dead beat reported by a member, sends immediate notice to all other members that a brother member "recommends" this party to the association.

The members fully understand what a "recommendation" means, and govern themselves accordingly.

To conclude, it would seem to be worse than useless that there be a multiplication of organizations in the medical and dental professions, as then the best results are partially, if not wholly, lost.

If there could be a combination of all medical and dental interests, and this combination, as a whole, cooperate, and furnish the names of dead beats as well as those of very doubtful credit, what could not be accomplished in the way of cooperation and self protection?
A paper was read on "Dental Analgesics," by Dr. N. S. Hoff, Ann Arbor, Mich.*

DISCUSSION.

Pres. James: Dr. Dickinson was to have opened the discussion of this paper, but he was excused. The paper is now open for discussion, and we would be pleased to hear from any one.

Dr. Wedelstaedt: I have used cocaine myself; in fact, I believe Dr. Ambler was the first dentist to use this preparation in the gum, in 1885, when cocaine was $3,000 an ounce. He was a morphine user, and one day he took 10 gr. of morphine and 10 gr. of cocaine, and he had trouble with the third molar. He injected 5 gr. of cocaine and extracted it himself. That was early in 1885, and he at once came to me and said, "I have learned to extract teeth without using gas." I said, "Very well, how do you do it?" And he told me. From that day to this I have never administered nitrous oxide. About a week or two later he discovered that it would obtund dentine completely, and he could extract nerves painlessly, and not by injecting in the pulp, but by injecting in the gum and taking the pulp out painlessly. In 1862, Scharff reported to the French Association of Physicians that cocaine placed on the tongue would produce insensibility, but from that time on we heard very little about it until Dr. Harlan brought out cannabis indica. I still have the bottle that Parke, Davis gave me then. In 1885, Koller, who is now in New York, found that by the use of cocaine he could do painless operations on the eye. From that time to this present day cocaine has been abused and otherwise, some of us have abused it and some of us have not. Whether it has been the fault of the drug, or the fault of the man behind the syringe or the fault of the indiscriminate use of the drug is a question still open for discussion. It is the best thing we have to-day for obtunding sensitive dentine that I know if it is used intelligently, if it is used discriminately, otherwise we will get into trouble. I use it with a great deal of care.

*See page 893.
I will state, if you will allow me, that comparatively painless dentistry dates back to 1885; but I soon found one thing, I had nervous hysteria here and there, and I did not know how to fill teeth. I thought I did, but I did not. I did not know how to sharpen my instruments; I did not know how to keep my instruments in proper condition, and that is not the secret of filling teeth. I found pulps would die, and I did not know why. I find that pulps die by using the cataphoresis method, I do not know why. We can work along all right for a while, and by and by that pulp dies. Cocaine is dangerous to use in some cases, particularly with those women who are known as voluptuously built women; those who have not that amount of will power they should have, but whose imagination moves them, with those we have trouble. Those are the women I described in a paper I read before the Chicago Dental Society in 1887; women with large shoulders, little bits of wrists and hands, who are all in a tremble, and hang on to the sides of the chair and say, "Please do not hurt me very much." They are dangerous people in which to inject cocaine, or to inject water, and I can work on them with an injection of four drops of water. It is only in the hypodermic use of cocaine where we have to deal with live nerves that we get the best results. Where it is applied locally, where we wish to apply clamps, ligatures, bands and crowns, I do not think we find it used as much as it was formerly, that is in all the minor surgery which I have mentioned. I do not believe in the careless use of six or seven, or even three injections of cocaine in the gum. Two injections of cocaine have always been satisfactory to me in obtunding sensitive dentine, in extracting live pulps and extracting teeth. I do not believe at the present time it would be a wise thing for any man in this room to inject a half grain of cocaine. I take out teeth usually with one-fortieth or one-eightieth, and people do not complain. That has come true which I said at the Chicago convention in 1887. I predicted that in ten years we would use one-tenth of one per cent of cocaine. I made that prediction in 1887, at the Chicago convention, and in less than ten years they were doing the major operations with one-tenth of one per cent.

I do not know anything about eucaine. I sent to the wholesale druggists in St. Paul for it, but I could not obtain any. Sys-
temic effects of cocaine are awful in my estimation, as I have seen them, nervous hysteria of a nature that a man does not wish to see a second time, and those who have had experience with them are banded together as brothers; you cannot break them very soon; it is something we cannot forget.

A short time ago a man was sent to me from Shakopee; some man sent me a patient for whom he was afraid to take out a tooth, a lower first molar on the left side. The trouble, I should say, was more in the tooth than in the jaw. The boy was breathing hard and frightened badly. I said to the physician, "Have you ever seen a case of cocaine poisoning?" He said, "No." I said, "I will inject one-twentieth of a grain of cocaine, one-fortieth on each side, and I will take out the tooth painlessly, but the boy will be poisoned." I injected the cocaine and took out the tooth, and all at once the physician took hold of the man's arm and looked at him. The perspiration was breaking out from every pore, and I gave him my antidote. The physician said to me, "Tell me how you knew you were going to poison that man with cocaine?" I was standing on the street in St. Paul when Dr. Stamm came along. "You had better go to bed, you are going to have intermittent fever," he said. I said to the physician, "Will you tell me how Dr. Stamm knew I was going to have intermittent fever?" If you will tell me how he knew that, I will tell you how I knew that man was going to be poisoned. I can always tell when they are going to be poisoned. I can tell in a moment by just looking into a person's face.

Convulsions I have never seen from the use of cocaine. So far as the antidotes are concerned, I believe in the simplicity of medicinal remedies. The best antidote I have ever found is spirits of ammonia, aromatic ammonia, about thirty drops in a little water. Whiskey is a little antagonistic, wine more so. Ammonia is a direct heart stimulant and braces the person up at once, and there is no further trouble with that patient, except where there is a nervous idiosyncrasy, a nervous hysteria which we are apt to find in a few cases. I prepare my cocaine in a little different way from what has been suggested. I take 10 grains to an ounce of distilled water, which gives me a 2 per cent solution, and put one
drop of oil of cassia in the bottle, and that solution will keep for a month at a time. There is an erroneous idea prevalent that a sediment settles at the bottom of the bottle which injures the cocaine to that extent that it is not a good remedial agent. That may be true if you apply it to your tongue, but you will find it is still pretty strong. A little oil of cassia put in your bottle is the means of keeping the solution free of flakes.

About infiltration. If any man in this room will take this hypodermic syringe, take a 2 per cent solution of cocaine, inject it back of the first molar, pressing the point to two-thirds of the way to the end of the root, withdraw his handle, turn to the table and pick up his lancet, I defy any man in this room to say that he will feel the penetration of the knife. I have heard discussions on the length of time allowed for the infiltration of cocaine. The very moment it gets there that tooth is practically dead, and it is impossible for the person to feel the penetration of the lancet into the gum. In some cases, I have seen one or two in my life, I remember in one case I injected 180 drops of a 4 per cent solution in the gum, and it had no effect whatever.

I do not know anything about cataphoresis. There is such a long time to wait for the dentine to obtund that I thought if I was going to use anything to obtund the dentine the cataphoretic outfit was too slow. Thank you, gentlemen.

Dr. French: How much have you used cocaine for obtund- ing sensitive dentine?

Dr. Wedelstaedt: I cannot say how many times. I prefer that preparation to anything else, and I have used it the last twelve years of my life.

Dr. French: I have never used it in that way, for obtund- ing sensitive dentine.

Dr. Wedelstaedt: The ignorance that is prevalent in regard to this subject I cannot understand. It is now so many years since cocaine has been used, and yet we keep on making inquiries as to whether it is of any practical value in obtunding sensitive dentine. If it is of practical value in obtunding a sensitive nerve if put in the tooth, it is also of practical value in obtunding sensitive dentine.
Dr. French: I am interested in this cocaine question. I have used cocaine a good deal. If what Dr. Wedelstaedt says is true that is the preparation we should use. I certainly can inject a little cocaine around the tooth much quicker than I can destroy the sensibility by cataphoresis. I have used cocaine ever since it came into use. I have been very successful with it in removing live pulps and extracting teeth, but I cannot say that my cataphoresis experience has been very gratifying or encouraging. I did obtund a couple of teeth with that preparation one day very completely. I filled the man's teeth and he went away, and I have never heard from him since. I thought he might have a couple of dead teeth on his hands because I injected so much cocaine into them, I thought the pulps would die. That is my opinion, still I don't know. I am a good deal like the owl, I think a great deal, and I think a great deal about this cataphoresis. I received a very nice letter from Dr. Hornbrooke. I wrote to him and told him my experience, and those of you who know him know that he is a very conservative practitioner, and I concluded from his letter that he knew a great deal more about cataphoresis than I did, and I am using cataphoresis less and less every day. I hope it will come to perfection and we will be able to use it and have everything painless, especially with those that are nervous and have sensitive teeth. I would like to ask Dr. Wedelstaedt how many teeth he has extracted with cocaine at one sitting?

Dr. Wedelstaedt: I inject the cocaine, say five drops of 4 per cent solution, right around where the inferior maxillary nerve enters the mental foramen, and I have with that one injection quite a number of times taken out eight teeth. Where there were teeth on the other side to come out I have used another injection and taken out the other eight. I took out at one time fifty-four roots of teeth (I understand there are only thirty-two in the mouth). (Laughter). I said fifty-four roots of teeth. I remember the case very well.

Dr. French: In one or two cases where people have used cocaine in that way they have had serious results.

Dr. Wedelstaedt: I never have had. I never inject into the foramen or in the jaw anywhere.

Pres. James: It has been suggested that we hear from Dr. Davis, of Chicago.

Dr. Davis (Chicago): I do not know that I have very much
to say on this subject of analgesics and anaesthesia. As far as the use of cataphoresis is concerned in the dental profession, I find it is of very great service to me. Instead of discarding it I think I use it more often than I did during the first month or so it was in my office, in fact, it was only yesterday, it was only yesterday afternoon that a patient was brought to me whom there was no possibility of relieving from pain except by the use of that apparatus, the cataphoretic outfit. The lad received an injury that broke one of his central incisors. The pulp was badly exposed, and it was impossible to apply an anaesthetic to that cavity so as to destroy sensibility. Cocaine would take a long time to get in its work, but in five minutes from the time I applied the cocaine with the cataphoretic appliance I removed the pulp and sent the boy about his business. I think it is the greatest boon we have had in the last decade if properly used. As to the sloughing of the gums by too great a current, or by any other method, we hardly know what produces this current we hear so much about. I have not met it in my own practice. I think the tendency is to work too fast. They want to get results in two or three minutes that require ten or twenty minutes, and if it is necessary to take fifteen or twenty minutes, and the patient is obliged to pay for that time you use, and is willing to pay for it, I see no reason why a man should not be willing to wait. That is my experience in regard to cataphoresis.

Dr. Wedelstaedt: A short time ago a man was knocked down by a street car and the left central incisor was broken off. Three minutes after the boy was brought into my office it was taken out. I would like to ask Dr. Davis how long it took him to take out that pulp?

Dr. Davis: Five minutes.

Dr. T. B. Hartzell: In regard to my experience with cocaine used cataphoretically, I would simply say that I have used it continuously ever since the outfit was placed in my office, and I am better pleased with it every time I use it. I have removed a great many pulps with it, and I never think of removing a pulp any other way; I have taken out a great many. The best record I ever made was in the removal of three pulps, filling the root canals, preparing them ready to be crowned by filling the root cavities, and filling in thirty minutes, and that was very much quicker than I could have done it in any other way. The patient had three teeth
to be crowned from which the pulps had to be removed. From the
time the patient sat down in the chair, the cocaine was applied by
cataphoresis, the root was filled, the second one was treated in like
manner, and in thirty minutes from the time the patient sat down
the three roots were filled, and she has never had any trouble since.
I find, however, you do get what I believe to be an electrolytic ef-
fect rather than blood poisoning from cocaine. I do not think it
is advisable to use the current for too long periods. If you cannot
get reasonable anaesthesia in eight to twelve minutes I would
rather give that patient chloroform and prepare the cavity and do
the filling under chloroform. I do not want to use a stronger cur-
rent than three milliamperes. I think we get bad results; I had
some experience where pulps have had to be removed, and I am
sure it was not due to the amount of cocaine used, because the solu-
tion was not a strong one, and the amount of tissue to be pene-
trated was very great, the time was long, and I believe it was
rather due to the electrolytic effect or the decomposing action on
the pulp. Therefore I try to discriminate in the cases I use this
process upon, and if I find I am not successful in from eight to
twelve minutes I resort to something else.

Dr. C. D. Snow: What cocaine do you use?

Dr. T. B. Hartzell: About a 10 per cent solution. The
amount carried by the current is so slight that I get but a very
infinitesimal amount in the pulp. I cannot state how much co-
caine you get in the pulp, but we all know that the osmosis is
very slow. I think we can almost eliminate poisoning by the actual
placing of cocaine in the pulp.

Dr. H. A. Knight: I was rather late in buying my catapho-
retic outfit, because I was afraid of what has been suggested to-
day, death of the pulp, although I must say I had very good
success. The object for which I bought the apparatus has been
reached—to fill teeth without causing suffering. I always feared
that we would, if we pursued this course with the catapho-
retic outfit, have dead pulps, and I believe some of the operators
were testifying to that effect just now. I want to state now that
I have been using a concentrated solution of cocaine. It is a
wonder I have not killed people before, but I have had good
luck altogether.

Dr. Wedelstaedt: I would like to have Dr. Hoff tell us of
the cases he has seen of sloughing of the gum and exfoliation of
the bone from the use of cocaine. I think my syringe has been used continuously for three years, and I have never seen a case of sloughing of the gums due to the use of cocaine, and I have never seen a case of exfoliation of the bone from that cause. Perhaps some of the rest of you have got some of my cases, but I am working for many people, and I have worked for twelve years in this way and I have never had such effects. I would like Dr. Hoff to tell us in what cases this took place.

Dr. Hoff: Two cases were due to eucaine instead of cocaine. When I first began using cocaine I used a 6 per cent solution; I used the chloral and carbolic acid which tended to eliminate its action, and I found almost invariably in those cases where I injected any considerable quantity, it produced considerable whitening of the gums, and I almost invariably had difficulty in healing the gum tissue, sometimes it healed so slowly I had considerable sloughing of the gum.

Dr. Wedelstaedt: There have been so many cases reported of sloughing of the gum that I would like to see one. I tell you, I would like to see one. I do not say they cannot occur, but I would like to see a case. A man went to some one who used this "go-to-thunder" stuff (laughter) to have a tooth extracted, and the dentist got his bottle mixed up with the carbolic acid bottle, and he gave the man an injection of ten drops of carbolic acid. The man actually did inject ten drops, and yet cocaine is abused for all the bad effects. A case took place at Superior some time ago; the papers came out with big scare heads, "A Man Killed by Cocaine." I wrote to see what had really taken place, and the health officer wrote me that three weeks before the man's teeth had troubled him and he went to a dentist and had the tooth taken out, and afterward the man died from some disease; but the papers came out and said the man's death was due to cocaine used in having his tooth extracted. There was enough cause for investigation if there was a vestige of truth in it, but it was not the truth. I do not think it is possible to kill a person with a minimum dose of cocaine, say one-eighth grain, and it is very seldom for a man who has used this remedy very much to go beyond that point. One-eighth of a grain is a maximum dose. Many men get down to $\frac{1}{8}$ and get just as good results. When we hear of some of those cases, it is well to investigate some of them before we believe them.

Dr. Brown: I will tell you about the case referred to which
occurred at Duluth. Cataphoresis was applied for the removal of a crown for about twenty minutes or a half hour. This was 2, or maybe little after 2 o'clock in the afternoon. A little after 7 o'clock a physician was sent for, and, according to a description of the case, he had a great deal of difficulty in keeping the man alive. The glands under the tongue were so swollen it was quite difficult to keep his breathing apparatus in order. It was only by hard work they managed to keep the man's heart going. The symptoms passed away in seven or eight days and they sent for me. I found where those teeth had been extracted, and I found him with all of the gum tissue sloughing away in that neighborhood, and about a half inch of the inferior maxillary nerve exposed. There was no necrosis. The man was quite seriously ill for a considerable time after that. I think there can hardly be a doubt but what something of that kind was the trouble. It was either the cocaine or the decomposing action of the current.

I would like to say a little more about this analgesia of pain. The sensation of pain is carried to the brain by a wave motion. Unless there is something in the brain to recognize that sensation we do not feel the pain. It does not make any difference in the individual whether I do something to the brain in the way of analgesia to affect the central portion or the outlying parts. A good deal has been said about hot water and that sort of thing. In a paper I read a year ago I read the certificate of a surgeon who removed a tumor, and the man did not do anything except to hold my hands. If I did not have the surgeon's certificate you might think it was a pretty big story. I think it is on record with the American Medical Association. I have not used gas in my office for two or three years. Taking out teeth is a comparatively easy matter, but removing pulp is a different matter; and I would be glad to use the cataphoretic apparatus if it could be done safely. I have heard this matter discussed in Chicago and Philadelphia, and I have not heard anybody who has handled this subject as well as Dr. Hoff. I think if we try to follow out his line of procedure we will accomplish something. (Applause.)

Dr. Harlan (Chicago): I consider myself exceedingly fortunate in having been here to-day to listen to the very admirable paper by Dr. Hoff. The manner of presentation of the subject and the logical steps taken to explain it, make it one of the best contributions
on this subject we have had for many years. Of course, as he said in the opening, the subject of analgesia or analgesics in general does not comprise hypnotics or soporifics. He confined himself particularly to the local application of cocaine and eucaine. Those who have not had a single scientific lesson in cocaine will be very much benefited by reading the paper.

With reference to the preparation of solutions. In the preparation of the solution of eucaine I have always found that by using distilled water and boiling it, the eucaine not being decomposed by boiling, it becomes of a uniform strength. You can make the solution in cold water, but it will not be uniform. I have found in the local application of a eucaine solution to the pulp in a tooth, without any other application, that in very many instances it will reduce the sensibility even without injection so you can remove it, where the body of the pulp was very large. In injecting around the teeth for the purpose of extracting roots, etc., I have used a 10 per cent solution instead of 5, and in a very short time I found I was able to operate with comparative freedom from pain. We are not always sure the patient tells us the truth, because he or she may anticipate much pain when they do not feel any at all. The imagination has a large share to play in minor operations of this kind, and it depends upon the manner of the operator and the manner in which he uses his medicine whether it has a large or small effect. Many times when I have not been able to prepare cavities in sensitive teeth I have taken a drop or two of some perfume and put it in the tooth, and the odor being diffused would soothe the mind of the patient and I would go to work the same as if I had used the cataphoresis outfit. I think we are justified many times in using similar deceptions on patients, especially in those where there is a liability of interference in the full performance of the operation.

In regard to the use of cataphoresis. I think there is a large field for eight or ten well instructed men to go around and instruct men in their own offices in the use of the cataphoretic appliance. There are twenty thousand dentists in the United States, and the probabilities are that on the outside not more than 10 or 15 per cent know anything about electrical science at all, and if they must use it how much better to use it in a manner that would show they had had some instruction. Even the books issued by authors
are not sufficient in themselves to thoroughly instruct those that are absolutely destitute of knowledge on the subject.

With reference to the understanding of sensation, I quite agree with Dr. Wedelstaedt in what he says of the instantaneous effect of cocaine when it is injected. What I mean by that is in one minute, or two at the outside, you get almost as much anesthesia as by waiting five or eight or ten minutes, because every fraction that you inject into the soft tissue would be effective until sensation has returned—that is, in minute doses. I think you get far better results in the hypodermic use of cocaine solutions in minute doses than in the concentrated ones. When I was in Paris in 1886, in a conversation I had with Dr. Paul Du Bois, who was professor of therapeutics, I found he was using cocaine by having previously dissolved it in liquid vaseline, and he got very excellent results with minute doses, and when I came home I used it in that way, and to this day I have continued to use cocaine in liquid vaseline. You do not require so much of it, and it is readily diffused, and the cocaine is rendered sterile by being dissolved in a little vaseline, as you do not have to use much carbolic acid, and I like it very much.

I wish individually to express my appreciation and gratification of the excellent presentation of this subject by Prof. Hoff to-day.

Pres. James: If no one else wishes to speak on this subject I will ask Prof. Hoff to close the discussion.

Prof. Hoff: I thank you very much for the appreciation you have shown my feeble effort, and I thank you also for all the criticism you have expressed, and I hope the object I have sought to attain in this paper has been partially accomplished, and that is that we should not discard cocaine, but that we should more closely pursue this subject, and more scientifically investigate it, and I doubt not in time we shall make more extensive use of cocaine than we do at present.

There are several things I would like to speak of that were brought out in this discussion, but I will only speak of one, and that is in reference to the instantaneous action of cocaine. I believe it is practically possible to get what you call an instantaneous action by the hypodermic injection; it is only in peculiar conditions, in those cases where you can make a definite injection. In a healthy, normal tissue you can make a hypodermic injection that
will produce an instantaneous effect within a limit of half a minute, but in a diseased condition of those tissues it is not possible in my hands, at least, I have never thought I got anything like an instantaneous effect from cocaine in those conditions, and I think the reason is plain, it is not possible to cause the absorption of the solution in the same way as where we have normal tissue to deal with, and you must not expect to get instantaneous effect.

Another thing in regard to the return of sensation. This you must expect where you use the diluted solution. It will be absorbed rapidly and the effect of the cocaine will be just as rapidly dissipated. It will be in effect longer if you use a stronger solution to make your injection; it will be possible to continue the effect some little time, say ten minutes, and with eucaine I have had the obtunding effect retained for fifteen minutes with a 5 per cent solution, but I have never obtained that effect from a 1 per cent solution. I take it the conditions will determine the effect, the length of the anaesthesia, the manner in which you apply it, the strength of the solution and the physiological conditions.

CLINICS.

“A Method of Fitting Bands for Logan Crowns.” Dr. H. A. Knight.

Pres. James: Are there any questions you would like to ask Dr. Knight in regard to this clinic? I think all those who saw the clinic understand the modus operandi.

“Quick Method of Resetting Teeth on Rubber Plates.” Dr. H. A. Knight.

“Combination Plastic Filling.” Dr. H. A. Knight.

The clinic was a combination plastic filling. I endeavored to demonstrate how a certain class of teeth can be restored to use by the use of cement and amalgam. Classes of teeth like broken down cuspids, where there is a cavity with the labial wall left standing. It would be a good tooth if it were not for the large cavity and so deep that it almost necessarily exposes the nerve. Any tooth that can be filled with something can be filled with amalgam. I fill the bottom of the cavity entirely with soft cement. Having mixed the amalgam before beginning the operation of filling the cavity it is now ready. I take a portion of this mixed amalgam and about an equal portion of the soft cement, and with the spatula mix thoroughly on the slab; then place enough of this
material in the tooth to fill the whole cavity until it is two-thirds or three-quarters full, being careful to carry it out to the margins. I then wait a short time until the mass has had time to gain some rigidity; then cleanse the margins thoroughly and apply some soft amalgam, burnishing it on carefully; then fill out the contour with a harder mixed amalgam, being careful to have no amalgam in contact with dentine. In this way it is impossible for amalgam filling to discolor the tooth.

"Removal of Live Pulp." Dr. A. C. Rosenquist.

Dr. T. B. Hartzell: I would like to know whether Dr. Rosenquist laid the pulp bare.

Dr. Rosenquist: I injected the cocaine, placed my rubber dam, and forced the cocaine through the dentine. The first attempt was not successful, and the patient complained she could feel it, but the third attempt produced complete anaesthesia.

Dr. Owre: The operation was not entirely painless; I suppose it was because it was so much inflamed around the tooth. We all know it was very hard to get the cocaine to take effect. The only other interesting feature about it was that he used the special handle that is made by G. R. Schimmel, of Detroit, Mich. The handle was separate from the shank that held it to the syringe. I think that was all.

Pres. James: That concludes the clinics, and as it is getting late a motion to adjourn will be in order.

REPORTS OF CLINICS. CONTINUED.

"Demonstrations of Treatment of Pyorrhoea with Reference to Etiological Factors." Dr. G. V. I. Brown.

Dr. Brown: The idea was to get at the etiological factors. In the second place, I expect there are a good many that do not agree with me as to the exciting cause in this case. The largest pocket there was not pyorrhoea; it was between the two molars on the left side. A number believe the trouble was due entirely to improper filling. I do not think so, because I found the man had been in the habit of grinding his teeth, and he ground one lower incisor which was a little out of the arch, a little out of the gingival line, but the same condition was on the right third molar where the occlusion was imperfect, and I believe therefore the proximal surface had something to do with it, because most of the force was applied to one of the cuspids.
It is to bring out discussion of these things that the whole idea of the clinic rests on, and if we do not do it then it will be a failure.

Dr. Murray: I would like to ask Dr. Brown what he attributes this condition to.

Dr. Brown: That should have been read with the report; I meant to bring out the etiological factors. The trouble was, he used some of those teeth more than the others; he was in the habit of grinding on this front tooth. That illustrates one thing very nicely. Wherever those little points of irritation occur we find some salivary calculus, we do not find any serumnal calculus, and they were on the side of the tooth opposite this tooth, and it was on the front portion of it where we found the irritation. The same condition applied to all the others.

Dr. Weiss: There is one point in regard to this matter of which no mention has been made. This gentleman has been wearing a partial plate for a few years, and he has suffered from large accumulations of tartar on his teeth, but during the latter years he has taken better care of his teeth, and that tartar has not been allowed to accumulate as much as before.

Dr. Brown: He seemed to have a deposit of salivary calculus around those teeth where the points of irritation were the greatest. There was no evidence of pyorrhœa around the inferior incisors. In each of those points of irritation there was a serumnal calculus. Salivary calculus did not seem to cut any figure.

Pres. James: If there are any others who would like to take part in the discussion we would like to hear from them; let us be as rapid as possible.

Dr. Day then gave the following report of another clinic by Dr. Brown on the same subject:

Dr. Murray: I would like to ask Dr. Brown if he always asks a patient in regard to rheumatism? I am a little skeptical about some of these points.

Dr. Brown: The idea of that is because it is often laid to uric acid diathesis. The mere asking of this question might lead us to suppose it was rheumatism. That is as far as we can go in this cursory examination. When I have cases under my own care I always get some of the urine and examine it, but I did not do it in this case.

Dr. Van Duzee: Now I wish the doctor would go a little
further and explain from his standpoint as a physician what the uric acid diathesis means and what it comes from. We may have a large following among the dental profession who may not know anything about this uric acid diathesis. I have some very strong feeling on this matter of urine, and I do not like such a superficial method of treating the subject as this, and if the doctor will give us his idea of it I think we will all appreciate it.

Dr. Brown: Uric acid diathesis is a little too big a subject for us to go into, and as to what it is I cannot answer with accuracy. The idea in a general way is that there is a certain amount of waste which is prone to cause rheumatism, but the sum and substance is it has not been proved, and it is very indefinite. The idea now is gaining ground that what is commonly known as rheumatic diathesis is only one of the common variations of uric acid diathesis, and a good many difficulties and troubles of mankind are due to this condition which have not been thought of before.

As far as pyorrhoea is concerned, our friends in Philadelphia and some others have taken the ground that they have been able to prove that pyorrhoea did not begin about the neck of the teeth always; that they had specimens where they found this deposit appeared at the end of the root. They also claimed to have found uric acid present in those cases and laid the whole matter at its door. On the other hand we have our friend Talbot who ought to be an authority. Talbot's idea is that it is the result of irritation, and he claims to have been able to demonstrate that the membrane extends a little beyond the pocket, and so concluded it to be due to irritation. I suppose he will in time find out definitely what the real cause is. It is interesting to note in a general way how many of those people have had rheumatism. If we could examine the urine we might get at the facts a little further. Those cases we have had, all except one, and that is a questionable one, I think almost all of you will agree with me that they were due to irritation. This one case comes distinctly under another head.

Dr. Van Duzee: That brings out a point I want to make. We are discussing these cases in a very superficial manner and overlooking all the vital points, and I do not think as long as our time is so limited that we should discuss or occupy our time in discussing cases in such an unscientific manner. If there are any
cases that are of interest to us, that we can discuss in a proper manner, let us get at them.

Pres. James: Dr. Brown, could you state the most interesting points, those which would be apt to be most beneficial in our daily practice, from which we can draw the most value?

Dr. Leonard: Before Dr. Brown speaks on that I would suggest that the complete report be read and we discuss it altogether, and then Dr. Brown's remarks would bear on all. As it is we are not through.

Dr. T. B. Hartzell: In regard to this last case it was the most difficult I have ever seen. It was a case that occurred in my own practice, and I brought it here to have Dr. Brown look it over. When the man first came to me the central incisors were entirely loose, except a small area on the anterior portion, about half way from the apex, and you could take hold of the tooth and turn the apex and root out. These teeth were so very loose there was no hope of doing anything with them, and after I extracted them those roots were entirely clean and smooth. I believe this man had what might be termed the uric acid diathesis, or had a condition in which the functions were interfered with in such a way that it had left in the system an accumulation or deposit of this serumnal calculus. Instead of eliminating these things they were left in the system. The man was in a bad condition. Dr. Brown thinks the cause of the condition was due to a nervous condition; the constant grinding of his teeth together during the hours of sleep. The occlusion was exceedingly close and true, and he was constantly shutting those teeth together in that way (illustrating) during his sleep, and in the morning his jaws would be tired. Whether Dr. Brown is right or I am right, I do not know.

Dr. Owre: I would like to ask if he ever examined the urine of that patient.

Dr. Hartzell: I confess I had not.

Dr. Owre: That is a scientific method through which the cause might be ascertained.

Dr. Brown: The man told me he had had his urine examined for life insurance, and they accepted him. This is a very interesting case. The others were clearly the result of imperfect occlusion. This case gave me more trouble than any I have ever had in my practice. The teeth were sound, no indication of caries, the occlusion was almost perfect, and yet he had this condition. His
occlusion to-day is not perfect, because the teeth affected are a little more out of place than those not affected, and I believe that will have to be corrected. I questioned him closely, and found he had been in the wheat business a great many years, and he says he was in the habit of taking up a handful of wheat and chewing it, and then he naturally shut his teeth very close together, as you have noticed a great many people press their teeth together very tightly, especially during sleep, and when they wake up in the morning they have a tired feeling in their jaws. That case, I believe, came from that cause. I believe if the lower front teeth would get a little out of place that the irritation would cease, but this continued habit of grinding started pyorrhœa, and from that it has gone on to other teeth, and since he became affected the action of his jaws kept on increasing the trouble all the time. In that particular case it is the result of the nervous condition. I think imperfect nutrition would come in that way.

Dr. Leonard: I think this is a matter that should have its interest for us about as much as anything. I believe there are as many teeth lost, if not more so, from the disease known as pyorrhœa alveolaris as any other known disease of the mouth. It is something that I am satisfied, and I think all of you are, we neglect. I think there are very few of us who have teeth coming to us loose, the sockets of which are diseased, that receive very much treatment, at least I think very few of us help them much. Now it is a disease I have thought a great deal about, and I do not think we should attack the medical members; we should at least give them an audience of respect. I have given this disease some consideration, and I am very much pleased, indeed, to note the conclusions of Dr. Brown, and he has to come to those conclusions through careful consideration through the means of successful treatment. As far as I am concerned I am satisfied that the principal cause of this disease is found in the occlusion, the cause on which Dr. Brown has based his conclusions. In every case he has recommended heroic cutting. Now, for instance, we all know the fearful pressure of our jaws, varying from one to four hundred pounds, perhaps. Imagine one tooth striking another, two teeth coming in contact with each other and grinding the incisive edge with a pressure of from one to four hundred pounds. Will the soft membrane of the tooth, will the soft osseous tissue of the jaw stand it very long? We all know it will not. Those teeth will move, they
will get away, and just as soon as they do this there is a looseness, and just as soon as there is a loosening there is a pocket. Those pockets are going to be filled with what? With anything but that which is aseptic. I gave a clinic in this university last winter in which I demonstrated heroic cutting of teeth, and I have followed it up more heroically still and am gratified with the result. Now in this second case to the last Dr. Allis and I took a measurement of the space between the occlusal surface of his bicuspids when the front teeth were touching. We took it in wax, and in one spot it measured 2.10 millimeters, and in the other 3 millimeters, and in the thickest portion of the wax where the greatest space was, it was 3.7 millimeters. Think of that space between those back teeth when the whole weight came on those front teeth, 3.7 millimeters. In order to bring the occlusion down so that when the lower jaw moves laterally or forward, all the remaining teeth, which are not many, will be relieved from the burden of the stress or closure of the jaws, those teeth will have to be shortened 3.7 millimeters, shortened perhaps on the lower ones, and partly the upper ones. Yesterday afternoon I cut off the upper central incisors of a patient about 6 millimeters, and I cut off in all of the lower ones about 5 millimeters, making in all about between 10 and 12 millimeters that I cut off from his incisors. It was remarkable. It was heroic treatment, but I am saving those teeth and they are feeling better. I have got a cast of them which I took last spring, and I shall take another one. I should have finished the case and come here with a report this year, but when we next meet I hope to have a report, and I guarantee you that the result will be satisfactory. He lost his molar teeth, or some of his back teeth, and he would have lost his front teeth in time, but I am going to save them if I have to grind them. In all the cases which I have noticed of Dr. Brown's, and in my own practice, I have not been able to trace any gouty or rheumatic, systemic trouble. I have simply found in nearly all cases, yes, in all cases, some complication predominating that may have been brought about by different causes.

There is one point which I wish to speak of in connection with correcting this occlusion by means of grinding and by means of cutting. After you cut these teeth off, when you are making a plate, be sure to make it thick enough so it will occlude against your lower teeth.

There is just one other point I wish to speak about. It is
claimed by many authors that there must be a breaking down of the tissue before serumnal calculus will form, and the question is how, at the apex of a tooth, where there is a gum, where there is a process of gum and ligament, we can have a deposit of serumnal calculus. That is one point I have never seen in print. I may be wrong and I may be right. When this tooth moves (indicating), when the lower tooth strikes against the antagonistic tooth, this tooth becomes a lever, the fulcrum of which is here, the force applied is here, and the resistance is here (indicating), and that tooth simply rocks back and forth, with the loose or apical portion of it breaking down the tissue here (indicating), which permits

![Lever Diagram]

the serumnal calculus to form. That is one great point that some do differ in; it is a point that Dr. Thompson and Dr. Pierce differ in. It seems to me if Dr. Thompson would take into consideration that the fulcrum of that tooth is not up here (indicating), and when the force is applied it simply swings loose here (indicating), I think it would show very plainly why serumnal calculus forms in that space. Have you ever noticed the post of a gate, an old fashioned gate, where the swaying of the gate and the force of the wind would loosen this post, just like this (illustrating on blackboard), and the earth on either side would be loosened up? Those (indicating) are your pockets. They are filled up with leaves and debris of all sorts. There is your tartar. Way down at the bottom of this post hole, if you would take the trouble to dig down, you would find a large cavity. You would find it loose at the top and bottom, and hanging more tightly in the middle. That is a case of pyorrhoea, and to cure it would be necessary to pack the earth around it and press it down so it would not become loose and diseased. (Applause.)

Dr. Brown: I am a great deal interested in this subject, and I asked to have my paper, which was to have been read this after-
noon, dropped. There are a great many people who are not conscious of it, but yet they are grinding their teeth all the time, and the paper I was to have read was on the action of the muscles of mastication, having in view, of course, the action of the muscles, as we have brought out in the discussion of this subject. If people had an action of any other muscle such as this we would set it down as some nervous affection. It cuts a great deal of a figure. Those people are not nervous when they go to sleep, but they will get some movement of the jaws. A grinding motion is produced, and people who sleep with them notice it, but they themselves are not conscious of it. I think it has a great deal to do with this condition; I think it has a great deal to do with the discussion of pyorrhea.

Dr. Leonard: I should like to hear from one of our authors, whom we have the pleasure of having with us to-day, and that is Dr. Harlan, of Chicago. (Applause.)

Dr. Harlan: Mr. President and Members of the Society: The subject of loosening of the teeth is such an important subject that it is hardly possible to discuss the whole of it without having previously heard a paper. I was very much interested in the diagram that was drawn by the last speaker, and while it served the purpose admirably of illustrating the conditions found existing around single teeth, it would not explain the same conditions around double or triple rooted teeth, and teeth with branching roots, as the line of axis of the roots of such teeth is not always in line with the crown of the tooth. The first diagram, showing the kernel or deposit of seruminal calculus near the apex, seems to have been discovered in the vicinity of Philadelphia. That deposit, I take it, is left there on the hypothesis of irritation or by movement of the teeth. It appears to me that that deposit is the result of some infection due to the presence of microorganisms, and that it is never mechanical. I have extracted a great many teeth with living pulps that were denuded of the periodental membrane or the bony socket, very near the apex, but I have never found, unless there was an opening from the gingival line up to that point, that there were any such deposits. I have very frequently found nodules and granular masses on the roots of pulpless teeth, which can be accounted for in another way, but whenever the pulp of a tooth is alive, in a number of observations I have made in the past, I have never found any of those deposits.
without a previous detachment of the peridental membrane. It may be the climatic influence may have something to do with that, and it may be that the presence of other constitutional diseases may have something to do with it. The gentleman who asked a little while ago with reference to this classification where they spoke of rheumatism, I think asked a very pertinent question, because we have various forms of rheumatism, gonorrhœal rheumatism, muscular rheumatism, all kinds of rheumatism, and so rheumatism, unless it is differentiated, does not cut much of a figure without very exact and close observation. We have serum- nal deposits at the roots of teeth of very young persons, and one of the cases I saw down stairs yesterday seemed to me to have been brought about by filth more than anything else, and the neglect or absence of personal cleanliness. The tendency to loosening of the teeth is perhaps sometimes transmitted. Where the true pyorrhœa exists the tendency undoubtedly is probably transmissible from mouth to mouth, but whether it is transmissible by the various forms of contact or by the use of instruments is something I am not able to determine. I had a case once where a man was sent to me who had very loose inferior incisors. He had been married for fifteen to eighteen years, and his wife did not have loose teeth; her teeth were perfectly sound. Whether some people are immune or not is another question that has not been determined.

To come to the point that Dr. Brown has made in his case, and the one that Dr. Leonard spoke about, with reference to malocclusion. If malocclusion alone were the cause of loosening of the teeth how does it happen that—well, we will take one lateral incisor, that is a familiar example, how does it happen that that tooth drops down and pushes the lip out? How does it happen that it may take just one central incisor, and instead of two teeth presenting a symmetrical tendency to the same trouble, that one gradually begins to push out and becomes twisted on its axis when there is no force below to cause that? We cannot account for all these things on the ground of malocclusion. I think in many of these cases it is due to wrong breathing. I have seen in my experience, and I have practiced all my life in Chicago, I have seen people with perfectly regular, even teeth, twenty to twenty-two years ago, and now in consequence of repeated attacks of various kinds of disease, exposures, etc., the teeth are spread with-
out any loss of the molars or bicuspids. I speak now of the perfect arches. Of course, as soon as you lose the first bicuspid tooth or the first molar above or below, there is a rearrangement of the teeth brought about through the loss or absence, we will say, of the muscles by which the teeth remain in place. I notice in the mouths of smokers and those who use pipes that after forty or forty-five years of age, instead of the teeth being in exact contact with each other on the proximal surface, they gradually spread, and formerly where they were not able to get between their teeth anything, unless it were a piece of silk, with ease, we see them take a wooden toothpick and pass it between the teeth. I have seen many cases of that kind that is called pyorrhea in one or two teeth. How do you account for that? How do you account for the gradual spreading and separation of the teeth from each other? It is the abuse of nature; it was not intended that man should smoke. If she intended that man should smoke, why should not woman smoke, too? There is something about the poisonous influence of tobacco, combined with the artificial heat generated that causes the texture of the bony socket to lose its hold and the teeth spread. I am not quite fifty years old, but I have every tooth in my mouth, and they are all in the same condition they were in when the dentition was completed. None of my teeth are loose.

Dr. Murray: Do you smoke, doctor?

Dr. Harlan: I have been a moderate smoker for the last fifteen years.

Dr. Murray: Is that condition not almost as prevalent in ladies as in men?

Dr. Harlan: I do not say that smoking is the cause of loosening of the teeth, but smoking is the cause of separation many times. We have to take all of these things into consideration in following any plan of treatment. A great many people will not stop smoking and will not stop mouth breathing. I know a man in Chicago who has a habit of doing something like this (inhaling a breath and then blowing it sharply through the lips), and he has blown the central incisor tooth out so you can almost put a pencil behind it. I have one case of a lady who has a bicuspid that moved around in a symmetrical way simply because she was in the habit of doing this without knowing it. If she would blow the air on the other side of the tooth it would go the other way. One of the diagnostic factors in determining what are the conditions of the case is lost sight
of, and a great many people place the cause as pyorrhœa alveolaris where there is salivary or serumnal calculus at the roots of the teeth. I always say that having a tooth with the peridental membrane detached and a deposit of salivary calculus at the roots, just so far will it be detached and no further, if it is serumnal calculus, and it may go right at the base of the deposit, or on the mesial side of the opening, and the track will run across the root transversely. Whenever those deposits are found, I will reiterate what I have said. In my opinion there is always an opening here, and you can find it if you will hunt long enough, and you will never find any calculus there. It is my thorough belief that that deposit is brought about by the agency of microorganisms in consequence of the degeneration of the bony socket and the soft tissue, and the irritation may be kept up by malocclusion. I quite agree with Dr. Leonard that a great many cases could be prevented where attention is paid to the matter. But to say that malocclusion is the cause of it per se, makes us lose sight of the whole foundation and inception of the disease.

Dr. Leonard: Where do those germs come from, in your opinion?

Dr. Harlan: Not from the serumnal deposits. I think they come not only from the outside but from the inside. We have the facultative microorganism that may be found in the blood, and the aerobic or anerobic (?), according to the situation in which it is found. Strictly speaking, the organism that exists without oxygen is the one that does not come from the outside, and the one that exists only in the presence of oxygen naturally comes from the outside; but the facultative organism may thrive in the presence of or without oxygen, and if we go a little further we find it is the facultative organism that is found about the teeth around the surface of the roots, and as a result they get all of the sustenance necessary. You can find any of the ordinary breeding organisms in those deposits according to the stain tests and according to the microscopic tests. I recognize that this is entirely in its infancy, and nothing like a systematic study has been engaged in by anybody. Those papers that have been read for the last five or six or ten years are more or less speculative and imaginative. The paper by Witzel calling this disease alveolitis is perhaps to-day as truly a scientific paper as all the rest put together. We do not seem to get any nearer the absolute underlying cause of these deposits.
The papers of the late Dr. Ingersoll and those of Dr. Block have thrown much light on the subject, but they are not conclusive, and until we have a chair of experimental bacteriology in our dental colleges, where a man can spend all his time and have twelve or fifteen hundred dollars a year so he does not have to practice dentistry, and can take up and thoroughly study these dental diseases, we must do the best we can, as we have in the past. So far none of our schools have seen fit to establish such work.

Dr. Leonard: Do you think the germs are capable of penetrating the tissues, too?

Dr. Harlan: From the outside, no, sir.

Dr. Leonard: Can they continue by that circular course?

Dr. Harlan: There is no doubt about that. You take the fingers and wipe the gum down that way (indicating) and you will find pus.

Dr. Leonard: Do you think those germs can penetrate up in there after those deposits are formed?

Dr. Harlan: I would not answer that directly. I would say yes, but the tissue that is destroyed from here to here (indicating) may be so little lacking in the food elements that until they get to a deeper place we do not have a large deposit, but as you go down you may have a minute granular deposit, gradually becoming thicker, and so to speak polished, as though the root were varnished, and finally you get to where there is a minute elevated, more or less irregular deposit, and you find it after it has been in process of development two or three or four years. The patient does not complain about this tooth when the gingival irritation first begins; he does not complain about it until after two or three years, and as most dentists are in the habit of not carefully examining teeth they do not discover it until it is deep seated, but there is nothing to prevent the breeding of microorganisms if they have food and moisture; they cannot sustain themselves in their own excrement.

Dr. Murray: Do you find that condition more prevalent in tobacco chewers and smokers than in others?

Dr. Harlan: I do not think so. I am coming to another point. Dr. Brown prescribes lactic acid. Practically speaking there are only three or four men that prescribe lactic acid. He does not say whether it is lactic acid, concentrated, or diluted acid. Lactic acid is one of the recognized agents of the pharmacopoeia.
Lactic acid is produced by microorganism, proliferates decay on teeth, and lactic acid is one of the best solvents, diluted, for tooth structure; but when lactic acid is concentrated it does not dissolve any serumnal accumulation on the teeth, and before you can get lactic acid to the point it will so coagulate it will not touch it; you want to cut it open and inject it in a deep pocket.

Dr. T. B. Hartzell: Can we not entirely eliminate such deposits as occur in gout or rheumatism? You have overlooked saying anything on that point. In gout we have the deposits at the joints, the so-called chalk stones or tophi. We also have in certain forms some deposits that resemble very closely some conditions where gout is a recognized factor.

Dr. Harlan: The deposits in the gouty conditions in other situations are not the same in physical characteristics as such deposits are that are found at the roots of teeth with an open pocket. Some of those deposits are very black. Now the gouty is not black.

Dr. T. B. Hartzell: They find that in chemical analysis they agree to a certain extent.

Dr. Harlan: I do not think a sufficient number have been examined to determine whether any or much of the urates are present. The last paper that Dr. Talbot presented at Philadelphia was accompanied by some of the chemical analyses by one of the best qualitative and quantitative analytical chemists in Chicago, and he failed to demonstrate anything of that kind, and the papers that were presented by Drs. Beers, Allen, and Kirk (I am not certain whether Dr. Kirk presented a paper containing chemical analyses or not), but they showed a sufficient quantity of urates, as they claimed, to show that the gouty diathesis was really a factor in the production of these deposits, but they are not anywhere near the beginning of their theories, because Dr. W. J. Reese, of Galveston, Texas, as long as fifteen to twenty years ago read a paper in which he claimed these were the causes of pyorrhoea alveolaris, that he had discovered it.

But I did not answer your question with reference to gout. I see so many people who have pyorrhoea alveolaris who have no gouty symptoms and no gouty ancestors, that it seems to me at present it plays a very small part. I only say this from my own experience.

Dr. T. B. Hartzell: I conclude then that you are not positive in your conclusions that it was due to some pathogenic germ
Dr. Harlan: You must first have the gingival irritation, and those pockets are caused by the presence of pathogenic microorganisms, and if you have a trauma somewhere near the gingival line or the apex of the root, you might possibly have a facultative organism come in there and lay those deposits, but not otherwise. I just merely say this is my belief.

As long as I am on my feet I want to say that we have two forms of loosening of the teeth, not dependent on an accumulation of salivary calculus; one is devoid of pus at the root of the tooth and the other is devoid of any pus whatever. We have loosening of the teeth by the destruction not only of a portion of the alveolar sac, but the peridental membrane is detached, and finally the apex of the root becomes uncovered and the vitality of the tooth is destroyed, and you may have this little attachment on one side or the other, and if you pull the tooth out it is perfectly clean and free from any deposit whatever. This is not so frequent as the one where there is a deposit, if every man who writes on this subject from the clinical standpoint would only say that those teeth had large or small accumulations of salivary deposits or calculus, or that there were serumnal deposits, or that those teeth were loose and there were no deposits at all. What you call loosening of the teeth, therefore, may be due either to the deposits in pyorrhœa alveolaris, or it may be something else. We have loosening of the teeth from salivary calculus, we have loosening of the teeth from serumnal calculus, and we have loosening of the teeth without any deposits, so practically we have only three. I think that is all I have to say.

Dr. Brown: Dr. Harlan's remarks brought out one or two things I want to speak about for a few minutes. He has brought out the point that I was going to bring out in the work I did this morning. We are apt to call them all pyorrhœa if we find teeth loose with pus discharging, and teeth that have no pus but have deposits, and we also have teeth where the membrane is dead and is gradually coming away. The essential thing is the death of the membrane. When you have pus it helps to kill the membrane, and when you have deposit it keeps on pushing and crowding the membrane until it is destroyed.

So far as malocclusion is concerned, those cases I have mentioned have given him the impression that I believed all those
troubles came from malocclusion; I do not think anything of the kind. I think malocclusion in a great many cases is the cause of the trouble. I think beyond a doubt that there is a tendency to this trouble which is not covered by uric acid diathesis. In the first place, the doctor was speaking in reference to the prevalence of adenoids. All these people have a tendency to other diseases of cellular development. I had a good opportunity in Milwaukee to see the patients through the different clinics. They were people who had a tendency to hypertrophic conditions, and common nasal catarrh, and adenoid growths, and where I was able to examine those people I found no vegetation whatever. Pyorrhea is not often, I believe, transmitted, as the doctor suggested, from one person to another. In an investigation in this society two years ago there were very few of those cases. The question was asked in each case whether the husband and wife both had the trouble, and the answer was always a negative one, although that would not have been the case if it were easily transmitted. I have one case in particular where the father has been one of the most troublesome patients I have had, and one of the daughters began to develop it at the age of fourteen years and the other at twelve. They had pockets formed with a distinct serumnal deposit, but there was not much tendency to salivary deposit. There is hardly a theory that would fit the case, that of the twelve year old which began to develop, except there was some natural tendency in the peridental membrane. These cases were treated at that time, and have given no trouble since. Malocclusion in those cases did not cut much of a figure. One case I took to Chicago recently was one in which, when I took the tooth out, the tooth was completely bathed in pus, the whole root was loose, and when that tooth came out there was no deposit whatever. The membrane had become a mass of dead tissue. I had a number of other cases. I had one case in which the disease progressed until the entire dental nerve was exposed; there was no deposit, but the membrane entirely disappeared. We can correct the occlusion in every case where that exists; we can do that much without going into the question of adenoids or uric acid diathesis.

The doctor spoke about my prescribing lactic acid, as if I prescribed for a patient without any particular direction. The doctor has demonstrated that lactic acid does not dissolve deposits; I do not care whether it does or not. I use it to make it more easily remova-
ble. Whether it dissolves the deposit or not, I do not care, as long as the deposit comes away—that is all I am after. I believe it has a beneficial influence about the pocket, and it has a better effect than anything I have ever used. There is another thing I like to use. If you will take the pockets and pack them with a little shaving of soap a few minutes, and then take a little cotton and swab out those pockets, you will find the deposits will come away more readily, because the secretions of the mouth make a slippery surface, and your instruments remove the deposit more effectually than they did before. After swabbing as I have described you can distinguish the deposit more readily. Another thing, the formation will resist any acid you may apply, so what you want is some alkali to counteract that effect. The thing that I rely upon is the constant use of the mouth wash, and that I do prescribe. I formerly used listerine and carbolic acid, but for a year or two I have been using something that is a great deal better, and that is euthymol; it acts rapidly and effectively. After a patient leaves you, after you have cured a patient and cleansed the pockets as well as you can, then all you can do is to depend on that patient to use a wash and keep the mouth clean. You want a strong antiseptic. While I do not agree with Dr. Harlan that those germs may be deposited, I think he means the germs irritate the membrane. The malocclusion irritates the membrane, and whatever else there may be to irritate the membrane those deposits will come. That is my theory of it. Of course, microorganisms play a considerable part in this matter, and it may often be due to them in some form or another. (Applause.)

Dr. Murray: We are placed in rather a peculiar position here. Yesterday we were taught that if we left our mouths open, if we breathed through our mouths we would be in danger of losing our teeth; to-day they tell us if we close our mouths we are still in some danger. It seems to me there is one point in this subject that has not been touched. I remember some twenty years ago of having an opportunity of looking into the mouths of about three hundred Indians; I had my mouth mirror with me. I do not mean to say that I looked into that many mouths, but I looked in a number of them. I was surprised at the condition in which I found their teeth. Their teeth, especially the molars and incisors, were worn badly. Those up to a certain age in life, say about thirty-five years, I found a rather healthy condition of the mouth.
That examination, of course, was very interesting to me, and had I the knowledge then that I now possess of this disease it would have been more interesting. I also have at home an old history printed in 1800. It was written by a very scientific man, C. T. Longley, and in that history he devotes several pages to the teeth of the aborigines, and I intend to bring his description to the society some time. I think it is well worth the reading. He was a very scientific man, and one who looked at the thing in its true light. In that history he gives the cause of the decay and the decline of health in the teeth of the aborigines as being due to the introduction of European customs and foods, the advancement of civilization and the foods that come with it, and the introduction of hot drinks among the Indians. I do not know that this subject has been touched upon. I think Dr. Harlan will remember the paper that Dr. Barrett read several years ago on this subject, and I think it is a subject that we could all study with profit to ourselves. This is a phase of the subject which has not been touched upon, and I simply mention these facts in the hope that we may pursue some study in that direction.

On motion of Dr. Knight, the subject was passed.

"Extracting Under Anaesthesia." Paper by Dr. F. S. Robinson.

DISCUSSION.

Pres. James: The discussion of this paper will be opened by Dr. Owre.

Dr. Owre: I notice that every gentleman who has been called on gave the excuse that he had not read the paper, and I might plead the same excuse, but I will say a few words on the subject:

The doctor speaks of operating in the office. I find the greatest convenience is not to have the patient at the office, but if it can possibly be done I prefer to operate at the house of the patient, or where he lives, as long as I can take my instruments with me. He states that he leaves the choice of the anaesthetic to the physician, although I prefer to use the chloroform, because it gives the patient less to talk about. I also prefer to inject a quarter grain of morphine before the anaesthetic is administered, because it puts the patient in a more quiet condition, especially those of a nervous temperament. The doctor prefers the use of euthymol as an antiseptic wash; I always use the bichloride, 2000th, and always have

*See page 81.
it on the table. He speaks of using a deep pocket for catching the blood and saliva that drops from the mouth of the patient. I use a papier mache receptacle that answers the purpose very well, and it looks nice around the office. He also speaks about having the patient come back to syringe the mouth. I use $H_2O$. I prefer to have the patients do the syringing themselves; they have so much to say when they come back to the office and it takes up so much time.

Dr. Leonard: There is something in connection with this subject I want to say, and it is something I nearly always say when I get an opportunity. There is no question but what there is considerable danger in administering chloroform or ether, or any of the anaesthetics other than gas. There is considerable danger. Our practice is all we have got, most of us, and no man can lose a patient in his office and hold his practice. If he is unfortunate enough to lose a patient in his office, I do not care what the precautions may have been, I do not care how skillful a physician was in attendance, that dentist's practice is doomed, and the sooner he gets away from that place the better. For that reason I think it very indiscreet of a dentist to permit the use of chloroform or ether. I think we should insist on going to the hospital, which is the proper place. If there is such a place in your city go to the hospital; that is the proper place to take the anaesthetic, or to the physician's operating room, but never in our own offices.

Dr. Van Duzee: I think if the profession of dentistry is ever going to become one of which we may be proud, it is quite essential that we be sufficiently well versed in the administration of anaesthetics to handle such cases in our offices without fear of the result. I consider that a dentist is under a moral obligation to his patients to take care of them. A large percentage of patients cannot afford to go to the hospital, and the surroundings and conveniences of most homes are not suitable. Under favorable circumstances I should be willing to go to the house, but I think it is our duty as dentists to handle those cases in our own offices, and I do not agree with the doctor that a man's professional career is doomed if he loses a patient in his office. I consider that cowardly. I am not talking against the doctor personally, but as a method for us to consider I think it is cowardly. I think we are entitled to take a risk that the physician ordinarily takes in those cases, and if we are going to run away from anything like that it is certainly not
creditable to us as dentists. I think we should have the patient where we can operate to the best advantage, and that is in our offices. I do not think the physician has anything to say about the choice of anaesthetics. If I am going to have chloroform and he does not like it, he can say so. I agree with Dr. Owre that chloroform is the practical thing to use in those cases as a general rule.

Chicago Dental Society.

The regular meeting was held in the Stewart Building, February 1, 1898, with the president, Dr. A. H. Peck, in the Chair.

Dr. F. S. Buckley read a paper entitled "Incidents from Practice in Germany."

Discussion.

Dr. A. W. Harlan opened the discussion. He said: The very interesting paper of Dr. Buckley does not need at my hands very much discussion, as Dr. Buckley speaks from a residential standpoint and from observation of practice in Germany, and the most I could do would be to say something of dental practice as I have seen it in foreign countries as a visitor. My experience in Germany as a visitor has mostly been as an eater of dinners and luncheons, visiting the dental colleges, attending conventions; so that I am sure from that standpoint they are a fine body of men. The practice of dentistry in Germany, as Dr. Buckley has said, is on the upward grade. There is no doubt about that, because they are not only making successful schools in Berlin, Breslau, Halle, and in other German universities, but they are giving students a thorough training in these schools; and while they do run more to plastics than gold fillings and pivoted teeth, yet any one who is in the habit of looking at the German dental journals from month to month and from year to year, as I have done for the last twenty years, cannot but have noticed that the papers are of better quality; the illustrations are good, and better elements of practice are being adopted throughout the German empire.

I have visited Professor Miller at his house and in his office, and also Dr. Sylvester, and also the late Dr. Abbott. Dr. Abbott was the first man to call attention publicly to tin and gold as a tooth filling material, although he was not the first to use tin and gold in combination in filling cavities in molars, and other teeth,
because the late Dr. Westcott, as early as 1843, said there were some dental practitioners in the United States who were in the habit of filling a third or one-half of large cavities in molars with tin and covering with gold in order to be economical in the use of gold, their object in using it not being the same as Dr. Abbott’s. In some of the reminiscences of Dr. Westcott it is claimed that he was the discoverer of the cohesive property of gold, but he did not publish his discovery until nearly sixteen or seventeen years after Arthur had written his book, so that for the uses of posterity his name cannot go down as the discoverer of the cohesive properties of gold. In an article published in the Dental Cosmos in 1873, he writes about in this wise. The postage on letters and packages in those days was high, and in writing from New York he said: “Can you not cut out the sheets of paper which separate the gold leaf and make it less expensive to send gold in the package to me?” Unfortunately for him, when the package came, he found that all the sheets had stuck together, consequently he could not use them. Arthur published his book in 1857, so that I think the credit is due Arthur of having discovered the cohesive properties of gold. There are independent discoverers of many things; that is, without one man knowing in California, for instance, that another one in Australia has had the same idea, and perhaps these men have only given the idea publicity in their particular neighborhood.

To go back to the subject of practice of dentistry in Germany and in foreign countries, we are not going to have many American dentists in Germany, Switzerland, Russia, Belgium, France and Great Britain for very many years, for the reason that the laws that have been enacted in Germany, France, England and other countries are of such a prohibitory nature that it will be impossible for any of our practitioners to go over there and practice dentistry as we practice it, because they absolutely refuse to examine our graduates even in their native language. There is no comity between the nations any longer, and if any one of the gentlemen who may be present desires to practice to day in England, he can put out the sign “George Jones,” but he cannot say “George Jones, D. D. S.,” or “Dr. George Jones, American Dentist,” or “George Jones, Dentist,” or anything of that sort, because they would swoop down on him and close his establishment. One of our Chicago graduates located in Munich. He had a little sign which read, “Zahnatelier.”
They soon closed him up. The police came around and told him it was about time for him to move, and so he moved, and came back to Illinois.

From my own observation in Germany the fees are large in a few offices, but are even smaller than in Chicago. The sittings, as Dr. Buckley has told you, are short, not only in Germany but in other parts of the country.

I had the pleasure of spending several days with Magitot, who is dead now, and I could tell you something about his method of practice. He was in the habit of coming to his operating chair at eleven o'clock in the morning, and he stayed there between eleven and three. He would see on an average of five patients an hour. He would put in cohesive gold fillings during these short appointments, make his replantation and implantation cases, and everything of that sort in short order. He had his offices fixed so that a person came in at this door and go out through this one (illustrating). His rooms were arranged in such a way that the patient never saw the room he originally entered. He had a large income. We talk some about large incomes of American dentists in Paris. The income of French dentists in Paris largely exceed the income of any American dentist at present located in Paris, because they employ numbers of assistants and really do what we would call a large business. The head of the establishment is a man of education and of great business ability. I remember one man concerning whom I was assured by several men of veracity that his practice amounted from two hundred and sixty to three hundred thousand francs a year. Well, there are not many incomes of dentists in Chicago that are larger than that. It was said that he had been in receipt of such an income for nearly forty years in Paris, and yet there is not a dentist in this room who ever heard his name except myself.

I know from my own experience and observation that there are quite a number of Germans in Berlin and Breslau who have large incomes in consequence of the employment of two or three or as many as six assistants. This is a favorite method of increasing their incomes. There is one thing they do in Germany much better than we in the United States, and that is, they make cement fillings in teeth with more care, and they last longer. We will find that those Germans who come to this country, who take reasonable care of their teeth, have cement fillings that have been inserted six
or eight years, and still in good condition. Whether they use better cements than we do is a question I am not able to answer.

There is one point Dr. Buckley did not speak about, and that is oxysulphate of zinc, which is known to us by some other names, as nonirritant cement and artificial dentine. It is true, we have not used that very much in this country because we do not cap so many pulps as they do in some other countries, for when a pulp is very badly diseased here we destroy it.

Dr. W. V-B. Ames: I was interested in the sample shown to me by Dr. Buckley, inasmuch as I have never made use of or seen what we have ordinarily called oxysulphate of zinc. The letter which he received from Fletcher through Ash & Sons, stated that this material was basic sulphate of zinc, which is what we consider or speak of as oxysulphate of zinc. After listening to what Dr. Buckley had to say of it I intend to give it a trial as a dressing seal and for the purposes for which it is recommended. I made a rough qualitative analysis sufficient to see that it was oxysulphate of zinc. I would like to ask Dr. Harlan whether, in the preparations of oxysulphate of zinc with which he has been familiar, the zinc sulphate was not in the liquid portion.

Dr. Harlan: It was.

Dr. Ames: That had been my impression, but I find with this that the liquid is simply an aqueous solution of creosote or carbolic acid and oil of cloves, while the zinc sulphate is mixed in a dry state with the oxide or hydrate forming the powder.

I think the greater permanence of oxyphosphate fillings made in Germany is due to the better material used. We do not find many German preparations with an ordinary solution of sodium phosphate. They more often have solutions of other metallic salts, which are better calculated to give permanency to cement fillings than we will find in examining American preparations.

Dr. Buckley (closing): I spoke of the preparation of Fletcher's, because it has been useful to me. I have no doubt other members of the profession have materials as indispensable to them as this preparation is to me. I do not feel as though I could get along without it. I am very much obliged to the society for listening so attentively to my paper.

Dr. A. B. Freeman read a paper entitled, "The Need of Coöperative Dental Protection."
DISCUSSION.

Dr. Don M. Gallie: It was the desire of my Scotch parents that one of their sons should be a minister, but through some unfortunate circumstance I was sidetracked from becoming a clergyman, and since listening to Dr. Freeman's paper in which he said the clergy lived the longest and the dentists are the first of professional men to succumb, I have regretted that I did not join the clergy instead of the dental profession. But the fact that we are among the shortest lived people is ample and sufficient reason why we should formulate some scheme by which we can collect all that is coming to us. He also compared the dentist to the shoemaker in touching upon the subject of longevity. The dentist and shoemaker are on a par when it comes to probating estates. A scheme or some organization by which we can keep track of dead beats would be a good thing, particularly if we had some agency upon which we could depend to collect our accounts and pay them over to us. It would be a great advantage. I turned some accounts over to a young man who said he had a novel way of collecting bad debts; he collected thirty-six dollars and he has got it yet. If we had some commercial agency handle the bills of dentists it would be very beneficial.

I was in hopes that Dr. Freeman would speak about other impositions that are forced upon us. Before I speak of them, I will say that we are to a very great extent responsible for the amount of bad debts we have. Very few people consult a lawyer or a specialist in medicine without putting up a good retainer fee or without making a good deposit. I do not believe 5 per cent of the dentists of Chicago demand a deposit when appointments are made. If this was done it would insure us against contracting bad debts. We are partly responsible for the bad bills we have on our books.

I was in hopes that Dr. Freeman would say something about the sharks in our dental supply houses. If my patients will remit I shall certainly become a member of the Dental Protective Association by sending in my ten dollars. The dental supply men have been holding us up in regard to the supplies that we use in our daily work. I will cite, for instance, Donaldson broaches, which we so frequently need and use a great many of. Until recently we have been compelled to pay a dollar and twenty-five cents for half a dozen; they are made for about twenty cents. In the last six
months we have been able to get them for about seventy-five cents for half a dozen. We are paying fifteen cents for a carborundum wheel that revolves for a little while, clogs up, or becomes elliptical, and then we throw it aside. We used to pay five dollars and fifty cents a pound for pink rubber. I might mention other things in this connection for which we pay too much. If we can cooperate in a way to compel the dental supply houses to give us supplies at reasonable rates and not hold us up as they have been doing for a number of years, it would be a good thing.

Another important point is this: Take the dentists we have in Chicago and they are endeavoring to tumble over one another in their efforts to get the biggest offices and pay big rent. The lawyers who occupy offices in the Ashland Block, Monadnock Block, and the Old Colony Building, do not pay anywhere near as big rents for offices as do dentists and physicians. We are undoubtedly paying much more than the space is worth. By making a good strong kick we can accomplish something.

I can take no exceptions to Dr. Freeman's paper because I fully agree with him in everything he has said. We need an organization by which we can keep track of dead beats and people that are endeavoring to get work done without paying for services.

Dr. J. N. Crouse: If I talk on this subject you will think that I am talking shop. To forestall that, and in order that you may listen without prejudice, I assure you that what I have done in the dental supply business has been done with my own money. I have made and assumed my own risks. I have been accused of running a dental supply house for the purpose of making money out of it, but if the members of the profession will read one of the circulars I issued six or seven years ago they will see that we were being robbed in an unmerciful manner by sham patents. The profession has paid hundreds of dollars in that way in the last forty years. I saw these things in my investigations, and the only thing for me to do was to formulate a scheme by which dentists could take an active part in the cooperative supply business.

Dr. Ames: How about dead beat patients?

Dr. Crouse: Well, every dentist gets some of them, I suppose, but they do not worry me very much. It is an easy matter for a dentist, as soon as he makes an appointment with a patient, to find out where he lives, what his business is, and if he has any
suspicion on him whether he is likely to pay his bills. If I were in doubt about a man I would present a bill to him at the first or second sitting to see whether or not he will pay it. If he pays that he is likely to pay you for other work, unless you let the bill run until it is a large one.

Dr. J. E. Nyman: I do not agree with Dr. Crouse, I think that the dental parlors are the best missionaries we have got for good dentists. I want to tell you that when a patient, who has previously visited these dental parlors, and has had the usual experience with them, gets into the hands of a skillful and conscientious dentist, he will pay him a bigger fee and more quickly than the average dental patient who has not had that kind of experience, will do. I do not believe it is just the thing to advocate a high class dental parlor scheme for the dental profession; but we are lamentably lacking in business principles, so to speak. Dr. Johnson, I believe, wrote an excellent article at one time on "Collect Your Bills and Pay Your Debts," that many of us would do well to read and profit by. I have a little plan that I follow out; I do not know who it was that advised me to do it. It is this: When a patient presents himself to me for treatment, in the course of the preliminary conversation I casually ask him who referred him to me. If he tells me nobody did and that he happened to see my name on the sign board, I proceed as follows: Before I do anything I have an understanding with him. He is given to understand what my charges will be an hour, and that he will be charged for broken appointments, if he does not give reasonable notice, and that he must give me business references before he comes again. The man who will take offense at such a proceeding is not the man to waste time on. Suppose he has been recommended by Charles Smith, who may be one of my best patients and friends. The evening, before I go home, Charles Smith gets a note from me thanking him for his kindness in sending that patient to me. Perhaps I may get a note from Mr. Smith saying that he had no intention whatever of referring such a gentleman to me, but that he casually mentioned my name in his presence; that puts me on my guard instantly and that gentleman is looked up thoroughly before I do anything for him.

The scheme outlined by Dr. Freeman is certainly a good one for dentists to adopt. There is no reason whatever why we should not adopt some such system as our business houses use. There
should be some headquarters where a list is kept of dead beats. I have a good collector. He was looking at my account book the other day and said: "Do you ever expect to get that account? There are four other dentists who have accounts against the same man." I was surprised. I would be willing to pay $10 or $15 a year to be kept posted in that way. The Dental Protective Association might be enlarged to take hold of this matter too.

Dr. W. V.-B. Ames: I should like very much to see some movement organized in Chicago which would furnish us information such as is furnished business houses. Like Dr. Crouse, I do not have dead-beat patients, i.e., very long; I have them for a time occasionally, and I would like to see some means adopted of evading them. When a person comes to me I try and make sure that he has been recommended to me by somebody. In a number of instances some family physician has sent one or two patients to me, saying that they were all right. When I get through with them I have a different opinion. I have too many unpleasantries at that time. Personally, I would rather spend a few dollars to get out of doing the work for such people than to be annoyed or beaten out of the money after I am through with the work. I hope something will come of this scheme.

Dr. J. N. Crouse: If the members of the profession can be induced to join the Dental Protective Association in sufficient numbers I will organize such a movement as we have under discussion and take care of these dead beats. I will guarantee to put in operation a system that will protect one dentist from the other regarding this dead-beat business, if the members of the profession will join the association in reasonable numbers. Of the 800 dentists in this city we have about 150 only who are members of the association.

Dr. Nyman: What would you call a good per cent?

Dr. Crouse: Two-thirds or 500. If we had 10,000 dentists in the Protective Association, instead of 3,500, I would guarantee to master the situation for the profession.

Dr. F. S. Buckley: My experience must be duplicated by others. I have heard Dr. Crouse speak of this subject, but I have not received one of his circulars or pamphlets in the last three years, or since I came back from abroad. I do not know why I have not received these pamphlets. While listening to Dr. Crouse I have been impressed with the importance of joining the Dental
Protective Association, and I shall do so at once. It seems to me that some of our dentists have not joined simply because they do not know much about it. If I had received any printed matter regarding it I should have joined sooner.

Dr. Truman W. Brophy: There was one remark made by Dr. Crouse that prompts me to speak. I approve of doing what we can toward building up an association for the protection of ourselves, and if there is any plan that is feasible for the protection of one another in a business way I think we could adopt measures to bring that about. Dr. Crouse spoke of our young men who are now engaged in so-called dental parlors. It is true quite a number of our young men are unfortunately so occupied, but the inference from the remark would point out a condition of affairs that does not really exist. It is true that many of our young men are so employed, and they are unfortunately handicapped by their positions. But, then again, let us look upon the other side of the case. While the dental institutions of this country are graduating many students, and it would seem as though the profession would be overcrowded, yet I believe not over 20 per cent of the people employ dentists for the purpose of preserving their teeth, and consequently the young graduate need have no fear that his services will not be required by those among the millions of people in this country who have no dentists and who do not know the value of dentistry. There is one other phase of the case that we cannot overlook. My friend Crouse is editing and publishing a dental journal, and there are other gentlemen engaged in literary work, and I would like to ask him from whom do we get the choicest literary productions that are appearing in the dental journals of our country if not from the young graduates of our dental colleges in the United States. If we look at the array of literature which appears in our dental journals and the work that is done in our dental societies, we will find that among the best men in the dental profession, the men who are advancing it, are the recent graduates of our dental institutions.

Dr. Crouse: I did not mean to convey the impression that these young men were not well educated, because they are. It is an unfortunate thing that they should spend their time and money to get a good education, and then be forced to take these positions at a much less salary than what it would cost to secure the services
of a good mechanic. They are well prepared for their professional work, and I agree with Dr. Brophy exactly on that point.

Dr. Brophy: The general impression was conveyed by the previous remarks of Dr. Crouse that a large number of our young men were engaged in what would seem to be disreputable work. I do not think that is so. They come to me and talk to me about it, and are eager to extricate themselves from their disagreeable positions. We will find many of them engaged in legitimate practice as soon as opportunity offers. Personally, I am sorry they are so engaged. I do not see any way to avoid it. There are some of them, on the other hand, who will engage in disreputable work in spite of every effort to prevent it.

Dr. Freeman (closing): I do not know that I have very much to say in closing. The discussion seems to have digressed somewhat from the contents of the paper. Dr. Gallie mentioned the collection of accounts. I do not want an agency to collect my accounts, because I can do it more successfully than a collector or one who makes it his business to collect the bills of professional men. I want some information accessible in my daily practice whereby I can prevent people from contracting accounts who have no intention of paying them. In corresponding with Dr. S. H. Guilford, of Philadelphia, in regard to this system I have referred to, he informs me it has been in use there for many years, perhaps ten or fifteen, and he states it has worked admirably. The charge that is made for the book I have passed around is ten dollars, and that is a mere bagatelle in comparison with the losses which we sustain annually. When presenting itemized accounts I enter them on a bill book with the date when they were presented or mailed. I have kept this book for ten years and given it proper credits. In obtaining information while writing this paper I found that I had an average of about six dead beats a year for the ten years, and while the loss in some instances has been considerable, in others it has been small. If we could report these dead-beat names to the Dental Protective Association or some other coöperative association, and have them issue annually a book for our reference, it would be a good thing. I did not mention the legal objections to such a list in the paper, because you understand there are legal objections to issue a dead-beat list. It is a principle of common law that to injure one's credit or to publish their name in a dead-beat list makes one liable and amen-
able to civil suits and damages. The Chicago association and the Philadelphia association mentioned have also avoided making any comments in publishing the names or in sending out the reports simply to evade the legal objections. With an organization conducted as these two are, it certainly would be helpful if even 50 per cent of the profession would join in, that is, the better class of practitioners, the men who attend dental societies and are considered reputable and progressive.

Dr. Newkirk: Is there a Chicago list now?

Dr. Freeman: I do not think there is. I called on Dr. Cazier, who was a practicing physician but who is now practicing law, and he told me that only one hundred and fifty members of the medical profession, out of a total of three thousand, had coöperated in this work. This, of course, is not a good showing. He said that the physician's association had not pushed this matter since their original circulars were sent out some three years ago. No doubt they would be glad to coöperate with the dental profession. While there were two organizations started two years ago, I have not heard anything of them since, and I doubt whether they have attained any significance whatever.

In regard to the collection of accounts, Dr. Gallie's experience is that of a great many practitioners who place their accounts in the hands of an agency; it is a long time before they get any report, and if they make collections you are not likely to see very much of the proceeds.

I would like to see the Dental Protective Association take this matter up and furnish just what we want and need in Chicago.

The Odontographic Society of Chicago.

A regular meeting was held January 10, 1898, the President, Dr. G. W. Swartz, in the Chair.

A symposium upon cataphoresis was led by Dr. E. J. Perry, who said: I have not prepared any set paper upon this subject, as I did not have the time to get together any data. I will acknowledge that I had been looking up the subject of cataphoresis, and had gone to Justi's and asked for the exchanges that the Dental Review gets, and had looked them all over for the past year and a half or two years and selected the numbers that contained any reference
whatever to cataphoresis. I found that the literature of the profession was quite full of references to this subject.

Over at the college one of the senior students asked one of the professors what he thought of cataphoresis, and he replied that he never ran after fads. I do not know whether he knew I had given a lecture to the students on cataphoresis or not. Of course, it was born in a manger. It did not boast of very respectable parents and is not used by some of the high priests of dentistry. I have asked a great number why they did not use cataphoresis, and they said they were waiting to see what the outcome of it would be. But I am using cataphoresis, and I am very much pleased with it. I have used it probably on seventy-five or eighty patients, and possibly it has been employed one hundred and fifty times in our office. I have not had any trouble with it. I have not had any untoward results, barring one case, where we had severe pain following the extraction of the pulp and the immediate filling of the root, which I ascribed to hemorrhage at the apex of the root, and the fastening of a clot in there beyond the root filling. A clot of blood in the root of a tooth will become putrescent and septic in twenty-four hours. You may devitalize a pulp by any other method and immediately seal it, and it will not become putrescent sometimes for weeks and months, but a canal filled with blood will become very putrescent indeed in a few days. I presume this clot of blood not being absorbed, and the root filling pressing down upon it, caused great pain. This is the only case of untoward result that we have had from using cataphoresis. I think that it is our duty, as dentists, to welcome the use of cataphoresis. Because we do not know how this anaesthetic condition of the pulp is brought about is not a sufficient reason for not using it, in my judgment. I do not think that there is any one who has a clear solution of the manner by which anaesthesia is brought about by the use of nitrous oxide gas. I do not know that it has ever been settled. There have always been opposing factions in the matter as to what really causes insensibility, and still the merest tyro of a dentist attempts to use nitrous oxide gas.

I do not think the position entertained by some in regard to the use of cocaine is a consistent one. Dr. Hoff, of Ann Arbor, has a paper in the December number of the Review, which I believe he read before the Minnesota Dental Society, in which he states that the use of cocaine cataphorically has been abandoned.
by the leading lights of the profession, and that a great many enthusiasts had been born about the time of cataphoresis. God bless the enthusiasts, anyhow. I like those kind of fellows, but he did not seem to. And then he goes to work in the same article, after deploring the use of cocaine, and fearing its toxic effect, etc., and advocates the use of it and eucaine hypodermically. They have gone so far and said so much about it that in the Dental Register they have advertised Dr. Hoff's prescription, his hypodermic tablets for local anæsthesia. Here is the prescription:

Cocaine.................. ½ grain.
Sulphate of morphine.......... ½ "
Sulphate of atropine........... 2% "
Sterilized water................ 30 drops.

Sig. Mix and inject hypodermically 15 to 20 drops.

It seems to me a man has got a lot of nerve that will do that and then complain of the dangers connected with cocaine when used cataphorically. I intended to have had some experiments performed. I intended to extract a tooth, or get one that was extracted, in a fresh condition, put on a dam, and use the cataphoric outfit upon it for twenty minutes or so, in order to find out how much cocaine there was in the pulp of the tooth, if it would pass into the tooth and into the dentine. I do not use cocaine in removing pulps exclusively. I use arsenic. I do not think any dental practitioner can lay down an inviolable rule and say, "Throw arsenic away, now I am using cataphoresis." I do not think it would be wise to do that with arsenic. I welcome cataphoresis as a part of my equipment. I use it more largely than in anything else in excavating sensitive cavities. I do not believe I am going to hurt my patients because I use cataphoresis. It is true, it takes a long time to use it. I do not care to use it until I have a cavity that I cannot prepare without inflicting great pain. Then I use it with convenience without fear and without hesitation. Some gentlemen say they are afraid the pulps will die after the use of it. No gentleman with whom I have communicated knows of a pulp that has died, and I have not seen any that have died. Maybe there are those who have had that unfortunate experience with cataphoresis. You may excavate deeper than necessary under cataphoresis, and thus produce a cause resulting in death of the pulp. Extreme care is necessary here. In the use of cataphoresis we must insulate a tooth. You must put on the dam, so that it
does not leak, and with such care as you would if you were going
to fill a cavity with gold. Furthermore, the current should not
leak, but should be directed through the tooth itself. I use the
Victor apparatus and a battery. I have never hitched on to the
street circuit. I use a saturated solution of cocaine in this way:
I take a few grains of the crystals upon a little piece of glass, and
then take a pledget of cotton, which will fill the cavity loosely, wet
it with water, it will dissolve the crystals instantly. I put that into
the cavity and put my positive electrode on to that. I turn the
machine as fast as the patient can endure it. I do not always give
them thirty volts. I have excavated decayed cavities, in one
instance in particular, for a boy of thirteen. The boy went up in
the air, so to speak, when I attempted to excavate these cavities,
and it was impossible to do anything with the little fellow. The
tears ran down his cheeks, and it was out of the question to
proceed and excavate those cavities. The teeth were very sensi-
tive. In this case I used only five volts for seven or eight minutes.
I went ahead and excavated the cavities, and filled them with gold.
I could not have done it had I not had this apparatus. I could
relate case after case of troublesome gingival cavities that are
extremely sensitive, and I have removed pulp after pulp. Satur-
day, I removed the pulp of a central incisor, where the tooth was
absolutely sound, and I used it as an abutment for a bridge. I
removed the pulp in about a half an hour from the time I started.
I used cataphoresis some twenty minutes, drilled in, extracted the
pulp, and the gentleman was not hurt.

I do not fill roots as I used to fill them. Experience has
taught me that hæmorrhage follows. extraction of the pulp, even
after we have wiped it out with pieces of cotton and bibulous paper,
and we are uncertain that it is stopped. Even if we are unable
to get a color out of it, there may still be some hæmorrhage. I fill
the canal with cotton and some essential oil, probably eucalyptus
oil, seal it in with gutta-percha, and fill the root later on. I find
when I do that the patient has no pain following extraction of the
pulp. I have done this in big and small, old and young patients,
and I do not have the bother about having something by my side,
such as strychnia, to give as a heart tonic. I am running against
no trouble, that I might have if I was using chloroform or ether, or
cocaine hypodermically, but where I have to use it and where I can
use it and it is indicated, I find it is in my practice a very valuable
aid. I consider cataphoresis a great discovery, and when its use is systematized and understood—when it shall have become an accepted practice—it will be a great blessing to humanity.

Dr. J. E. Keefe: My remarks in this symposium will be limited to an attempt to explain what is commonly known as the 100 volt system as we have it in Chicago.

How many of us know how the Edison wires are constructed so as to deliver the current to us? Do we all comprehend the danger to which we sometimes submit our patients by indiscriminately connecting them with the current as we find it in our various offices? My experience has shown me that a great majority of dentists who still cling to this convenient method of obtaining current for cataphoric work, understand very little about the current and seem to fear no dangerous results from its use. Then again, we often hear from those who have not yet adopted the electrical method for obtaining sensitive dentine, that the reason for their not doing so is their fear of giving such treatment, owing to their limited knowledge of anything pertaining to electricity. My own knowledge of electricity is not very extensive, and I find it necessary to give the subject constant attention and deep study in order to use it intelligently in my practice.

The direct or 100 volt system is the only dangerous one of the two currents we use, and from the drawings I will here make I will attempt to show the reason why.

This drawing represents what is known as the three wire system adopted by the Edison company here in Chicago.

The middle or neutral wire was a revelation to me. I was always under the impression that there were two wires only; that the current left the power house on the positive and returned on the negative wire. Since investigating, however, I find that no less than three wires are used, and in some cities more than that number.

We, however, are working from the three wire system. The third or neutral wire is used as a balancing wire. It may become positive or negative, as the occasion demands. When working with the positive wire it acts as the negative wire for the return of the current, and when connected with the negative wire it becomes positive. There is never a direct connection made between this positive and this negative wire for cataphoric work, because the voltage received by such a connection would be 220 volts. You
will notice I have written "live wire" on the positive and negative wires. These wires are termed live wires because the currents transmitted through them can be detracted from their courses by any connection that will permit the escape of the current to anything of a lower potential or level, as for instance the earth.

I want to call your attention to the course of the current, say in Room 7 of the drawing. The arrow above the positive wire indicates that the current flows down the positive wire into the room and connects with the neutral wire. Now suppose a dentist has a cataphoric instrument connected in this room, and has a patient in the circuit, and this patient touches the fountain cuspidor which is grounded, what would happen? To one not familiar with the workings of this circuit it would seem that the patient must receive a shock, but such is not the case. The patient would be perfectly safe, and why? Because the neutral wire in this case is negative, and as the neutral wire, as I have shown in this drawing, is grounded the patient will receive no shock.

Let us turn our attention to Room 6. Here you will see that we are working from the neutral wire to the negative or live wire. In this connection the neutral wire is positive. Now, suppose a patient in this room is connected with this circuit and touches the fountain cuspidor. Would he receive a shock? Yes, a tremendous one. He would receive the entire 110 volts from the cuspidor to the negative electrode.

Why would the patient, in this case, receive the powerful shock? Because of the fact that a circuit of comparatively low
resistance is established across the patient's body from the neutral wire—the hand—to the negative electrode, wherever it be attached, and a current determined by the resistance of that circuit and the pressure of 110 volts would flow through it.

Many dentists feel that all danger is averted by having milliampere meters in connection with their rheostats; but, in a case such as I have just cited, a milliampere meter would be of no use whatever.

My advice to every dentist who is using the 110 volt system is, to test his wires and ascertain which wires lead to his office. The test is very simple. I will demonstrate it to you. Take a common 16 candle power lamp, such as this one, and wind a piece of wire around the thread that screws into the socket. Cover the wire and thread with something that will insulate them; then hold the exposed end of the lamp to a pipe that is grounded (water, gas or radiator), and put the other end of the wire into a lamp socket; then, touching the end of the wire (which should be a covered wire with only the end exposed, to prevent forming a connection with the side and center of the socket, thereby short circuiting it,) to the spring in the center, and then to the side, and your lamp will light as this does. Now that we have found our current, we will determine whether we are working from positive to neutral—the safe current—or from neutral to negative—the dangerous current—by placing this piece of sheet lead on; or you can use other metals, preferably a radiator, filling this glass with water, and adding ten to twenty drops of sulphuric acid. Put into this glass a piece of lead bent like this (Fig. 1), letting it hang over the edge of the glass, not touching the sheet lead; then, on the opposite side, put a much longer piece of lead, like this (Fig. 2), letting it hang over so as to touch the sheet lead. Now, we will put our lamp on this small piece of lead (Fig. 1), and touch the other end of the wire in the socket, and let the lamp burn a few minutes. Now, if this small piece of wire (Fig. 1) turns black, we are all right, we have the safe current—from positive to neutral—in this room; but, if the lead turns white, we have the dangerous current—from neutral to negative.

When working with this current, I would advise those who wish to treat teeth cataphorically to cover the chair fountain cuspidor or any pipe within reach of the patient with rubber sheeting or use a battery, which is the safest of all currents.
There are many forms of rheostats made, but the two most common in use are the German silver coil and the graphite, which is carbon or plumbago. Some of the gentlemen who are using the graphite instrument, and I have spoken to several of them, say that they are well satisfied with it, but in my opinion they should never be used with either of the currents I have described, as they are unreliable.

I know the manufacturers of these instruments will not agree with me on this point, but let me ask them and you who are using them, to inquire of some disinterested electricians, why it is that the finer grade of electrical measuring instruments are made of German silver and other wires. Why do they not make these instruments of graphite? Simply because graphite is unreliable for any delicate work. Then why should we use instruments made of an unreliable material when we know many of our patients feel a shock when the point on our volt indicator is moved only one-tenth of a volt?

It is true there may be some poorly constructed German silver instruments put upon the market. I have had an experience with one of them, but if manufacturers will take the pains to get the proper size wire by making accurate measurements, and will put in wires that will carry the currents desired, such an instrument will not vary enough with any kind of usage so that the variation of potential difference will be apparent. (Here Dr. Keefe, by means of numerous illustrations, brought out many points showing why instruments heated and short circuited, demonstrating that if the German silver instruments heated so as to reduce the current they were improperly constructed for the purpose for which they were intended.)

What I have said with reference to the resistance of rheostats holds good with regard to the teeth. In some cases we can excavate a cavity in a tooth after using cataphores is for about ten minutes. In another tooth in the same mouth, at the same sitting, it may be twenty-five minutes before we can operate painlessly; still another may require thirty-five minutes. Why? Because those teeth although in the same mouth, offered different resistance. This may be due to the fact that in some mouths the dentine may be more moist, the cavity may be deeper or have larger tubuli than others. The smaller the tubuli the greater the resistance and the longer it will take to anaesthetize the pulp.
Dr. C. P. Pruyn: I know very little about electricity, and after listening to the very erudite explanation of Dr. Keefe, I feel still more of a numskull than I did before. We are very much indebted to Dr. Keefe for his lucid explanation, but even yet there are many things I wish I knew about electricity. I have been using cataphoresis somewhat during the last year, but empirically. I have had some successes, some failures. I feel like going ahead very carefully. I feel conservative, and perhaps the reason why I feel so conservative is because I know so little about electricity. It is a foreign matter to me. What is voltage? What is ampereage? What is an ohm? There are so many things connected with electricity that I do not thoroughly understand. Even when I do use it and am successful, I fear there may be evil results following. During the first few months I used it I had two or three cases that were quite unsuccessful; and, while I was not alarmed to the extent of wanting to discard it, yet, I felt I ought to proceed a little more slowly and cautiously with this peculiar substance of which I knew so little. If I could have a special course of instruction under Dr. Keefe, or some one who knows something about it, then I might be able to handle it with a great deal more satisfaction to myself and greater safety to my patients. When we first began to use this remedy I think we made mistakes. We know that, as a rule, when a new remedy comes out, the pendulum swings up high; but, after a little, it goes to the other extreme, and eventually, the pendulum seeks its proper level. I feel that the pendulum is beginning to go back to its proper level. It has been swinging in the hands of many of us in the other extreme, so that we have been a little fearful of cataphoresis. But when we listen to men like Dr. Perry and Dr. Keefe, we take heart again, and we think, perhaps we have been too conservative. It may be, however, that Dr. Perry will come across cases, some time or other, that may set him to thinking. He may see some direful results. We are as yet mere tyros in using this peculiar substance of electricity. It is a force, the power of which we are in ignorance; but because we are in ignorance, there is no reason why we should entirely discard it. Let us be conservative in its use. I am not using it as much to-day as I did a year ago; still, I do not say it is a failure. I do not want to discard it. I do want to know something more about it before I experiment very largely, and discussions, such as we have had this evening, are promotive
of good, of inspiration, of light, of education; and I need to be educated along these lines.

Dr. E. J. Perry: I would like to ask Dr. Keefe if he would not recommend a dry cell battery instead of the street current.
Dr. Keefe: Yes; I do especially to those not familiar with rheostats and 110v current.

Dr. Pruyn: We are such novices in the use of electricity that I would like to ask Dr. Keefe a few questions. What is your modus operandi of insulating a tooth? What do you do in the case of an amalgam filling in a tooth, and a new cavity forms and you have to anaesthetize the pulp? Suppose there should be a gold filling and you wish to open up another cavity and to anaesthetize the pulp, what would you do?

Dr. Keefe: I would, of course, insulate the filling whether it be gold or amalgam.

Dr. Pruyn: How?

Dr. Keefe: In many ways; you can insulate with chloro-percha or some of the varnishes.

Dr. Pruyn: Do you prefer chloro-percha as an insulating material?

Dr. Keefe: Not necessarily. I have used court plasters, but there might be some danger in its use. If it should become wet there is danger of permitting it to become loosened. Copal ether varnish and chloro-percha make very good insulating material. I rely more upon those two than anything else.

It is always advisable to insulate fillings, and it is also good practice to put two thicknesses of rubber dam over the tooth on which you are working to prevent any possibility of the cocaine getting beyond the tooth to the tissue. Suppose an operator is careless and while working on a labial cavity the current is gradually turned on, the cocaine leaks through the rubber and anaesthetizes the gum tissues and pulps. It is admitted by the disciples of the graphite instrument that the current may increase in their instruments but not diminish. Now it is usually at the point of poor contact that current burns tissues, and if some of these instruments allow enough current to penetrate the numbed tissue and your contact is poor, sloughing will result.

Dr. Pruyn: Suppose there should be a leak of the aqueous solution around the periphery of the tooth, will the sloughing result from the cocaine or from the electricity?

Dr. Keefe: It may result from both. It may result from cocaine if you put a strong solution of cocaine in the tissue. Sloughing will occur from hypodermic injections of cocaine. It may be a combination of both. I have never seen a case of the
kind, but I can imagine one where the tissues would slough when burned by too much current and poor contact, but this could not occur when using the German silver rheostat.

Dr. Pruyn: Suppose you are going to put a gold or amalgam filling in a molar tooth that is decayed on the proximate surface, and you wish to open the cavity on that surface, and do not want to insulate the filling, what would take place?

Dr. Keefe: With an amalgam filling you might get a deposit produced by the action of the current, some oxide of the metals that it composed. When we combine gold and an alloy in the same cavity or in separate cavities we get an electrical action between the metals until such time when there is a deposit of the oxide of amalgam formed around the amalgam and then it becomes partially insulated and the current would be scarcely perceptible.

Dr. Pruyn: Is there any possibility of breaking down the tooth tissues surrounding an old filling?

Dr. Keefe: Not any more so than there would be of breaking down tissues surrounding the positive pole, where we have it applied.

Dr. Pruyn: Suppose, in the case I have cited, you have to use a clamp, would you protect the clamp in any way or insulate it?

Dr. Keefe: I would insulate the clamp. The current in passing would pass around the clamp; it would not get through the enamel, as enamel is a nonconductor.

Dr. Pruyn: Suppose it reaches below the enamel and touches the neck of the tooth?

Dr. Keefe: You would get current if there is any moisture.

Dr. Pruyn: Would it be advisable to guard against that?

Dr. Keefe: Yes. You should guard against the current flowing in any direction but the direction you want it to flow.

Dr. Pruyn: How would you insulate that?

Dr. Keefe: With copal ether varnish. I would like to state while I have the floor that experiments are being carried on in the laboratory at Ann Arbor to determine what drugs pass from positive to negative and what drugs pass from negative to positive poles.

They have demonstrated that drugs do pass from the negative to the positive poles, and have coined a new word for this action which they call anaphoresis. The result of these experiments will shortly be published in full.
Dr. Pruyn: You do not know why?
Dr. Keefe: I do not know.
Dr. Pruyn: Some one suggested a short time since that a very good insulating material for teeth where we wish to apply the rubber dam, is to take a piece of French tubing, slip it over the tooth after the dam is adjusted, and then put on the clamp. In this way you insulate from the clamp.
Dr. Keefe: It would be very difficult to get rubber tubing over a tooth, and the other insulators are certain.
Dr. Geo. B. Perry: After you have exposed the tooth you are going to work upon, do you find it necessary to put a clamp on the first tooth exposed, or attach the adjustment which some of the manufacturers have put on the market in the form of an adjustable clamp, for holding the positive pole exactly stationary? If you find it necessary to expose another tooth, can you not insulate that tooth by placing a strip of rubber dam between them after having carefully dried all moisture around the tooth?
Dr. Keefe: Yes.
Dr. Pruyn: Are there any dangers that you have come across in your experience, or that you can suggest, that we might steer clear of?
Dr. Keefe: There is danger in overanaesthetizing a pulp.
Dr. Pruyn: What might be the result then?
Dr. Keefe: An inflammation, although to my knowledge I have never had it occur in my practice.
Dr. Geo. B. Perry: What is the indication when a tooth is sufficiently anaesthetized?
Dr. Keefe: There are many indications, the most common being when the current can be increased without causing pain.
Dr. Pruyn: Have you known of permanent injury to the peridental membrane from its use?
Dr. Keefe: No, sir.
Dr. E. J. Perry: In what percentage do you use cocaine?
Dr. Keefe: About 20 per cent solution.
Dr. E. J. Perry: Have you used eucaine solution in this connection?
Dr. Keefe: Yes.
Dr. Geo. B. Perry: Have you ever used anything besides that, such as guaiacol or menthol?
Dr. Keefe: Yes. I have had good results from guaia cocaine.

Dr. E. J. Perry: Have you ever had any experience in bleaching teeth cataphorically?

Dr. Keefe: Yes. I have not in all cases, however. I prefer, where I can, to bleach teeth by hermetically sealing a 25 per cent solution of pyrozone in a tooth for twenty-four hours. You can do this in ten minutes and if you can insert the pyrozone into a lingual cavity in any of the anterior teeth, the result is usually good.

Dr. E. J. Perry: Do you use cataphoresis in soft tissues as in cases of pyorrhoea alveolaris?

Dr. Keefe: No, sir.

Dr. E. J. Perry: Do you use cataphoresis in putrescent pulp canals?

Dr. Keefe: No sir.

Dr. Pruyn: Have you had any experience with it in carrying antiseptics and anodynes in cases of alveolar abscesses?

Dr. Keefe: I have attempted to use it in that way, but did not obtain very rapid results, consequently I discontinued its use.

Dr. A. E. Matteson: It may not be pertinent to the subject under discussion, but Dr. Keefe said that he had been using a 25 per cent solution of pyrozone, hermetically sealing it, for the purpose of bleaching teeth. I would like to ask him how he hermetically seals pyrozone in a tooth.

Dr. Keefe: I do not of course, hermetically seal the 25 per cent solution of pyrozone. I simply make an attempt at sealing it as tightly, or as nearly hermetically as possible. This is accomplished by using a quickly setting cement after drying the edges as thoroughly as possible.

The question of endangering the pulp by the use of electricity for obtunding sensitive dentine, by forcing ptomaine or bacteria into the pulp tissue, has caused alarm among some of the profession. This could occur, but I believe the current would destroy the bacteria and neutralize the ptomaine so as to make them harmless.

Dr. W. T. Reeves: I do not know that I can say anything of especial benefit except to remark that I have been using cataphoresis for a little over a year and a half. I do not use it as much as I did at the start, not through any fear of using it, but because
of the time that it takes in the application. I do as Dr. Perry
says, prepare those cavities I can without too much pain to my
patients, and when I have a cavity that I am not able to prepare
as it should be for a filling that I wish to insert, I then make use
of cataphoresis. I am using the direct current. I shall test my
current according to the method described by Dr. Keefe to-night
and find out how my current flows. I am inclined to think I shall
find that it is flowing from the positive to the neutral, because I
have had very little trouble in the application of the current to
patients.

I have not made use of the method in destroying pulps and
removing them at the same sitting. I have used it to anaesthetize
the pulp so that I could make the exposure I desired, and then
have gone ahead and applied my arsenic as usual, preferring not
to take any chances of excessive haemorrhage, which sometimes
occurs in removing a live pulp at that sitting.

Some Remarks on Current Controllers.

By W. V.-B. Ames.

At the recent symposium on cataphoresis, when Dr. Keefe called
timely attention to the difficulties attending the attempt to use the
negative wire of the Edison three wire system, it would have been
just as timely to have called attention to the opportunities for un-
pleasant experiences from the indiscriminate use of the McIntosh
graphite rheostat so extensively used in this locality, which is
essentially a battery apparatus, on the 110 volt system, with only
a lamp in series on one of the wires which is mostly a protection
against blowing out fuse plugs. With this arrangement there is a
possibility of 105 volts in the patient's circuit with a full revolution
of the arm, and from my knowledge of the number of these instru-
ments used in this way the wonder is that more serious results
have not attended.

An apparatus wired within its own mechanism for the 110
volt system cannot be easily adapted to the battery, as such must
contain a shunt of comparatively low resistance, which would ex-
haust the battery to a serious extent; but any battery apparatus can
be readily adapted to the 110 volt system by simply shunting in a
lamp between the positive and negative (ground) wire either just
at the binding posts of the apparatus, or anywhere between these
posts and the lamp which should be in series on the live wire
which has been spoken of as a protection mostly against blowing
out fuse plugs. With a 16 candle lamp in series and a 16 candle lamp in shunt, there would be a possibility of 54 volts, with a 32 candle lamp in shunt 93 volts, and with a 50 candle lamp in shunt 24 volts. By this it will be seen that an instrument of any desired voltage can be readily arranged. In using the 110 volt system it is not only essential that the polarity of the live wire be ascertained, but that the protecting lamp be in series on this live wire, i.e., between the power house and your apparatus rather than between your patient and the ground. Most forms of apparatus, especially designed for the 110 volt system, have two lamps in series, one on each wire, which I consider to be a serious fault. If there is a necessity for two lamps put them both in series on the live wire, when, if you are working with a positive wire, there is no difference in the resistance between the negative sponge electrode or the patient and the ground, by way of the neutral wire or your chair which may be grounded.

There should be no excuse for using a negative live wire. Either get the electric light company to change the wire through your meter to a positive, or adopt the battery. The negative live wire might be connected to the post marked positive of your apparatus and the other wire to that marked negative, which arrangement would lessen the severity of a short circuit. This arrangement would call for the positive and negative of the patient's circuit being reversed, but even then you would need to take many precautions against short circuits.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-fourth annual meeting of the Illinois State Dental Society will be held at Springfield, May 10-13, 1898. Dentists practicing in the State of Illinois who are not members of the society, and dentists of other States are cordially invited to attend. Hotels and railroads will make the usual reduction. A large attendance is desired and a profitable meeting is anticipated.

Dr. E. K. Blair, supervisor of clinics, states that a very interesting program is being prepared in his department, and will appear in the April issue of this journal.

A. H. Peck, Secretary,
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The Illinois State Dental Society.
The next annual meeting will be held in Springfield the second Tuesday in May. Dr. E. H. Allen has promised to present an interesting program for this meeting.
All dentists are invited to be present from adjacent States.

Midwinter Enthusiasm.
The gigantic success attained by holding midwinter clinics in Chicago was never more clearly manifested than the latest achievement of the Odontographic Society in the celebration of its Tenth Anniversary, February 21 and 22, 1898.
From Denver in the west, Minneapolis in the northwest, Philadelphia in the east, Louisville in the south, with Kansas City, St. Louis, Cincinnati and other cities in between will tell something of the character of the attendance at this monster meeting.
About eighty-five clinics, all told, and six papers is the sum total of the work accomplished. Dating back to 1889, when Chicago gave its first midwinter celebration until the present is only a short period. During that time many winter gatherings have been held in Chicago and St. Louis, but this last eclipses them all in point of attendance and enthusiasm. Meetings of this character are genuine educators, having a tendency to enthuse the onlooker. They breed friendships and the personal contact makes of us all better citizens and dentists. We hope to present in these columns the result of the meeting as fast as we can find space to print the proceedings. They will go farther to show that we are progressive and in the race, than dull, tiresome midsummer
meetings which we all feel a burden upon us at a time when what we most need is recreation, change of air and time for recuperation.

Let's have more of these midwinter clinics and social diversion.

**What Is Medicine?**

Is it anatomy, physiology, chemistry, materia medica, surgery, obstetrics, practice, or what is it? Sometime since we heard a man say that his paper was one which leapt beyond the confines of dentistry into * * * so many subjects that dentistry was not large enough to comprise or comprehend it.

What is dentistry? Is it anatomy, histology, physiology, materia medica, surgery, pathology, embryology, bacteriology and practice, or what is it? It seems to us we number about twenty thousand or more in the United States; that it is only practice which is different, not fundamentals. Each in its own space is large enough to consume all the energy and learning of a full man or woman. No one pretends that botany or geology is medicine or dentistry, no more than that sanitary science or pharmacy is medicine. It is about time to stop and look around and see if dentistry is not big enough and grand enough and useful enough to absorb all of our talents, and all of our spare time, and all of our researches for the benefit of those whom we seek to aid by these talents. It is not a question of which is the more honorable vocation; it is a question of dealing with the maimed, neglected, and the suffering. All medicine and all dentistry is practiced for the benefit of humanity, for the lengthening of human life and the comfort of it while living.

**Bleaching Teeth.**

Some time ago we had two teeth to bleach which had been stained by dead pulps and decomposed blood and iodoform. After all decay had been removed they were washed with a pyrozone solution 3 per cent; then powdered alum and Labarraque's solution of chlorinated soda was introduced for about five minutes. This removed some of the coloring matter. The cavities were then washed with borax water 10 per cent. We then used a saturated solution of sodium peroxide for about ten minutes, and
the cavity was then washed with 10 per cent sulphuric acid. This was neutralized with a 2 per cent solution of carbonate of sodium. The teeth were still somewhat black, and we gave it up for the day. Next day 25 per cent pyrozone was used, but the teeth were still discolored. We then used the alum dry in the tooth, adding the solution of chlorinated soda for about ten minutes, and the bleaching was perfect. The cavities were then washed with a solution of biborate of soda, then dried, and the interior painted with a solution of white paraffin dissolved in ether.

A thin oxychloride was packed into each cavity and allowed to harden. This was covered with oxyphosphate of zinc, and the teeth were left for a week. They were then filled with gold, and the color is perfect, as they both look as natural as the adjacent teeth. All of the exposed dentine was covered with gold, so that no percolation from the outside is possible. Did we take too much trouble for the result?

DOMESTIC CORRESPONDENCE.

Letter from New York.

Borough of Manhattan, March 7, 1898.

To the Editor of Dental Review:

Dear Sir: Dr. Catching, of Compendium fame, is issuing a little pocket edition weekly which has been coming north for the past twenty-four weeks or so.

One of the recent issues contains an article on "Septic Infection," couched in language to meet the dentist, to whom the article is intended to appeal.

There are a horde of medical practitioners both in and out of town to whom such an article would apply as well. Although it is imperative that all those practicing the healing art should also practice antisepsis, that there may not be even a suggestion of uncleanliness or the possibility of inoculating one with a virus, yet Prof. Weisse, of the Regional Anatomy and Oral Surgery Department of New York College of Dentistry, made the assertion before one of our dental societies not long ago, while speaking about the "Indications of Syphilis in the Oral Cavity," that he had never seen a case, nor heard of one, in all his years of experience where inoculation had occurred through a dentist's imprudence. Of course we are glad to know that, but who of us would
care to submit to the possible chance of inoculation at the hands of one whom we knew to be only so careless as not to have sterilized instruments that had been used on another.

The day has arrived, according to our State law, when a penalty, even to compelling one to discontinue practice until charges can be investigated, and which may be brought forward by one maliciously inclined from blackmail, jealousy, or other motives, such as the theory of uncleanness might suggest.

The latter would be a good method to adopt to force a few undesirables out of the profession, such as the rank advertiser. The Seventh District Society of this State asks the question in a circular letter sent to all dentists of the State society. Suggestions as to changes to the law governing the practice of dentistry in this State that would have a tendency to prohibit of such places as the Albany Dental Association, the Hill Dental Association, and other similar places, which are a stigma on the dental profession.

A fine of $500 was imposed upon a would-be dentist a short time ago for assuming the name of Thomas E. Jackson, who graduated from the Western Dental College, and practicing under his diploma. The graduate reported the loss of his diploma in 1895; but as he died soon after, search for same was discontinued. Inquiries as to whether the diploma was taken from the fined dentist has not developed the fact that that has been done. It would seem reasonable to suppose that this most important proceeding has not been abandoned, for the offender is a man of such character as to be capable of most any duplicity, certainly of such as to duplicate the action for which he has been brought to justice. There are others, said a man who works in one of these advertising offices, and I could name twenty-five right in this town without diplomas or even a license, if I had to. It would be profitable to the State society to compel that gentleman, say by presenting him with $1,000, to divulge the knowledge he holds. Nefarious suggestion, I know, but the law committee has taken even more drastic measures than that to gain their points against illegitimates.

The diploma fraud mentioned above is a brother of a dentist who acquired notoriety only a short while ago by assaulting a gentleman in the swellest of hotels with a bottle, and who has just had entered against him a suit for $5,000 damages by a woman
who alleges injuries to her mouth brought about by an attempt to remove a plaster impression. The dentist forgot his patient, and when he returned it was necessary to use a hammer and chisel to dislodge the mass.

Have you ever noted it, but the majority reflect their early training in their professional career? A gentleman of refined mentality is most invariably refined professionally.

The following character of advertisement pendant from that of corn-fed pig pork would be enough of an incentive for a refined personage to discontinue seeking for such clientele as that advertisement is liable to bring:

Corn-Fed Pig Pork, Young, Tender and delicious, is the only kind used in Deerfoot Farm Sausages. Choice spices for seasoning.

Expression Restored by Artificial teeth. Dr. ———, Dentist. World's Fair Award. — Lexington Av.—N. Y. Herald, December 4, 1897.

It is an appeal to his higher sensibilities.

Another busy month in dental society history has passed.

Dr. John T. Usher used for his subject at the meeting of the First District Dental Society, February 8, "Some Suggestions on Prosthetic Dentistry." His remarks seemed to convey the impression of an appeal for the use of silver as a base for artificial dentures with vulcanite attachments and methods for vulcanizing on same. He had practiced all known ways to accomplish a good result, by tinning the surface to be covered for attachments, and finally by covering with mercury, then with mercury and gold foil over same. He did not say to what extent this method must have weakened the base by amalgamation, but should think it was material. The gentleman did not state that he had ever electrically plated the surface with gold which was brought out in the discussion which followed, as a better method where silver plate was to be used as a base.

Dr. Usher also described "a system of crowning" and showed models. Whenever it became necessary for him to show some new step in the process or an instrument was needed it was forthcoming from the doctor’s pockets, and by the time he had completed he had provoked considerable merriment by his resourcefulness and supply properties, which was unintentional on his part and
not taken with a grace. One good hint was elicited from his remarks, which was the use of a saturated solution of borax in water as a flux for soldering, which has been tried since with most gratifying results. Dr. "Lowry's System of Crown and Bridge Work" was demonstrated by Miss Martha Smith, of Kansas City, Mo., following Dr. Usher.

On March 8, Dr. Eugene S. Talbot, of Chicago, is to read a paper. Subject: "Degeneracy in Its Relation to Deformities of the Jaws and Irregularities of the teeth."

At the meeting of the Second District Society on February 14, Dr. H. C. Ferris read a paper on "The Legal and Ethical Limit of Constitutional Treatment in Dentistry." The discussion brought forth a variety of opinions as to the propriety of transgression upon the medical profession's realm, but the consensus of opinion was that where it was indicated and where that recognition was coupled with ability to prescribe, then it was permissible; but the indications must certainly hinge upon dental or stomatological deficiencies.

Mere codes have no binding effect in law. The law states no limitation to the use of drugs, except where malpractice can be proven.

Opinions of physicians procured through communications were diversified. Some said that the dentist could only use such drugs, etc., that would assist in alleviating dental suffering. Others contended that drugs may be used locally, but never otherwise. Skill must be the main requisite, which implies practical experience.

The event of the month hereabouts was the eighteenth annual dinner of the Central Association of Northern New Jersey, who had with guests about one hundred and seventy-five at their board. The latter comprised the bulk of the attendance, with one lady present. The president said in his address that he would like to address her in the plural, but being one, it's singular.

There were representatives from all quarters—Chicago (Ill.), Connecticut, Philadelphia, Baltimore, and many from Greater New York.

One of the first toasts of the evening was "To our American citizens who have gone to rest just the week past—the crew of the 'Maine.'" Hon. James M. C. Seymour, Newark's mayor, then
opened the ceremonies with a resumé of Newark's virtues and accomplishments.

Dwight L. Hubbard, M. D., dean of the New York Dental School, indulged in compliments to the association, and said he admired dentists and envied them their manipulative dexterity; not only manual dexterity acquired, but dexterity of the brain. Says it honestly, if he had his life to live over again would choose dentistry as his profession.

Dentistry is that which comprehends all the professions and fine arts.

Yankee gumption is what 'the superstructure of dentistry is built on.

And sincerely advocates the requirements for dental colleges to be the minimum, and let them raise above that as high as they can. There are such sectional differences in the States that a common standard is impossible. This is truly American, so let us not discourage ambition, and there will be a self-adjustment of this question.

Dr. O. E. Houghton, of Brooklyn, and president of the Second District Society, dwelt upon "Reciprocal Relations."

Dr. Louis Ottofy responded to the toast, "Faculties versus Examiners." Regretted that there is any such versus as exists between the two bodies.

Fight seemed to start by his presenting the New York State laws for adoption as the requirements, etc., in Illinois. They were adopted in 1896 and rejected in 1897, as a whole. The difficulty in understanding the New York law is the difficulty with it.

The Illinois law does not enforce the practice of dentistry even in Chicago. Examiners are appointed on political grounds.

Dr. Dan Jones, of Connecticut, had prepared certain stories, but on account of certain conditions (the girl) he was helpless.

Poor Dan, we all felt sorry for him.

Dr. B. A. R. Ottolengui said that this, gentlemen, was the first time the Jersey "hornet" had ever shown its sting, and then it was stung by the "queen" bee.

His toast was "Independent Dental Journalism for the Whole Profession," and then he lapsed into the three movements he will undertake this year through the journal he represents:

First movement: To obtain amendment to the patent law.
Independent dental journalism in Chicago is the Digest patent search.

Second movement: Uniform examination in each State. As described by him will be a very unreasonable plan.

Third scheme: Dental museum (National). The repository of curiosities, monstrosities, appliances, methods, etc.

Other speakers lent their aid to the occasion, which proved a great success.

Newark is such a journey from the metropolis that the Jersey boys must feel themselves complimented to get such attendance at their event as they did, and more than complimented by attendance of those from afar. Most fraternally,

"The Borough."

REVIEWS AND ABSTRACTS.

TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY AT THE MEETING HELD AT PEORIA, MAY 11 TO 14, 1897.

Each year this society adds an important volume to dental literature, but probably never before has it presented one containing so much of original matter on so many subjects as this one of the year 1897.

The Illinois society has always been one of the foremost societies in America, and its discussions of papers is sure to be a noteworthy part of its deliberations.

With the presentation of so much new and original matter, the members of the profession present fairly outdid themselves in these discussions. Those taking part were not all members of the society, but many of them are in attendance from year to year to give and receive the good things always to be found there.

The annual address of the president presents some new thoughts to all those working in the interest of dental societies. This address was ably sustained by a report of the "Opinions of Illinois Dentists Regarding Dental Societies."

Pyorrhoea alveolaris was in good evidence and its etiology is yet to be settled. Some very fine demonstrations were made in connection with the paper on the diffusibility of coagulants in dentine.

The department of operative dentistry, as usual in all societies, makes up the larger part of the transactions. New classifications
of cavities, new methods of testing the insertion of gold and new methods of anchorage of fillings with the accompanying discussions are good reading.

"The Anatomical Relation of the Teeth to the Lips and Face" and "The Principles of the Force and Anchorage in the Movement of the Teeth," are both original papers and time will be well spent in their reading.

Other good things are presented in the paper on "Practical Things in Dental Practice," also the "Report on Results in Experiments in Bacteriology."

In the report of the Committee on Dental Art and Inventions, and the Supervisor of Clinics, the "newest" cataphoresis comes in for its full share of attention.

The appendix presents the business, social and memorial portion of the meetings. It is with great satisfaction that the members can look over the summary of its membership of all classes, numbering 269, with 142 present. The attendance, however, of the members of the profession could not have been much less than 250.

The appearance of the volume is neat and tasteful and the press work and cuts admirable. The publishers can feel assured that their good work will be appreciated.


This book covers the ground fully and concisely. It will aid the student materially in obtaining clear ideas of histology. It is an excellent supplement to the ordinary text books for review, but should not be substituted for them. The authors have displayed great pains and are evidently teachers who realize how difficult it is for the student to obtain a clear understanding of the subject.

Tomes Dental Surgery.

The last edition of this valuable work is before us, and from a somewhat careful reading of the text we feel quite safe in saying that it is one of the best and most reliable of all our recent text-books. The first edition was published in 1859, and this the fourth edition has been carefully revised and mostly rewritten by C. S. Tomes, M. A., F. R. S. The illustrations are mostly new and the whole work is of a kind that reflects credit on the editor. We
cheerfully recommend it to the reader. The bacteriological portion is quite up to date and most of the subjects are brought down to the present time. Published by P. Blakiston Son & Co. Edward Spokman, Chicago. Cloth, $4.00. Pages 718.

MEMORANDA.

Dr. C. W. Jones, of St. Paul, Minn., attended the clinic.

Drs. Bailey, Kremer and St. John were in Chicago recently.

Dr. W. E. Griswold, of Denver, was in Chicago attending the clinics.

Drs. C. L. Hungerford and J. D. Patterson were in Chicago in February.

Dr. A. C. Bernays, of St. Louis, recommends antikamnia for the relief of facial neuralgia.

Ferropyrine is recommended as a haemostatic in cases of bleeding after the extraction of a tooth.

Ohio was out in full force at the clinic. Drs. Todd, Barber, Custer and others being seen by our reporter.

The annual meeting of the Iowa State Dental Society will be held in Des Moines May 3, 4, 5 and 6, 1898.

Dr. D. W. Clancy, Dr. O. N. Heise and Dr. J. R. Callahan, of Cincinnati, were in Chicago during the clinic.

The Eastern Illinois District Dental Society meets at Kankakee, Tuesday and Wednesday, March 15 and 16, 1898.

Drs. W. C. Barrett, T. W. Brophy and N. S. Hoff have gone west to visit Omaha, Denver and San Francisco.

Did you ever try the effect of sodium peroxide solution in a discolored tooth after using pyrozone in bleaching?

Dr. J. Taft, of Ann Arbor, Dr. N. S. Hoff and Dr. J. A. Watling were in attendance at the Odontographic clinic.

Some years ago we had an epidemic of "arthurizing" teeth. Now some one has proposed to "sculp" the teeth. What next?

Drs. A. H. Fuller, G. A. Bowman, J. H. Kennerly, Emma E. Chase and others from St. Louis were in Chicago on Washington's birthday.

Dr. W. G. A. Bonwill, of Philadelphia, was in evidence at Chicago during a whole week. He lectured and clinicied almost daily during his stay in Chicago.

In the colony of Victoria, Australia, a new dental college has been started. "The Australian College of Dentistry," Dr. A. P. Merrill, formerly of Chicago, is dean.

Dr. E. K. Blair, of Waverly, Ill., will be master of clinics at the next Illi-
nois meeting in May at Springfield. Drs. G. V. Black and E. L. York will act as assistants.

Prof. Anderson Stuart, of Sydney, N. S. Wales, is visiting the old world to gather pointers for the establishment of a dental department in connection with the Sydney University.

The new edition of Gray’s Anatomy has been revised throughout, and this is especially true of the dental portion, which has been almost entirely rewritten by Prof. H. H. Burchard, of Philadelphia.

We have received the first number of the Przyjazdo Deutystyczczego (Polish Dental Review). We have found it very entertaining and instructive. Dr B. Discryowsky is the editor. It is published at Warsaw.

Do you rotate teeth by the immediate method? Dr. A. F. James, of Oak Park, Ill., has been doing some work of rotating and immediate regulations of teeth with much success, as was shown by models at the Odontographic clinic.

**TRI-STATE MEETING.**

The States of Michigan, Ohio and Indiana will hold a joint meeting at Put-in-Bay in June about 21 to 24, if we are correctly informed.

**TO THE EDITOR:** I had occasion recently to read New Burial, a production of that quaint old philosopher and observer, Sir Thomas Browne. In describing the urns found in England and of Roman origin, among other things he observes: “In sundry graves and sepulchers we meet with rings, coifs and chalice. Ancient frugality was so severe that they allowed no gold to attend the corpse, but only that which served to fasten their teeth.” From which I judge that the Romans practiced some sort of dentistry in England during their long sojourn in that country.

**E. G. BETTY.**

**A LOW FUSIBLE METAL.**

- Bismuth .................................................. 48 parts.
- Cadmium .................................................. 13 parts.
- Tin ......................................................... 19 parts.

This melts below the boiling point of water and is very hard. It melts at so low a temperature that it can be packed with the fingers. A common plaster impression can be poured at once without waiting for it to dry.

**THE ABORTIVE TREATMENT OF INFLUENZA BY CALOMEL.**

In the Therapeutische Monatshefte for October, 1897, Frudenthal expresses the belief that calomel is an exceedingly useful drug in the early stages of an attack of influenza. The dose which he gives amounts to two grains twice a day to adults, or one grain three or four times a day. In infants smaller doses are given according to age. He asserts that the effects of this treatment are remarkable. In a few hours he obtains a great fall of temperature and the disappearance of the neuralgic pains and loss of appetite. The advantage of this treatment he thinks is that it is inoffensive, and admits of general employment. He believes that a cure can usually be produced by the third day.
MEMORANDA.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

The eighteenth annual banquet of this association was given at Davis', Newark, N. J., on Monday evening, February 21. About one hundred members and guests were present. Among the guests were Drs. E. A. Bogue, R. Ottołyngui, Dwight L. Hubbard, of New York; Louis Ottołyngui, of Chicago; Daniel A. Jones, of New Haven, Conn.; C. D. Cook, O. E. Houghton, of Brooklyn, and others.

After the elaborate menu had been served and disposed of, the president of the association, Dr'. William L. Fish, of Newark, rapped for order and delivered an address of welcome. Among those who responded to toasts were Dr Dwight L. Hubbard, of New York, "Professional Requisites: Quality vs. Quantity;" Dr. Owen E. Houghton, of Brooklyn, "Reciprocal Relations Between Societies;" Hon. James M. Seymour, mayor of Newark, "Newark and Her Industries;" Dr. Louis Ottołyngui, of Chicago, "Faculties vs. Examiners;" Dr. Daniel A. Jones, of New Haven, Conn., "The State of Connecticut;" Dr. R. Ottołyngui, of New York, "Not for One Faction, but Independent Journalism for the Whole Profession;" Dr. J. C. Crater, of Orange, N. J., "The New Jersey State Dental Society." Impromptu responses were made by a number of others, and the toasts were interspersed with musical and vocal selections, after which the election of officers was held.

There is a certain member of the dental profession in this city, remarkable for his dignity of bearing and fondness for a joke, even if it is on himself, who has a large yellow covered kick to register because of the indiscriminate and unfeeling use of the appellation "Doc," as applied to himself. His sentiments in regard to the use of this term are embodied in the following:

"Please don't call me "doc." I would not for any consideration, have this recognition become at all general among my friends, for I should have to move to some other location and I do not want to move. You may call a man a thief, a liar, or a dead beat, and yet he may prosper and live on the fat of the land, but let him be called "Doc," and his professional success is seriously imperilled.

I would prefer to spend a night in a station house, so far as my success in the community is concerned, rather than have my friends greet me with that most detestable of all appellations, "Doc."

If a man calls me "Doc," I never feel sure of a penny from him for any professional service rendered. His answer is sure to be "All right, Doc, in a few days I'll make it right."

"Doc." means disaster.

"Doc." is the culmination of all calamity.

"Doc." is a catastrophe given at one stroke.

"Doc." is the warning that we have reached the extreme limit of our usefulness.

"Doc." is the hand that points to the next town.

The word is so odious to most professional gentlemen that some one has truly said, "Knock the man down who dares speak it to you, and every self-respecting member of the profession will applaud you for the righteous act."
Metal Posts for Anchorage for Fillings in Incisors and Cuspid Teeth.*


There are quite a large number of cavities occurring in the upper incisor and cuspid teeth that call for the greatest skill of the operator and taxes his best ingenuity to successfully prepare and fill them so that the teeth and fillings will stand the constant strain and hammering they are to receive from the force exerted upon them by the lower jaw when chewing and biting, aside from accidental causes that work to their injury.

The difficulties surrounding these operations arise from at least four particular causes, which include: Defective tooth structure, peculiar tooth form, extensive loss of tooth substance and excessive and indirect application of force. One or more of these peculiar conditions have to be met in each of the operations to be presented to you in this paper. It is presumed that you are all familiar with the most complete and approved methods in the preparation of cavities, as laid down by Professors Black, Johnson, Harper and others, so that little space will be given to the details of cavity preparation.

The first class of cavities to be considered is the crescent shaped one, usually found in the central incisors. While this class of cavities are not very numerous, they do occur often enough to require thought and care in their preparation, because they are subjected to a large amount of strain. The most essential part in the preparation of such cavities is the anchorage, for no matter

*Read before the Odontographic Society of Chicago.
how perfectly the details may have been in their preparation and in the skillful manipulation of the filling material, if the anchorage is not strong the operation is soon a failure. These cavities are usually found in teeth of defective calcification, and the occlusal surface is thin, having little if any dentine between the labial and lingual plates of enamel in the region where the cavity occurs, and the projecting horns of tooth structure on either side of the cavity, mesially and distally, are not strong enough, because of the lack of dentine, to be used for anchorage purposes.

These cavities should be formed by retaining the general crescent outline both from an artistic sense of form and because it would weaken the mesial and distal walls of the cavity by giving a square seat for the filling to rest in. The retaining anchorage should not depend upon the walls or general form of the cavity so much as upon two suitable screw cut posts set with cement in the body of the dentine in such a position as not to injure the pulp, and at the same time so placed as not to weaken the dentine that sustains the enamel of the horns of the crescent as represented in cut No. 1.

These posts can be bent and placed in the position that each operation seems to require of the intelligent operator.

The superior incisor teeth are subjects of many accidents and the busy dentist is frequently called upon to restore the remains of what is left of an incisor tooth after a Thanksgiving football game, or a "red hot liner" from a baseball bat.

Often the pulp is exposed and dead, leaving the pulp chamber and canal as a suitable place for the main dowel, with two smaller posts to be set in the dentine on either side to hold the platinized gold that is to be filled in between them and contoured to the natural form of the broken parts.

Sometimes from these accidents the pulp is not exposed and
remains alive, when posts are placed mesially and distally to the live pulp and used as means for retaining the parts to be restored.

A very superior method is to prepare the broken tooth as for filling and then burnish or swage No. 32 to 33 pure gold plate over the stump, pass the posts through the same and solder them to the gold cap, allowing the posts to project below the gold cap nearly to the occlusal edge. Barb the projecting ends and then contour the parts with Watts' crystal gold as nearly as possible, as described by Dr. Ames for gold inlay fillings and then flow 18k. gold solder into the crystal mass until it is solid, then finish and set the same in place as though it were a crown. This latter method is superior because in children the teeth will not kindly submit to the continued use of the mallet necessary to the building up of such large masses of gold foil; besides, the filling itself is much stronger than one made from foil. The surface line of the broken tooth is best changed by giving it a curved form, as shown in cuts 3 and 4; thus allowing the filling to contact with the adjoining teeth and possibly prevent decay near contact point and at the same time satisfy the æsthetic sense of beauty.

Another and a much more numerous class of cavities occur in the incisors and cuspid teeth, either on their mesial or distal surfaces.

As an illustration, a typical cavity is taken whose outline may embrace the mesial surface of the left central incisor tooth from its gingival line to the occlusal angle which is too much weakened to be retained, even if it is not entirely gone, extending to one-third or even one-half of the occlusal surface distally. The decay may or may not have encroached upon the pulp; in either case the difficulty is to find sufficient sound dentine and enamel to sustain a filling that needs to be contoured into symmetrical and artistic proportions and still be able to maintain its position under the stress it must of necessity meet.

The cavity should be prepared in the most thorough manner in the cervical regions by so shaping the cervico-labial and cervico-lingual angles as to give the cavity as broad and as retaining a seat for the filling as it is possible. Prof. C. N. Johnson has very graphically described his method of anchorage for this class of fillings, which is to cut a retaining groove across the remaining occlusal surface to near the disto-occlusal angle, which cannot be done in many cases without weakening the labial wall of the
groove so that it is only a question of time until the last stage of that cavity is worse than the first, because of the final breaking down of the labial wall along the occlusal grooves.

It has been also advised for such cavities that a "dovetail groove be cut across the lingual plate of enamel, midway," enlarging the groove distally for anchorage.

The weakness in such an anchorage consists in the fact that the distance between the anchorage grooves and the occlusal surface gives additional power to the force applied at the occlusal surface of the filling to dislodge the same on account of the leverage there is in the length of the filling between the anchorage and the point of applied force; besides that, the anchorage is to one side of the direct line of the force applied. It is a law of dynamics that force travels in a straight line when free to do so, and such a filling is liable to break off below the anchorage if it is not wholly dislodged. The anchorage groove is placed where it is not possible, in many cases, to get sufficient depth of groove to make a strong anchorage bar, besides the difficulty of perfectly uniting the retaining bar with the main filling. For the anchorage will be no stronger than is its union with the filling. The greater the distance, in a filling, between the anchorage point and the point of applied force, the less force is required to dislodge the same, is axiomatic and is a universal rule regarding all fillings, no matter in what tooth or in what surface of the tooth they may be placed.

A stronger anchorage than either of those described can be made in many cases by using a threaded anchorage post made of iridio-platinum or spring gold wire cemented into a hole slightly larger than the wire of which the post is made. The dowel hole should be placed as far below the pulp and in a diagonal direction as may be done to conserve the pulp and at the same time not overweaken the remaining portion of the occlusal surface of the tooth, as per cut Fig. 5. The farther across the incisal surface the cavity extends, the stronger the anchorage can be made. The depth of the hole should be equal to the strength of the post, and the dowel should project far enough into the cavity to allow of perfect adaptation and anchorage of the filling to the post, and should come as near to the point of direct strain as can be and still leave gold enough of the filling to thoroughly incase the post on all sides.

On the lingual side of the filling in many cases the filling may
be strengthened by making the gold more than flush with the enamel, and then grinding away the lower teeth sufficiently to allow of proper occlusion. It should be remembered that all that portion of the filling between the cervical wall and the anchorage post, if it has been properly condensed, reinforces the anchorage pin, and cannot be moved or dislodged until the retaining post is broken.

What is claimed for this method of anchorage is that the metal used for the post is many times stronger than any anchorage that can be made by welding pieces of gold together, or that can be made from pure gold in any form, and that the anchorage can be placed at the most desirable point, with the least loss of valuable tooth substance.

The post acts largely to retain the filling firmly against the walls of the cavity, while the seat of the cavity bears the brunt of the force, which tends to dislodge the filling.

The method of cementing the post in place is superior to screwing the same into dentine, because a bent screw can be cemented in, and there is no danger of fracturing the tooth or of breaking the screw loose by setting the screw up too tight, as when screwed in.

It may be well to call attention to the fact that there are two distinct differentiated incisor tooth forms where this form of anchorage is most applicable:

1. That form of tooth where the occlusal contact point is at or near the occlusal edge or surface of the tooth. The plates of enamel are strong and well sustained with dentine.

The cavity of decay forming near the occlusal angle and the decay progressing toward the occlusal surface with the breaking down of the enamel even or nearly so with the decay in the dentine, leaving no possibility of securing sufficient retentive form of the cavity within the boundary of decay.

2. That tooth form, where the labial and lingual plates of enamel are thin and weak, often very little, if any, dentine supports the enamel plates as they approach each other near their union at the occlusal surface. In fact, the enamel plates are so thin that the occlusal surface is nothing more than the sharp edge of a wedge. This form of tooth is the most difficult to successfully retain a filling in, because the occlusal contact point may extend from the cervical line to the incisal edge and the tooth is so thin
that it is difficult to get enough gold in the filling, near the occlusal edge, to stand the incisal strain. In such a case it might be necessary to bend that portion of the post that extends into the cavity in such a form as to bring it toward the incisal edge, as shown in cut No. 7, being careful when cementing it in place to so place it as to get the dowel where it will allow the most gold in the filling to be on the lingual side of the post where the most direct strain on the filling comes. The wire as it extends into the cavity can be dressed to a point or nearly so, or flattened labially and lingually, without weakening the post and a thread cut on the tapering end of the dowel by changing the screw plate.

In the cases where the pulp is extirpated, a large wire can be used, say from No. 16 to No. 14 gauge.

The square iridio-platinum wire has given the greatest of satisfaction. By anchoring it well into the pulp canal and tapering that portion of the post that extends into the cavity and cutting a screw thread the whole length of the post, most satisfactory results can be obtained.

The size of the posts to be used must depend upon the conditions and the necessities of each case. No. 21, or possibly No. 22 wire, will be as small as can be used in any case. Additional anchorage can sometimes be had where the decay extends well across the occlusal surface by making a retaining anchorage pit toward the distal angle.

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Degeneracy in its Relation to Deformities of the Jaws and Irregularities of the Teeth.*


I propose in the short space of time allotted to me this evening to give you, as briefly as possible, the results of my twenty one years of constant application to the study of the etiology of the deformities of the jaws and teeth.

In order to accomplish the results obtained, the line of study and investigation has carried me entirely outside the narrow limits of our specialty, into the broad realms of embryology, neurology, anthropology, sociology, criminology, etc., requiring many visits

*Read before the Odontographic Society of Chicago.
to the public institutions of this country and Europe. Although Morel, of France, fifty years ago, laid down the law of human degeneracy, and Lombroso and others commenced their investigations some ten years later, very little, if anything, had been written about the jaws and teeth until many years afterward. The absurd theories (that of the criminal type) advanced by Lombroso were so antagonistic to the observations of the other investigators that very little interest was awakened until the last few years in the study of this subject. These investigators must have considered the jaws and teeth of very little consequence, since most attention has been given to brain development, its various lesions and idiosyncrasies, rather than to degeneration of the jaws and teeth.

For two decades Spitzka,† of New York, and Jas. G. Kiernan,‡ of Chicago, have furnished more facts along these lines and awakened more interest than any other writers.

Basing my researches on the principles thus outlined, in a paper (read before the Section of Neurology and Medical Jurisprudence of the American Medical Association, May 5 to 8, 1896, entitled, "The Degenerate Jaws and Teeth," and published in the International Dental Journal, February, March and April, 1897) I have shown that these structures are more important indices of the physical nutrition of the individual from conception until the skeleton has obtained its full growth than any others. I am free to say, therefore, that the treatment of the structures of the body which we, as dentists, have chosen as a life calling, are of much more importance, in many respects, than the filling of teeth and supplying artificial substitutes.

It may not have occurred to you, students and fellow practitioners of dentistry, that the mere filling of teeth, their substitution, and the treatment of so-called pyorrhoea alveolaris, are by no means all that will be required of the future dentist. The coming dentist will be required to spend most of his time in expansion of jaws and correction of irregularities of the teeth. It will not do, then, for the future dentist to say "that he does not care for the causes, it is enough for him to know how to correct them," as has been already remarked by two specialists in this branch of dentistry. We must know, then, the cause in order to treat, successfully.

†Somatic Etiology of Insanity.
‡Alienist and Neurologist, 1882-1898; Journal of Nervous and Mental Diseases, 1882-1886.
deformities of the jaws and teeth, as well as other lesions of the body.

Kingsley, in his work upon "Oral Deformities," in 1880, collected all that was known up to that date upon etiology of irregularities of the teeth. In glancing over its pages, I was struck by the statement upon page 36, in which he says: "By a comparison of my observations of idiots with those of all ranks and conditions in life, as represented in our public schools, I found that, taking the idiots as a class and comparing them with the lower orders of society as found in this country, there were no more irregularities in the one than the other. In both cases did I find that amply developed jaws and teeth were the rule, and narrow, pinched, and V-shaped maxillae and dental arches were the exception.

This paragraph stimulated me to take up the study with a view of ascertaining the causes which produce these deformities. Starting out from a narrow specialty with a limited knowledge of what had been and was being done in other fields, it is gratifying to me to be able to announce that my investigations, although made along different lines, have resulted in the same conclusions as to cause and effect of degeneracy as those of investigators even in fields of science far distant from dentistry. The evolution of man has been going on ever since his creation. Whether you believe that man sprang from the lower orders of animal life or not, should we know nothing of his earlier history, our present knowledge of evolution and atavism is sufficient to settle the question that man, in many ways, did resemble the lower animals. These laws are just as fixed in this respect as any of the laws of the universe. Let me illustrate: Under my observation is a young man living in another city, whose head resembles that of an anthropoid ape. He has a small head with exceedingly receding forehead, protruding superciliary ridges, small eyes, with large sockets, very high and large cheek bones, small flat nose, excessively developed and protruding jaws, massive body and rami, saddle-shaped upper and lower jaws, excessively large teeth; the cuspids prominent. The size of the occipital region is the only line of demarcation between his skull and that of an ape. Very early he contracted the habit of being intimate with domestics, which, later in life, necessitated his being sent from home, his mother being unable to retain proper help. He contracted the morphine and cocaine habits,
and at the age of twenty-nine landed in an insane hospital. Degeneracy has been in the family for a number of generations.

While all the structures and organs of the body are subject to degeneracy, the head, face, jaws and teeth reveal the stigmata more forcibly, because the least deviation can be observed. Hence, the face, jaws and teeth are more important in the study of criminal anthropology and degeneracy than any other part of the body. When arrest of the face takes place, the shape reverts to that of the anthropoid ape.

In ascension of the scale of evolution from the lower vertebrates gradual change in the shape of the head and face is found. The forehead becomes more prominent and the jaws recede until we reach the type of face so much admired in Greek art, that of the Apollo Belvedere. While the lines in this type of face may be pleasing to some, no one at the present time would select it as an ideal type of intellectuality. Indeed, from my studies of marble and bronze statutes in Rome, Naples and Athens, I am of the opinion that this was, at that time, as well as the present, an ideal face borrowed from, the Egyptian type, since the busts of the Roman emperors, as well as nearly all the ancient Greek and Roman statues, together with skulls found in Pompeii and Herculaneum and ancient tombs in the Appian Way and at Athens, show more intellectuality in protruding foreheads and receding jaws. That I am correct in the opinion that the evolution of this type of face long preceded the Greeks is shown by the Village Sheik, one of the earliest and most beautiful Egyptian figures, nearly 6,000 years old.

The evolution continued until the human face reached the perpendicular line as laid down by Camper, which in my mind represents the highest mental and physical development. This period in the evolution of the face and jaws is the one in which we, as dentists, become interested. It is the period at which the service of the dentist, in his relation to the evolution of the face, begins. Up to this time the human jaw has been sufficiently large to contain thirty-two sound and healthy teeth. Some years ago, by measurements of a large number of ancient and modern skulls,* and of people now living in localities where these skulls originally belonged, I found that there had been a decrease in size of one-half an inch in the past 1,000 years. In cases of arrested develop-

*See Dental Cosmos, 1892.
ment and contracted dental arches, at the present time by actual measurement the decrease is from 1 inch to 1.75 inches.

Anterior development of the brain and recession of the jaws are still going on, and here a peculiar complication of things is found. The bones of the body develop from a nucleus, while the teeth calcify from the periphery, and owing to the very early period at which calcification takes place they are not influenced by individual defects after birth, hence they are the same size to-day that they were 3,000 (Michaels, of Paris, says 30,000) years ago. It is now easy to see what must result; the jaws being too small for the long diameter of the teeth, a break in the dental arch must take place. Hence, irregularities of the teeth ensue.

Visit our public institutions in this country and you will find very few, if any, contracted jaws among the foreign degenerate classes. On the contrary, among the English-speaking people this stigma is very common. This naturally caused me much thought and critical analysis as to its significance. In planning my trip to Moscow this summer, I arranged to visit various cities and make observations of the degenerates in the public and private institutions. The objective points of interest were the prisons, insane hospitals, schools of idiocy, foundlings' homes, etc. The features of the soldiers, police and cabmen, as well as the citizens themselves, were also noted for the purpose of comparison. Every country was visited except Portugal and Lapland. In Spain, Italy, Greece, Turkey, Asia Minor, Rumania, Russia, Denmark, Finland and Switzerland contraction of the jaws was not observed; in Germany, Austria, Holland and France the percentage was very small, while in Norway, Sweden and England the opposite was found to be the case. *

If, now, Camper's triangle is applied to the face, it will be found that, among the different races of the world, a majority of the faces fall short of the perpendicular line, while most Scandinavians and Anglo-Saxons have reached it, the Swedes and English, in a majority of cases, have passed far within it. The old New England as well as the older families along the Atlantic Coast have also reached the same angles as the English, but, owing to intermarriage with different nationalities and the newness of our middle and western country, this angle has not advanced so rapidly.

*See report in *International Dental Journal*, January, 1898.
Standing on the corner of Piccadilly Circus and Regent Street, London, I casually examined the faces of the passers-by and found that in 10,000 faces 82 per cent had angles within the perpendicular. In an examination of 3,000 school children in and about London 93 per cent had an angle beyond the perpendicular. It will be seen, therefore, that in the coming generation the percentage of the recession of the face and jaw is greater among the English than the previous generations. A solution of the question, "Why do the Swedes, English and Americans have more arrest of development of the face and jaws, contracted dental arches, irregularities of the teeth, than other nationalities?" has now been found, and, having settled this question, let us look at another phase of it.

Degeneracy of the human body is brought about by many vicious habits in the male, female, or both; namely, excesses of all kinds, worry or fright, exhaustion, as well as ill-fed mothers, thus affecting the nutrition of the foetus. After birth, the eruptive fevers and all constitutional diseases affect the child in part or as a whole, which may only be temporary, or remain permanent. In no part of the body is the effect so marked as upon those structures which are naturally degenerating, such as the face, jaws, teeth and appendix vermiformis. Thus, it is very common for a child to be born with a well developed face or appendix but at any period before the sixth year become stricken with a constitutional disease and have complete arrest of the face and jaws. This condition, afterward becoming inherited, is a splendid example of the inheritance of acquired defects.

People suffering from hypertrophy of the nasal bones, mucous membrane, polypi, or appendicitis are in a large majority of cases degenerates. So-called high and contracted vaults, then, are not due to mouth breathing, but all these conditions are the result of the interaction of evolution and degeneracy. The vault is not pushed up, but is built downward by a lengthening of the alveolar process owing to the long rami. When there are more than thirty-two teeth it is atavism, a return toward the lowest primates possessing forty-four teeth.* Where arrest of the jaw takes place, there is not room for the teeth; as a result in the order of evolution, a break must take place at one or two points, first, in front forming the V or some of its similars, producing a reversion or atavism

toward the reptilian type; second, at the sides, forming the saddle or some of its similars, producing a reversion or atavism toward the carnivorian type. The formation of these deformities is purely mechanical, depending entirely upon the order of the eruption of the teeth. Therefore, the arrested jaw is inherited, but not the deformed dental arch. I have never seen models of parent and child alike. In a collection of 3,000 models no two were found to be alike.

Nature is trying to compensate for the degeneracy of the jaws by dropping the third molar and lateral incisor, hence, whenever jaws are found with these missing it not only indicates degeneracy at conception, but arrest of the jaws as well. If they are imbedded in the jaw, it indicates the same condition, but not to so marked a degree.

Some Thoughts on Alveolar Abscess.*

By A. W. Harlan, M. D., D. D. S., Chicago, Ill.

At the present time it may seem somewhat like going into ancient history to present any thoughts on such a subject as alveolar abscess. But this is a subject which must always have for the operative dentist and for the therapeutist an absorbing interest. As long as the pulps of teeth die violently or by design; as long as the roots of teeth are filled indifferently or incompletely, or filled unmechanically or unscientifically, or if they remain unfilled we will have alveolar abscesses. Alveolar abscesses may be found at the apices of the roots of deciduous teeth. Ordinarily, however, these are of little consequence compared with the formation of an abscess at the apex of a permanent tooth. The permanent teeth being thirty-two in number, many of them double and triple rooted, the possibilities for alveolar abscess in the mouth are very great. The injudicious use of separators and regulating appliances, the careless use of forceps, the numerous accidents that are occurring from day to day through casualties in elevators and from riding bicycles, have a tendency to destroy many of the pulps of teeth which would not be destroyed in all probability by dental operations or by agencies producing decay of the teeth. If it were possible for all teeth to be seen by a competent surgeon-dentist shortly after the destruction of the pulp, perhaps there

*Read before the Odontographic Society, of Chicago, Ill.
would be few abscesses; but, as a matter of fact, few, if any, are seen at a time when the minimum of treatment is necessary. One of the things of first importance in the consideration of the handling of abscesses on any of the oral teeth is to maintain, if possible, the color of the crown. One of my reasons for addressing this assemblage to-night on such a common topic as alveolar abscess is to utter a word of warning with reference to the introduction of remedial agents into the crowns or roots of teeth that have a tendency to discolor them. In the past few years, in consequence of the introduction of numerous oleaginous and semioleaginous remedies, especially those ending in \textit{ol}, there are great possibilities of deep and permanent staining of the teeth, which is indulged in by inexperienced and ignorant practitioners to an extent that is very alarming. Scarcely a day passes but what I am consulted by some man or woman of adult age with reference to the possibility of restoring normal color to a discolored tooth. Alveolar abscesses are not wholly responsible for this frightful discoloration of the teeth; but if the alveolar abscess had not existed deleterious agents of this class would not be introduced into the crowns of teeth.

What I wish particularly to discuss now is that an ordinary alveolar abscess with a fistulous outlet need not be treated with any agent capable of discoloring, by infiltration or imbibition, the dentine of a tooth. In all of those cases where a fistulous outlet exists and the abscess has not been of many years standing, the strong probabilities are that the best treatment that could be pursued in such a case would be, after the root was ready to receive a medicinal agent as the funnel through which it should be pumped, to take a 1 to 2 per cent solution of sulphuric acid in myrtol water; that is, you have ninety-eight parts of myrtol water and two parts of sulphuric acid. If this is pumped directly through the root, after it has been thoroughly cleansed, usually not more than two treatments of this kind will be necessary in even an aggravated case, because the sulphuric acid in 2 per cent solution forced through the apex of the root will remove all of the inequalities around or pertaining to this disfigured apex. If the operator will place a little fold of paper fiber lint over the exit of the fistule prior to pumping this remedy through the root, he may then, after having pumped it, gently press upon this little fold of paper fiber lint and work it and massage it, so to speak, so that every portion of the abscess will be brought in contact with the fluid.
that has gone through the root. If this is done carefully and with sufficient directness and vigor, any little edges of necrosed or carious bone will be acted upon by this solution much more satisfactorily than by the use of aromatic sulphuric acid, chloride of zinc, carbolic acid, or any of the agents that do not directly attack necrosed or carious bone. If the abscess is of some years standing, say five to ten, usually two treatments ten days apart will be sufficient, without the aid of any surgical operation, around the apex to remove this disfigured carious process or the disfigured end of the root.

Now, if it is a blind abscess that we have to treat, it is much better, before an agent of this character is injected into the pouch, to treat it with some form of drug or other that will have a tendency to cause the evacuation of the contents of the pus sac enveloping the apex, and personally I prefer to use 1-1000 solution of corrosive sublimate made in peroxide of hydrogen instead of in water. This carries directly into the territory beyond the apex an agent capable of destroying pus; one capable, also, of destroying any of the pus microbes that may be present, and at the same time it is an excellent stimulant. I make this solution by adding the requisite quantity of corrosive sublimate, 1 gr. to 1 1-20 gr., to 2 ounces peroxide of hydrogen, and add 2 grains of tartaric acid to a 2 ounce solution. This will prevent a precipitation of any insoluble albuminate of mercury which would hinder the healing process. It goes without saying that it is necessary to adjust the rubber dam before injecting an agent of this character into a pouch beyond the apex of the root, and it goes equally that it is necessary to remove all of the debris of the dead pulp, or any other foreign matter contained within the pulp chamber or canal. If the remedial agent which is forced into this pouch is allowed sufficient time, it will escape through the apical opening and drain itself through the channel of the root and crown.

After the preliminary treatment I have always been careful to introduce into the root or the canal either a pledget of absorbent cotton soaked in eucalyptol, or soaked in myrtol, both of which agents are incapable of discoloring the crown of a tooth. These I introduce into the root very carefully, and only about half its length; not stopping it firmly. I cover this with a little pledget of paper fiber lint, soaked in clear liquid vaseline. If I have any apprehension in my mind that there will be trouble or discomfort to
the patient in consequence of injecting a blind abscess in this way, I am careful to not cover the dressing with a piece of gutta-percha or wax until a subsequent visit from the patient. This I usually arrange for at the end of four or five days. After cleansing the pocket with this corrosive sublimate solution, I then inject directly the aforementioned 2 per cent solution of sulphuric acid, dissolved in myrtol water, and stop the root of the tooth nearly as well as it will be when it is filled. The object of using this, as in the other case with the fistulous outlet, is to dissolve any projecting edges which press on the root of the tooth, and by leaving it sufficiently long in contact with the apex of the root these roughened surfaces will be dissolved. All of you know from experience and observation and reading and analogy that the soft tissues will be better builted around the smooth end of a root than one that is jagged, roughened, or that presents an unequal surface.

I only present these thoughts on the treatment of these two particular phases of alveolar abscess, not because they contain much that is new, but because I have come to the conclusion that agents for the disruption and destruction of alveolar abscess have frequently been chosen in the past, not because of their efficient action on diseased, dead or necrosed bone, but simply for their supposed action in the destruction of pus microbes, and the irrigation of the tract or pouch leading from the apex of the root. It is well known in general surgery that hydrochloric, sulphuric, nitric and other acids have been used for the destruction of necrosed and carious bone, but in such a limited space as that around the apex of a root and where abscesses are tedious and distressing, it will be found that the treatment, based on the supposition that you must have an acid to destroy the carious or necrosed bone, will undoubtedly appeal to those of you who have had ill success in the injection of abscesses with various other remedial agents. In the use of stronger solutions of sulphuric acid I have not had as much success as I have had with the dilute solution. It is the aim of the writer to allow such solution to remain in contact with the apical end of the root five or ten minutes or even longer when it is possible to do so. The solution is readily neutralized with a weak carbonate of sodium solution about $\frac{1}{4}$ of 1 per cent in water. The soft tissues readily respond to such treatment if practiced carefully and thoroughly.
Syphilis from a Dental Standpoint.*


The origin of this disease was a subject of never ending discussion for many years prior to 1500, when Torella, who, it appears, was the first one to suspect the true mode of propagation of the virus, said that this disease ordinarily came about by way of transmission, but it was not until the year 1530, when there appeared the much celebrated poem of Fracastoro, a physician of Verona, that this disease received its name.

The story of the poem runs as follows: A shepherd by the name of Syphilus one day reproached Apollo for drying up the trees and draining the springs in such a manner that his flock was dying from want of shade and water. He swore that in the future he would sacrifice to his king, and no longer to the sun. Apollo, enraged, loosened upon the whole land a shameful disease, which attacked first of all Syphilus, and spread everywhere without sparing the king himself. Syphilus had his body covered with shameful ulcers; he was the first to know nights without sleep and cramps in his limbs; it was he who gave his name to the disease, which has been called syphilis from that time, on account of this circumstance. A very interesting history called, "Syphilis of the Ages," has just been finished by Dr. F. Buret, Paris, France. In this book he shows conclusively that this disease was a common malady in the days of the early Egyptians. In fact, syphilis has existed almost since the beginning of man. Buret, to substantiate this, quotes passages from the Bible, as early as the book of Genesis, which seem to describe this disease very clearly. Among other passages, the Bible says: "Moses commanded 24,000 of his soldiers to be killed, because they had become afflicted with a horrible disease through coitus with the women of a neighboring tribe."

Syphilis is a chronic, infectious disease, which begins in a local lesion; this lesion is caused by some morbid secretion, virus or blood, derived from some previous syphilitic person. Beginning thus as a local infection, it quickly invades the whole organism, especially the connective tissues. While in some respects it resembles leprosy and tuberculosis, it is always distinguishable from them by the initial lesion, which has never been found in the two

*Read before the Odontographic Society.
latter diseases. At the end of the first period of incubation, which varies from twelve to thirty days, the first evidence of syphilitic infection shows itself. This is the initial lesion, or hard chancre. In the majority of cases the initial lesion is situated on the sexual organs, and is termed a genital chancre, while the lesions found elsewhere on the body are called extragenital chancres. These lesions consist of a localized mass or tumor of granulation tissue, in appearance somewhat like an indurated pimple of a brownish color, and when extragenital they make their appearance on the lips, tongue, fingers, hard palate, tonsils, nose, eyelids and other portions of the body exposed to infection. At the expiration of the second period of incubation, which lasts from forty-five to ninety days, the second stage of syphilis begins. The secondary symptoms are general systemic manifestations.

In many subjects there is, however, no change from the usual good health aside from slight skin affections, which sometimes go entirely unobserved. In the majority of cases the most constant symptom is fever, which varies from 101 to 104 degrees, with a corresponding acceleration of the pulse, and an increased ratio of respiration, also severe headache. Although the glandular swelling of the lymphatics is one of the secondary symptoms, there is no doubt that the glands are involved as early in the second period of incubation as the fifth week. Inasmuch as skin affections may appear at any stage of the disease, and are exceedingly difficult of diagnosis, I do not think that we, as dentists, need consider them at all. But the lesions that do interest us, and should always warn us as the red lights on the ends of railroad trains, not to run into them at full speed, are the mucous patches. These patches are among the earliest, most frequent and most recurrent of secondary manifestations, located principally within the oral cavity, but sometimes in the nose; and are grayish white in appearance. They are more irregular in their outlines than condylomata, and, unlike the latter, are not, as a general rule, perceptibly elevated above the surface. When syphilis does not become extinct in the secondary stage, it passes into a chronic condition usually called tertiary, the course of which is very uncertain, slow, and sluggish. Tertiary lesions attack the subdermal and submucous connective tissues, and produce in them extensive and dense infiltrations, which are resultant in the contamination and destruction of the whole thickness of these structures. The disease,
at this period, is very deep seated in its lesions, attacking the bones, muscles, viscera, blood vessels and the nervous system, with the predisposition to produce ulceration, sloughing, gangrene, thrombosis and necrosis. Although lesions of the tongue, tonsils and gums are often present, the one of greatest interest to us, at this stage, is the syphilitic necrosis of the superior maxillary bones, the latter producing cleft palate. In the majority of cases hereditary syphilis symptoms appear about the third week of life, and are generally transmitted only to the second generation. It differs very materially from the acquired disease, inasmuch as it presents no initial lesion, and cannot be divided into stages. The lesions, as a rule, are very active, and tend to involve larger surfaces than the acquired form, the bone lesions resembling those of the tertiary stage. I am reminded of a most interesting case I have had my attention called to lately, in one of our hospitals, of a little girl, eleven years old, who developed hereditary syphilis, and with it ultimately a cleft between the palate bones large enough to slip a twenty-five cent piece through into the nasal cavity. After three weeks of mercurial and potassium iodide treatment, the cleft was closed by what seemed to be a secondary growth of bone, as now not even a probe can be passed through it. For many years the crescent teeth described by Hutchinson have been considered by most dentists to be always present in hereditary syphilis, but it is the observation of progressive medical men that they are not present except in a very small percentage of cases; and, personally, I do not think, when they are present, that necessarily they are the result of this disease, but may be due to physical weakness and malnutrition of the individual at the time of the secondary dentition. The Hutchinson teeth were not present in the case cited of the little girl.

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Modes of infection being all-important, I will now pass on to them. We are warranted in assuming that in all instances of syphilitic infection there is a lesion of continuity, or gape, in the epithelium of the skin, or mucosa. Direct contact is the most common mode of infection, and sexual intercourse is the one by which the disease is in most cases given and received. Kissing is a prolific source of infection, and by this act chancre of various parts of the body are produced. Surgeons frequently contract syphilis on cuts and abrasions about the hands and fingers, when
operating upon syphilitic persons. Dentists, in this way, sometimes contract syphilis while operating upon the mouths of infected patients. Vaccination and skin grafting are also fruitful sources of infection.

Mediate infection is traceable to the use of wearing apparel, pipes, drinking and eating utensils, razors, towels, sponges, pillows, lead pencils, surgeons' and dentists' instruments, speaking tubes, musical instruments, etc., etc. Diagnosis by the dentist is often attended with great difficulty, owing to the fact that the symptoms ordinarily present in the mouth are sometimes temporarily obliterated by reason of systemic treatment. That syphilis can be diagnosed by the dentist from the lesions presenting themselves in the oral cavity and about the head, there can be no doubt, for Krefting, in recent investigations, gives statistics showing that out of 280 cases the seat of extragenital chancre was as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lips and buccal comissures</td>
<td>143</td>
</tr>
<tr>
<td>Gums</td>
<td>1</td>
</tr>
<tr>
<td>Tongue</td>
<td>11</td>
</tr>
<tr>
<td>Pharynx</td>
<td>58</td>
</tr>
<tr>
<td>Chin</td>
<td>1</td>
</tr>
<tr>
<td>Forehead</td>
<td>1</td>
</tr>
<tr>
<td>Scalp</td>
<td>2</td>
</tr>
</tbody>
</table>

Summing up the foregoing table, we find that, out of a total of 280 cases, 217 of them are seated in tissues exposed to our observation. The saliva in the mouth of a syphilitic patient, who has no mucous patches, erosions, or fissures, has been clearly proven by the experiments of Diday and Profeta to be noncontagious; but personally, I feel that I owe it to myself and my practice generally to use every precaution, as though the patches and other symptoms were present. So much, then, for the frequency of the extragenital chancre as a diagnostic sign. In every case of hard chancre the neighboring ganglia become enlarged as early as the fifth day after the appearance of the sore, but, as a rule, between the seventh and fourteenth day, rarely later. At first the enlargement is more pronounced on the same side as the chancre, but later on both sides are involved. The hardness of the ganglia is peculiar in its density and painlessness. The anatomical relation between the seat of the chancre and the situation of the indurated
ganglia is very clearly described by Fournier, who says that if the seat of the suspected chancre is on the lips or chin, look to the submaxillary ganglia for enlargement; where it is of the tongue examine the subhyoidian ganglia; of the eyelids, the preauricular ganglia. The value of these landmarks is very greatly appreciated when we consider how often that which is supposed to be a mere fever sore on the lips, is, in reality, a chancre. The next lesions of importance for consideration are the mucous patches of the oral cavity and nose. Inasmuch as their appearance has been described previously in this paper, we will consider them from a comparative standpoint. You will, undoubtedly, ask me if it is not impossible to mistake the condition of ulcerative stomatitis for the mucous patches of syphilis. Yes, it is, if you do not know the diagnostic symptoms of syphilis that are generally present in the oral cavity and about the head. Should you suspect syphilis, look for sore throat, enlargement of the cervical, and submaxillary glands; observe also if there is any thinning out of the eyebrows and a moth-eaten appearance of the hair, which is known as alopecia, the latter being especially noticeable about the temporal region. If these or any of the aforementioned symptoms be present, it is generally safe to ask the patient point blank: "When did you contract syphilis?" Should you ask him if he ever had syphilis, 99 out of 100 would say no. Most authorities on this subject claim that all syphilitic persons are liars as regards acknowledging their disease, but excuse this proclivity on the ground that they are ashamed to disclose it.

Where cases are referred to the dentist from the physician for coöperative treatment, it is his duty to accept such patients and put their mouths in as nearly a prophylactic condition as possible. Remove all calcareous deposits, and fill temporarily all teeth affected with caries, as it is a well-established fact that mercury is precipitated one-third quicker in the presence of dental caries. The removal of all dental irritation overcomes in a measure then the liability to mercurial salivation.

The line of treatment apparent for us to pursue, aside from the removal of dental irritants, is very limited, and is confined to prescribing a gargle of boracic acid or chlorate of potassium (in some cases the application of a 2 per cent watery solution of chromic acid, or, what is better, the wiping of the mucous patches with a 2 per cent solution of corrosive sublimate, care being taken
to touch only the mucous patches. Preceding the application of all medicaments, I would advise the use of a 3 per cent solution of pyrozone.

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It seems quite proper that such a subject should point out to us, as dentists, the need of great caution and a definite moral. If we know, or can prove, the existence of syphilis in the patient, every precaution should be used against inoculating ourselves and others. Avoid operating, if possible, until after the chancre of the mouth or lips, or the mucous patches have been cured.

Operate for syphilitic patients at the close of the day so as to allow as much time as possible to elapse between such operations and those of a healthy mouth. Have separate instruments, clamps, water glass, mouth mirror and saliva ejector for the exclusive use of these patients. Always use rubber dam when possible, as it keeps the saliva from the fingers and also prevents the possibility of the patients coughing in your face, for should a minute particle of saliva strike you in the eye, a chancre might result. Handle all dentures of strange patients carefully, as this is one of the possible means of being inoculated. Boil all instruments thoroughly in a pan used for them exclusively, and, after drying, place for a few minutes in a solution of 1-500 bichloride of mercury. The care of your hands is very important. Before and after operating wash your hands carefully with antiseptic soap, and then in a 1-1000 solution of bichloride of mercury, and it has always been my practice to scratch a little toilet soap under all my finger nails before placing them in the patient's mouth.

While I have been reading but casually on this subject since 1891, I have studied much in the past year, and have attended with much pleasure and profit Dr. Baldwin's clinics on syphilis at the Chicago Medical College and the post-graduate school twice a week for the past three months, seeing probably one hundred patients. I am also indebted for much of the data of this paper from recent investigations by Taylor, Morrow, Ricord, J. William White, Furness, Hiller, Buret and the Annual of Universal Medical Sciences.

The undeniable fact that there exists such a gross ignorance on this subject among our profession is undoubtedly due to the lack of professional information in regard to it. While it should be considered as thoughtfully and comprehensively as other dis-
eases of far less prevalence, it is not intelligently recognized at all in the curriculum of any dental college in this country. That this fact is true is as indisputable as its existence is reprehensible.

THE WELDING PROPERTY OF GOLD, WITH DEMONSTRATIONS.*

By G. V. Black, M. D., D. D. S., Chicago, Ill.

This subject has not been closely studied, or closely followed, within the last fifteen or twenty years, so that those who have come into the profession within that time have had little opportunity for the study of the subject. Some six or seven years ago I remember reading a short paper, which was published in The Dental Review, and it is the only contribution on this subject that I remember for quite a long series of years. Some of the older members of this society may remember that during the sixties and the early part of the seventies there was much discussion relative to the welding property of gold—why was it that gold welded? why it was that it failed to weld? This is what I wish to illustrate to you to-day, for after observing dentists using gold, and watching their results, I see plainly that not many are getting the full benefit of the welding property of their gold. Now, in order to get my experiments along I will prepare a few ropes of gold and then give you something of the history of this subject. This is a sheet of No. 3 gold rolled into a rope, which I will pass in the annealing lamp and anneal, and another one I will prepare similarly. You see they stick together, and when I press them strongly they will be welded perfectly (illustrating). Now, I will tie a thread about these and drop them into a bottle of ammonia, not in the liquid, but simply in the dry gas above the liquid. This bottle contains ordinary ammonia water. I will stick this bit of red wax on the thread so that we will not mistake it. I have in this other bottle a solution of chlorine, and above the liquid the bottle is filled with chlorine gas. In this I have suspended several ropes of gold so that they do not touch the liquid. I will remove them now to the ammonia and will explain later. They have been in the chlorine gas for about half an hour, may be a little longer. I stick these threads to the glass with wax so that they will not fall into the liquid when I remove the cork.

*Read before the Odontographic Society of Chicago.
When the welding property of gold was first discovered, it was thought by most dentists to be some special preparation of gold. The facts were these: Dentists had been urging upon manufacturers of gold foil the importance of the gold being pure, and that the surface of the foil should be clean. This was urged from year to year increasingly, and it so happened that in the effort to get the gold pure and the foil clean the manufacturers found the gold foil became sticky, and they were in considerable trouble because the sheets of gold stuck together in such a way that they could not be unfolded without tearing the sheet. This was regarded as objectionable, and they contrived various means for overcoming this stickiness before the gold was put upon the market. But it so happened that some books of gold went out that were still sticky, and Dr. Arthur, discovering this, thought it was a curious thing. He tried the gold in filling teeth, and thought this adhesive property of the gold was a great advantage. He therefore wrote to the manufacturers, asking if he could have more of the sticky gold, and he was informed that he could have all he wished, and that if the gold was freshly annealed before using it would be more sticky. After careful experiment he announced that gold would weld cold; that there was an actual welding of the gold, not simply an adhesion, but absolute cohesion. Then came the discussion of this cohesive property, why it was developed, and why it was lost, and we had quite a number of papers, some very learned, dealing with this subject theoretically. It so happened that I was somewhat engaged in the study of this subject myself, and for other reasons entirely I had set up a chemical laboratory in a room connected with my office, and was doing a great deal of chemical experimental work, having class recitations evenings. Now, it was common in those days for dentists to have more or less gold lose its welding property in such a way that it could not be restored by annealing. While I was carrying on the chemical experiments I discovered that I was having more trouble than usual with the welding property of my gold, giving me the idea that the gases escaping in these chemical experiments had something to do with it. I therefore instituted a search, exposing gold to this gas and that, and I discovered that each of a very considerable number of gases would destroy the welding property of gold promptly. How did it destroy it, was the next question. Why was it destroyed in this way? I found that my reasoning upon it would not answer the question.
I therefore had to demonstrate it experimentally. The results I can give you somewhat briefly. I found only a fact that we had not known before. It was well known at that time that charcoal, somewhat fresh from the furnace, if exposed to carbonic acid gas, would condense within its pores many times its own volume of the gas, not simply filling the pores with gas in its ordinary rarefied state, but an actual condensation of the gas occurred until it became in a degree a solid; otherwise it could not condense many times its own volume of gas. This is one instance.

Another is this: We take a glass rod and dip it in a bottle of water; it comes out wet. The molecules of water have a stronger attraction for the glass than they have for each other, and a portion of the water adheres to the glass rod. Again, if we take the same glass rod wet with water and dip it into a bottle of oil, we will find that the water has been removed and the oil adheres to the surface. Here we have the fact that the oil has a stronger affinity or a stronger attraction for the glass than has the water. It develops the fact that such of these substances has an attraction to the glass; the one having a stronger attraction to the glass than the other. The principle with regard to gold is precisely the same. If we place gold in the atmosphere of ammonia, the ammonia is condensed upon the surface of the gold; there is not merely an adhesion to the gold, but an actual condensation of the gas upon the gold, forming a thin film of a solid. If we dip it in chlorine gas that is dry we have the same kind of condensation, but in greater amount. If it is damp, the chlorine gas will actually attack the gold, forming a chemical combination. But these others are not chemical combinations, they stop short of chemical combination. Platinum is found to attract oxygen strongly, so that oxygen is condensed upon it in considerable amount. Indeed, if we take spongy platinum, and after annealing it, expose it for a moment to oxygen gas, or simply let it cool in the ordinary atmosphere, and then turn on it a stream of hydrogen, the platinum attracting the hydrogen as well as the oxygen, these two gases will be condensed in the pores of the spongy platinum so rapidly that the latent heat of the gases is liberated so rapidly as to heat the platinum to redness and set the hydrogen on fire. If we can free the platinum from this condensation upon its surface it will weld. So it is with all metals. When you bring two metals in contact with each other they weld. If we take a piece of lead and
cut it through and put it together again quickly, we may weld the two pieces together. If we notice the two cut surfaces we will find that a film spreads over them, and after this film has spread over them pressure will not cause them to cohere, because there is something interposed between them, and they no longer weld. When we come to examine the whole list of metals we find a similar thing occurs, but the majority of metals attract oxygen strongly, and therefore welding is prevented.

I have dropped a rope of gold freshly annealed into the bottle of ammonia, suspending it above the liquid. You saw it weld readily at the time it was put in. It has only been a few moments. It requires some time for this to act. I take it out now and try to weld it (demonstrating), and you see the result. It does not weld; the welding property has been destroyed during these few moments by ammonia gas. If I anneal it, it welds. This is an experiment any of you can try at your leisure in your offices. The loss of the welding property of the gold is not from any change in the gold; there is nothing on the gold that you can see by ordinary vision. There is no change in the appearance of the gold; it seems as though nothing had happened to it. There is no chemical effect; but there is a film of gas condensed upon the gold that prevents the surfaces from coming in contact, therefore the failure to weld. This film is driven off by heat in annealing, and it will weld again.

I will now remove one of the rolls that has been subjected to the chlorine gas and then to the ammonia. I will cut it into pieces and anneal it a little bit differently. My object now is to show you that something has been condensed upon the gold. The gold looks as it did before; we see no change in it; the appearance is the same. The gold will not weld. We may put these pieces together, compress them up together, they will not weld (demonstrating). Now, I will select a tube. One will do as well as the other. I will drop those in the tube, and the thought is this: If the gases have been condensed upon the surface of this gold we may form a salt on the surface by introducing another gas, introducing two gases which, when coming together, will form a salt. If we can distill away the salt that is evaporable by heat, possibly we may crystalize it and get sight of it or even analyze it afterward and see what it is that has been formed on the gold, as some of my students have done this winter. Then by subjecting it to ammo-
nia and then to chlorine we would get ammonium chloride, or if we subject it to chloride and then to ammonia we would get ammonium chloride formed. I will now anneal it. Watch it as closely as you can (demonstrating). You see a ring of ammonium chloride forming on the glass where it is cooler (a white ring of ammonium chloride forms in the tube). You can perhaps see it from all over the room. The condensed ammonium chloride not attached to the tube you will see moving back and forth in the tube. This amount of ammonium chloride now seen in the form of crystals was formed upon this one sheet of gold, a thing that we could not see upon the gold at all, but a thing that becomes very apparent to us when we have annealed the gold in the tube in this way so as to show the crystals of the ammonium chloride that have been formed upon the gold. Here is another (repeating the experiment). I will say, gentlemen, as I go on, that this experiment may be performed in many ways in order to show this condensation of gases upon gold, and we may use various gases. It is not necessary that we use ammonia and chloride always; we may use sulphureted hydrogen and ammonia; we may use various other gases, anything that will form an evaporable salt, and illustrate this experiment in a great number of ways. We are not confined to any one plan or any one set of gases for this purpose.

The gold used in this experiment, after it has been annealed, is just as good as it was before; it will weld just as perfectly. We take these pieces, stick them together (demonstrating) and weld them just as if they had not been subjected to these gases. The principle is this; if the gases uniting upon the surface of our gold are such as will form a volatile salt, the welding property is lost. We may remove the salt by annealing and restore the welding property. If the gases that unite upon the gold are such as will form a fixed salt we will not be able to restore the welding property of the gold by annealing. The salts formed by ammonia are generally volatile. Then, if we keep gold in an atmosphere of ammonia, so that the salts formed upon the surface of the gold will be ammonium salts, we may evaporate them from the gold by annealing and restore the welding property, therefore, we are able to keep gold in perfect working order simply by keeping it in an atmosphere that has a proportion of ammonia in it, so that this gas will have possession of the surface of the gold. Then any other gas that is condensed upon the surface will be condensed in the
form of an ammonium salt. The gases that destroy permanently the welding property of gold are carbonic acid, the sulphur gases and the phosphorus gases. Just what is formed upon the surface in these cases it is difficult to tell. We do not know all of that. We only know that gold subjected for a considerable time to these gases does lose its welding property permanently. There are probably some compounds of the carbon group formed that are stable and remain permanently upon the gold. Some of the sulphur compounds are formed that are stable and remain permanently upon the gold, and also others, and what others we do not know. But this experiment will show you how easy it is simply to have a bottle with a little ammonia in your gold drawer, renewed from time to time (just so as to get a scent of ammonia when you open the drawer is sufficient) and you will find the gold is working perfectly from day to day, month to month, and from year to year, it makes no difference how long.

The destruction of the welding properties of gold is not immediately complete in any of these cases. It occurs little by little, and by observing the action of some gases, particularly illuminating gas, we may discover how it spreads over the gold. In this case there is a peculiar discoloration of the surface of the gold and we find it begins in spots and radiates from those spots, so that it is flecked over, but the main surface will be clean. We often see our steel instruments rust, beginning in spots here and there, which gradually spread until finally the whole surface is slowly covered. Now, illuminating gas will fleck over the surface of a sheet of gold in a similar manner. So will various other gases fleck over a surface of gold, so that the welding property is not lost upon the whole surface at one time. In the exposure of gold in the ordinary keeping of it, we have the welding property of the gold destroyed here and there over the surface of the sheet. The result is that while the gold appears to work fairly well, it does not work perfectly, and you are liable to have spots of nonwelding gold come in such a position upon your filling that a corner will break off, or the welding will not be perfect throughout the filling. There will be little spots of failure here and there. The filling will lack strength. There will be these little spots all through the filling, and if we put pressure on the filling it breaks away or goes down. It is imperfect. While the gold may appear to weld the filling will be flecked over its surface. It may even be so bad that
it will pit and gradually crumble away. So much of the surface of the gold is injured that its welding property is really very imperfect. Now, it is this imperfect welding of gold that is injuring so many gold fillings. Dentists do not get the full result of the welding property of their gold. Therefore, I would urge greater care in the annealing of gold, and in the keeping of it, than has been exercised heretofore. We should endeavor to keep its surface in such a condition that every particle of the surface will weld. Time is an item in annealing gold. We can anneal it at a lower temperature than a red heat if we give it more time.

Dr. Morey: How about the gas flame?
Dr. Black: A pure Bunsen burner gas flame is all right. It is as good as the alcohol flame.

A Member: What about wood alcohol? Does it not answer the purpose?
Dr. Black: I have not tried it.
Dr. Taylor: It does not make as good a blaze.

Oral Hygiene.*


The maintenance of a clean mouth is important to the well-being of the human economy for two reasons: First, because it is necessary for the health of the teeth themselves, and second, because of its power to prevent general diseases. Let us very briefly examine this subject under these two headings.

The early writers on dentistry—those who published books along about the beginning of the century, principally for distribution among patients, seemed to recognize the prophylactic value of the clean mouth. Their books contained little else than directions for cleansing the teeth, the formulas for dentifrices and mouth washes.

In our day science and clinical observation both show the importance of the clean mouth. We have the certain knowledge that dental caries is due to microorganisms. We have the almost certain knowledge that pyorrhoea alveolaris is produced by germs, concomitant with an hereditary tendency or dyscrasia. These two maladies are practically the only ones we live to combat and com-

*Read before the Chicago Dental Society.
bat to live. The microorganisms which cause them could not flourish except in undisturbed oral filth.

Second. As to the influence of the hygienic mouth in preventing constitutional diseases. The mouth is said to be the avenue of entrance into the body of all infectious diseases. The dried spores or active germs themselves may gain admission to the mouth from the atmosphere, hands, clothing, foods, liquids, household utensils, etc. No more favorable environment for their development and growth can be imagined than an unclean mouth. During sleep especially all the conditions of a perfect culture medium and incubator combined are present. It is not to be presumed that all the germ diseases are contracted from colonies first cultivated in the mouth, but I consider it of very frequent occurrence.

But I hear you say that all this is a matter of common knowledge to the profession. Then why is it, I say, that the dentist is confronted by the fact that not one person in twenty who comes regularly under his notice succeeds in keeping all the teeth properly cleansed? Is it a fault of the patient or practitioner? I am inclined to the belief that we are as a profession largely to blame. The public needs educating on this subject, and who is to do it if we do not? It is a responsibility we must assume. How shall we set about it? We have all sorts of people to deal with, and the same arguments will not do for each. One class is appreciative of any instructions or suggestions, and at once say, "Why have I never been told this before," and at once put into practice whatever is advised. With another class—you all know them—drastic measures only will suffice. They must be informed what common decency requires, and shamed, if need be, into observing the ordinary hygienic rules of an enlightened civilization. The ways and means of accomplishing this will occur to any man who has an earnest desire in his heart to effect some good in this world and to get some more substantial benefit from his profession than mere fees. It is a labor of love to some extent, and not infrequently "love's labor lost," but nevertheless a duty no conscientious practitioner may shirk.

The laity, as a rule, are blissfully ignorant of the dangers to which improperly cleansed teeth subject them. A popular knowledge of this fact alone would, if given wide publicity by the authority of the Health Department and Board of Education,
revolutionize the statistics of diseases and deaths of our great city.

Now, as to what measures the individual is to take to maintain clean teeth. I have already gone on record, years ago, as a strong advocate of the brush and a powder dentifrice. Time confirms my belief in it, because I have observed that intelligent, unremitting effort is successful. That is my position, and if I have any enthusiasm in my daily work it is in tireless effort to instill such principles in the minds of patients. It is my experience that very few people know how to use a brush properly, when to use it, and how often, and the same with regard to the dentifrice. I find this to be the case not only with people who are careless, lazy, untidy or unclean about their persons, but it is the case also with the most fastidious. My advice is that four stiff brushes be in everyday use. Four, because one or two only in use become watersoaked, and hence too soft to be effective. The brush is to be used vigorously and thoroughly twice daily, and twice only, just before retiring and on arising. A powder dentifrice is to be used in abundant quantity at both cleansings. In cases predisposed to local or constitutional disease the use of the brush and powder is to be followed by floss silk and a disinfectant wash or mouth-bath.

Forty-six Years of Continuous Gum.
By L. P. Haskell, D. D. S., Chicago, Ill.

The name of John Allen will ever be connected with one of the most important improvements in dentistry. Continuous gum dentures are today the only perfect artificial dentures. Nothing has ever been devised that can take their place. They are at once the strongest, most durable, most natural looking, most agreeable to the tissues, and the cleanest denture made. The objection so often urged against them, that of weight, I do not consider a factor in an upper denture. If the plate is properly fitted and articulated the patient does not realize weight. In all the sets I have made in forty-six years I never had to replace one with other material on account of weight.

In 1851 John Allen first sent out his agents to dispose of office rights. One visited Boston, and I was one of twelve to purchase a right, paying therefor $150. Within a year all the others who purchased rights, one of whom paid $300, had discarded the
method as worthless, while I have used it ever since. Why the difference? The agent gave instructions such as I was certain would result in failure if followed, and such was the result. I said the principle would prove successful if methods were followed to make the work strong, and from that day to the present I owe my success to this one fact.

The strength of this work is in the metal foundation. The porcelain adds to the strength, but cannot be relied on to maintain its integrity. One of the greatest mistakes to-day is the attempt to make it cheaper and lighter by using very thin platina, and by some combined with this a very low fusing material. It will result in a few years in bringing discredit upon the work, and trouble to those who use it.

About twenty years ago I ventured to use even thirty gauge plate, much to my regret. Twenty-eight gauge is as thin as ought to be used. This should be reinforced across the heel by doubling about one fourth of an inch, which also makes the heel thinner than if the porcelain extends to the edge, and the inner edge of this is turned up slightly to protect the edge of porcelain, and making a fine finish. The upper margin should have a flat wire soldered to it, affording protection to the porcelain, making a nice finish, besides strengthening the plate. In all cases where there is room for backings they should be used, made in three sections, with narrow foot piece resting on the plate. This anchors the teeth firmly to the plate, and enables the denture to resist a much greater strain in mastication. And when it comes to repairs, it is only such a constructed continuous gum denture that can be successfully repaired.

There is no work done by the dentist which so amply repays him for careful, thorough and artistic efforts as is the case in the construction of a continuous gum denture.
Suggestive Therapeutics.

By Prof. A. C. Halphide, M. D., Chicago, Ill.

Suggestion in this case is intended to mean hypnotic suggestion which requires for its application a state of impressibility or suggestibility, natural or induced, which enables one to cure disease through mental influence. This may also be properly called mental medicine, psychic treatment, etc. The condition of impressibility is normal with some cases, and that, too, in a sufficient degree to admit of curative results; in others it must be increased or induced before such results can be obtained. The means of inducing the suggestible state is found in hypnotism, known formerly under various names, as magnetism, mesmerism, etc., and the manner of its induction may be any one of the various methods used in magnetizing, mesmerizing or hypnotizing.

In order to make my paper as plain and orderly as possible let me ask and answer the following questions: What is hypnotism? What is hypnosis and how is it induced? What are the states and symptoms of hypnosis? What are the therapeutic uses of hypnotism? What are the limitations and dangers in the use of hypnotism? The answers to these six interrogations will give a fair view of our subject.

What is hypnotism? It is not something new, for it has been known in one form or another throughout the history of man; it is rather the new understanding of an old subject. In its present form it is directly traceable from magnetism and mesmerism. The magnet had long been used, even in ancient times it was supposed to have curative effects and had been used as a remedy. The idea gradually dawned that there are magnetic properties in the human body. From this was later developed the theory of animal magnetism, about the first of the sixteenth century, based upon the supposition that ascribed to man the power of exercising an influence analogous to that of the magnet.

Although the foundation of the doctrine of animal magnetism was thus laid, universal attention was first drawn to it (1766) by Mesmer, a Viennese doctor, whose name it thereafter took. James Braid, an English surgeon, was the first to prove mesmerism a mental rather than a physical influence, due to subjective rather than objective conditions, and he called it hypnotism or nervous sleep (1841).
While the several steps noted above may be easily traced in
the development of the science, modern hypnotism dates back less
than a quarter of a century, and is now represented by two dis-

tinct and rival schools—namely, the school of Salpetrière or of
Charcot and his followers, and the school of Nancy or of Lié-

beaul and his disciples. According to the former, hypnotism is
a form of hysteria and only useful as a therapeutic agent in that
and allied diseases, and, moreover, is dangerous to use since it is
a disease. The phenomena observed at Salpetrière occurred in
subjects of major hysteria. Indeed, its therapeutic application
outside of this class of subjects has been little pursued by Char-
cot and his school; they rather sought to prove hypnotism by un-
questionable proofs, to place it upon a solid basis, and to elucidate
thereby the physiology and the pathology of the nervous system.
According to the latter school, hypnotism is simply suggestion,
and is followed by no dangers or evil results when intelligently
used. By "suggestion," is meant somewhat more than is usually
understood by that term; it means not only the offering of an idea
to the mind, but also the acceptance of the idea. Now, then,
"hypnotism is the induction of a peculiar psychical condition,
which increases the susceptibility to suggestion." (Bernheim.)

What is hypnosis and how is it induced? Hypnosis is the
induced psychical state or condition into which the hypnotic sub-
ject passes when hypnotized. It is produced by either of two
methods—namely, a strong and abrupt or a light and prolonged
sensorial excitation. The former method is used by the Charcot,
and the latter by the Nancy school of hypnotism. Since different
types of hypnosis are induced by the different methods, these fur-
nish the basis for the variance of the schools as to the medical
uses of hypnotism. Time will not permit a full discussion of these
differences; suffice it here to say that the milder methods used by
the Nancy school are decidedly preferable, for the sufficient reason
that they do not so profoundly shock the nervous system. The
methods of inducing hypnosis used by the followers of the Nancy
school are various, but they are all based upon the same idea—
suggestion. Two things are fundamental in the theory of hypno-
tism, namely: (1) the proneness of persons to be influenced
by others, and (2) the likelihood of the expected to happen,
whether it be psychological or physiological in character.

What are the states and symptoms of hypnosis? Most writers
recognize several states varying from a slight to a profound change; from a condition of full consciousness to a state of deep somnambulistic sleep; from a state in which all of the experiences are remembered to a state in which all of the experiences are forgotten, after regaining the normal condition. These have been fully classified by many, but as there are no well defined lines of demarkation between the states no two agree. For our purpose two stages will suffice, namely, light and profound hypnosis; in the first, memory is retained, and in the latter, memory is lost upon awaking.

The chief symptom of hypnosis is the increased susceptibility to suggestion. This is often found where fixation of the eyelids is lacking, although this is one of the first and most regular phenomena. In some subjects in hypnosis the movements are quick and easy, while in others they are slow and labored. Not only speech but music has a marked suggestive influence upon the hypnotized. Sad music, like a sad story, will make them sad, and tears will well up into the eyes and trickle down their cheeks. The same is true of lively music or a humorous story, they will go into ecstacies of mirth over them. The fact that they are incapable of other than deductive reasoning renders them liable to serious deceptions and furnishes an explanation for many of the dangers of hypnotism, of which I shall speak a little later. The individuality of the person may be changed; suggest that he is another person and he will believe it and comport himself accordingly. Posthypnotic suggestions are readily accepted to be carried out at an appointed signal. The voluntary muscular system is readily controlled in many subjects. They have willingly and unresistingly delivered themselves into the control of another, and if you suggest that they cannot move, they cannot. The same results follow in the sensations. They can be made to feel warm or cold, hungry or thirsty, to see, hear, smell, taste or feel anything. They can be made to feel well or sick, to feel pain or be relieved from it. The physiological actions of the involuntary organs may be just as well and as certainly affected. Many instances of such results are at hand. The action of the heart may be increased or diminished, the character of the respiration changed, the functional activities of the stomach, the liver, the kidneys, and the intestinal canal affected, at will. The subjects in this state are said to be en rapport with the operator, i. e., he will receive suggestions from him, but no one else.
What are the therapeutic uses of hypnotism? Hypnotism seems to be a power adequate to cure disease, and when it is so used it finds its legitimate employment. If it is true than we can gain an almost absolute control over the muscular movements and the sensations and modify the physiological functions of the body is it not reasonable to expect marked curative results? Hypnotism in medicine is the application of the mind in the cure of the body. When we contemplate the powerful effects of the mental emotions upon the material fabric, although we are unable to explain their rationale, we must admit that mental causes induce disease, retard recovery, and destroy life. Therefore we see that hypnotism is no mean addition to therapeutics, and we should lay hold of it and use it as it deserves.

The neuroses and diseases caused by psychical influences furnish the greatest opportunity for the use of suggestive therapeutics, and many and mighty have been the results obtained therein. Diseases as hysteria and the like are said to be caused by “ideas controlling the body and producing morbid changes in its functions.” Now, by hypnotic suggestion the ideas which cause morbid changes may be replaced by other ideas which will make for health and normal functional activity. Nor are the curative effects limited to functional disorders; for example, we often get remarkable results in organic lesions, such as paralysis following apoplexy. How is this explained? In apoplexy a portion of the brain (a) is destroyed and another portion (b) is functionally deranged; the nerves served by the part (a) are useless, and those served by the part (b) are functionally interfered with. Now, the functions of the nerves served by (b) may be recovered. None claims that it is possible to restore destroyed tissue, but it is possible to obtain the best service from tissues and organs that remain intact.

In moral ailments and habits of all kinds we find other fertile fields for psychic treatment, and when it is remembered that for these diseases we have hitherto had no reliable remedies, it is paying no small tribute to the usefulness of hypnotism. Many cures, including masturbation, bed-wetting, stammering, and the tobacco, alcohol and morphine habits might be given in confirmation of the efficacy of this treatment, but space will not permit. Pain and insomnia, which are common symptoms of so many diseases, are among the conditions most easily controlled. Any one
who has had much experience in treating diseases knows that the relieving of suffering and securing proper rest are two of the most important factors in the cure of disease. So it is in these cases that we get the results most understood and appreciated by our patients.

Abnormalities in the vegetative system furnish a large number of cases which may be successfully treated by suggestion. Nausea and vomiting, whether of pregnancy or seasickness or from other causes, may be readily corrected. Constipation, with its host of accompanying and distressing symptoms, can be readily and permanently cured.

Obstetrics and gynaecology offer many opportunities for the application of hypnotism. Rapid, painless confinements have often been obtained and the derangements of the menstrual functions corrected. Rheumatism, rheumatoid pains, lumbago and other members of this troublesome group of affections have furnished most astonishing and conclusive proof of the potency of this therapeutic agent. Not only the pain but also the stiffness and contractures have been removed, and helpless cripples have laid aside their canes and crutches and gone about their work again, new men and women.

You will be more interested in the surgical uses of suggestion, so let the above suffice to illustrate its medical application. The percentage of cases susceptible of anaesthetic effects is not great, and this limits its surgical uses not a little. Something over 20 per cent are included in this number. We shall show you directly that complete surgical anaesthesia may be obtained, and a number of cases might be cited which we have operated under hypnosis; but I am consuming too much time without that. Undoubtedly a large number of minor and not a few major operations may be performed in this state, as is proven by cases numerously reported by reliable writers. Among these cases may be mentioned amputations, curettements, implantation of teeth, extraction of teeth, setting fractures and dislocations, lancing abscesses, etc.

What are the limitations and dangers in the use of hypnotism? It would be a matter for regret if you were led to believe that there is no limit in the application of suggestive treatments. It is doubtless true that the application of suggestive therapeutics is very broad, but it is not a panacea; however, either alone or in conjunction with other remedies, it is useful in all classes of
disease. Few have found an adequate estimate of the sum of the bodily ills which have their source in the mind, and these diseases of psychical origin all lie within the legitimate scope of mental medicine. We are prone to concentrate our attention upon the physical, often neglecting the mental aspects of disease, and subject our patients to various unavailing drug treatments when "the true origin of the malady is some inward sorrow which a moral balm alone can reach."

The dangers in the use of hypnotism have been and are greatly overestimated. The mysterious is always feared and surrounded by all sorts of imaginary horrors and dangers. This is especially true of hypnotism, and it is difficult to free it from the ancient relics and rubbish which cling to it. The preposterous notion, in the popular mind, which associates a Svengali-like character with the name of hypnotist cannot be too soon unseated. The idea that there is any force which passes from the operator to the subject has long since gone by the board. However, many writers, especially in this country, in their efforts to remove the apprehension from the popular mind have unduly minimized the power of the hypnotist over his subjects. Undoubtedly it is possible to do with, and make the subjects do more under hypnosis than when not under its influence.

Hypnotism has not come to the front without meeting opposition—no advance in medicine ever has—they all have had to fight for existence. Many most unreasonable objections have been urged against the use of hypnotism. For example, it is said to be of satanic origin; that it is injurious to the subject; that the patient is in the power of the operator, and may be hypnotized against his will; that those who are under its influence may never awaken, and that persons sometimes fall into spontaneous hypnoses. For the most part, these objections have been raised by persons who are ignorant of the science, and a careful investigation will satisfy any unprejudiced person that they are groundless. Now that scientists have taken a serious interest in hypnotism it is to be hoped that it may soon be lifted above suspicion and presented to us in its true light and at its real worth. No potent therapeutic agent is without its dangers, and it would be strange if suggestion should have none. If the dangers in the use of a curative agent are understood and may be avoided, what more can we ask? Drugs are mostly poisonous, and yet we use them daily.
Now, without going farther into details, let me close by saying that all of the best authorities are as one on this subject. They confidently affirm that the intelligent use of hypnotism as a curative agent can do no harm, but may accomplish untold good for suffering humanity, for it furnishes a means of relief for many ills for which there has heretofore been no remedy.

3458 Wabash Ave.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

A regular meeting was held March 1, 1898, in the Stewart Building, with the President, Dr. A. H. Peck, in the chair.

Dr. J. W. Wassall read a paper on "Oral Hygiene."

DISCUSSION.

Dr. Garrett Newkirk: The first thing that occurred to me in reference to this paper, when I looked it over a month ago, and when I was better prepared to discuss it than I am now, was its brevity. It was concise and to the point. It probably took Dr. Wassall more time to write this paper than it would have made it longer. Sir Walter Scott was once asked why he had written the life of Napoleon in two volumes, and he replied that he did not have time to write it in one. There is a good deal in that. It sometimes takes much study and thought to write the short paper or the small book.

A clean mouth. I often tell my patients that if they could keep their mouths absolutely clean (if such a thing were possible) they never would have any decayed teeth. I ask them to notice the free surfaces which are naturally kept clean and smooth from their being constantly washed by the saliva, those free surfaces where we seldom or never see decay unless there is some deficiency of formation. This is an argument that usually appeals to patients. Disease, as the doctor has well said, feeds on all uncleanness. I was impressed a short time ago in reading the history of one of the yellow fever epidemics, I believe it was in Memphis. The statement was made that you could graduate the extent of the disease by the altitude; that on the lowest level, next to the river, the disease had its principal feeding ground, where filth was in
great abundance. Going up a little higher, the disease, according to the population, was very much less prevalent, and so on up to the highest altitudes, where there was very little.

In Memphis resolute action, thorough supervision on part of the health department, better sanitation and all that have revolutionized the statistics with reference to disease and death. The whole secret, pretty much all the health department has to do when you get right down to the bottom facts, is to promote cleanliness, to secure freedom from filth. Speaking of powder dentifrices, I do not know whether or not they are very much superior to the recent preparation which Parke, Davis & Co. have gotten out, the eurymol tooth paste, which I am using myself and like very well, and which my patients seem to like. I think there is a sufficient amount of powder in the paste to give the necessary friction, and the only fault I find with it is that it is too strong with the essential oils.

One thing not often spoken of in reference to cleaning teeth is the value of rinsing. Many patients know nothing about it, and the average dentist does not think it worth while to mention it to them. The matter of closing the lips and forcing water vigorously backward and forth, between the teeth, exercises an important part in the cleansing of the teeth. I take water in my own mouth and show patients how they ought to rinse their mouths after the use of the brush. The doctor mentioned in one part of his paper, that especially during sleep, all of the conditions of a perfect culture medium and incubator are present. It seems to me we get from this a hint as to the most important time for cleansing teeth. He favors brushing the teeth night and morning. Very good. This is all right, but as between the two, certainly cleansing at night is the more important, because when a person is waking, the mere eating of breakfast, lunch or dinner, the working of the lips and cheeks and tongue, forces the fluids back and forth, and has the effect of changing the secretions in the mouth; so the night time is the danger period, as the doctor says. Therefore, it follows that the important time for cleansing the teeth is just before retiring. If people do not clean their teeth at any other time they should do so then; they should go to sleep with clean mouths. I try to impress this upon my patients always. Then, again, we might have in view the making of fillings with self-cleansing surfaces, not to leave points where debris can accumu-
late. The question of the interproximate spaces might come in here very properly—a very important matter indeed.

We have often heard this question, “Why do first molars decay so frequently?” I suppose we must allow that their development is not usually as complete; they are not perhaps so perfect as second molars, or possibly bicusps; but in addition to that, they are exposed to the uncleanliness of the mouth which is always sure to coexist with the age of the patient—from the age of six years to that of twelve. There is a period of six years when the child is apt to be careless; he is sure to be unless he is most thoroughly controlled and instructed and made to pay attention to cleanliness. There is a condition of uncleanliness for six years which promotes the destruction of the first molar, and at the same time there is often the coexistence of decay in the temporary teeth, which signifies simply more uncleanliness. The adult or young person should be instructed how to use the brush, and children should be taught the importance of, and should receive early instruction in, the use of the brush and of floss silk.

I may add in conclusion that an important reason often for the extraction of third molars is the promotion of a cleanly condition, for we know that in many cases they make cleanliness of their neighborhood well nigh impossible.

Dr. Thomas L. Gilmer: The paper was to the point and it was good. Concerning oral hygiene we are all supposed to know, but I presume we may become careless if we do not give the subject attention once in a while. I think I can make a statement and not be ashamed of it, viz.: That I have saved more teeth by teaching my patients how to care for their teeth and insisting on their caring for them than I have by filling. I have had many children under my care whose teeth were decaying rapidly, too rapidly to be saved by filling alone, and I know that by proper instruction I have been able through their cooperation to save teeth that could not have been saved without this cooperation. Perhaps some children and grown people, too, are in the habit of brushing their teeth too frequently. They do it so often that should they be thorough it would be a burden to them, therefore will not be thoroughly done. I would prefer that they clean their teeth thoroughly once a day than to brush them three or four times daily, as they frequently tell us they do, and do it carelessly. Persons who say they brush their teeth three or four times a day almost
universally have unclean teeth. If teeth are well cleaned, a good
deal depends upon how a toothbrush is used. Very few of our
patients, even the most intelligent of them, unless they have been
thoroughly taught, know how to properly use a toothbrush and
what kind of a brush to use. The majority of toothbrushes are
entirely too large; the patient is unable to reach certain parts of
the mouth on account of the large size of the brush. A number
of years ago I had a dealer send one of the Mintzer brushes to the
maker in France and had it changed in shape according to certain
instructions I gave. The ordinary Mintzer brush is too large and
the bristles are all of the same length, and they are all too thickly
set. The changes made remedied these difficulties. I showed this
to this society at one time. I selected this brush because it was the
best made brush I could find. These brushes can be had in two
or three places only in the city. There are a number of different
brushes by this name, but it is the smallest brush of this make,
with the bristles not thickly set and irregular in length, that I refer
to. It is almost unnecessary for me to say that the upper teeth
should be brushed down and the lower teeth up, in order that the
gums may not be injured and that the interdental spaces may be
cleansed, besides it prevents the wearing of the buccal and linguoal
surfaces of the teeth.

A word or two regarding the use of a cloth for cleaning the
teeth. It is used by some and is recommended by a few dentists.
Of course, we know that if a cloth is used we force the microcorganisms and particles of food into the interproximate spaces, the
very thing we do not desire to do.

Some of our patients who are even very careful and desire to
thoroughly cleanse every surface of all of the teeth will neglect or
overlook some one or two teeth on one side or the other of the jaw or
both, and it is necessary to call attention to this neglect and show
them with the mouth mirror what tooth or teeth are neglected.

Dr. D. M. Cattell: I want to say a word on this subject, which is "next to godliness." It is true that Dr. Wassall placed
himself upon record many years ago in regard to this same subject,
and he has been quoted several times. By the way, the first paper
I ever read before a dental society, written in 1882 or 1883, was
on a subject related to this, in which I quoted him. The part
that startled my mind more than any other in the paper just
read was his idea of cleansing the teeth both morning and night,
brushing each time with powder. It has always seemed to me that the work of a powder is to remove the tartar. Indeed, if it were not for the presence of the so called "tartar" we would not need a powder at all. The calculus is deposited during the night upon the mucus which collects around the teeth, not being washed away as it is during the day. The saliva oozing gently, loaded with lime salts, coming in contact with the juices in the mouth, somewhat fermented, changed in character in such a way that it is no longer a solvent of salivary calculus. It is thrown down as a sediment, lodging in the viscid mucus over the surfaces of the teeth. The next morning, if it is not rubbed away or cleansed off thoroughly with the aid of the brush and powder, only a portion of it is removed during the act of mastication; other portions unassailed by excursions of food during the day remain. All day long we are using the tongue and lips more or less, chewing food, changing the conditions continually in the mouth, so that by night the teeth are practically clean from such substances as we would remove with the powder, provided they had been previously cleansed of the "night soil." To render the teeth clean by simply cleansing with a brush, removing the particles of food left between the teeth, taking a sup of water, closing the lips, forcing it vigorously back and forth between the teeth, very few individuals know how to do. Many dentists cannot do it instructively, for the reason that the muscles of the cheek have never been trained to vigorous action. Some, in undertaking to rinse the mouth, try to get the water all around in this way (indicating). I have always thought that a better plan would be to use the brush and powder vigorously in the morning to remove the salivary calculus and sticky mucus, and at night use the brush and antiseptic wash energetically to cleanse the mouth so as to leave it as clean as possible from fermentable substances during the night.

Dr. George B. Perry: I do not want to take away any credit from those to whom it belongs, but this matter of brushes recalls to my mind very vividly an interview I had with Dr. Bonwill the other evening. He showed me a brush with Dr. Talbot's names which is an exact copy of the one Dr. Bonwill put on the market over twenty years ago. Dr. Bonwill also told me that while traveling abroad he met Dr. Talbot and asked about the brush, and Dr. Talbot admitted that the brush was a copy of his, but that he had improved it by making a curve in the handle. The bristles extend
about half the length that they do in the ordinary brush. They are doubly convex as it were, and Dr. Bonwill showed how readily the bristles could be gotten between the teeth and interproximate spaces. He also said that most people objected to any sort of tooth powder or soap containing pumice stone; that he had made from pure olive oil a soap, or castile soap, and into it he put a considerable quantity of pumice stone which he used entirely for brushing the teeth. Instead of injuring the teeth it cleanses them much better and it is much more satisfactory in its use.

Dr. Elgin Mawhinney: Dr. Bonwill's brush does not look any more like the Talbot brush than does the prophylactic brush look like Bonwill's brush, that is, those I have seen.

Dr. P. J. Kester: It seems to me as though there is very little that can be said on this paper except to commend it. Dr. Wassall generally boils down what he has to say in a few words. Without disparaging the idea of cleansing teeth, I think possibly we ourselves dwell too much on this matter. Dr. Gilmer says that he probably saves more teeth by good advice than he does by filling them. I am inclined to question this statement. We have all known people who have had good sets of teeth their whole lives and have never used a toothbrush. A large proportion of the people throughout the country, who have good teeth, very seldom cleanse them. I think it is admitted that a large number of people who clean their teeth do so imperfectly, and therefore they are not saving them to the extent that they might if they cleaned them daily. I believe there is something in the matter of decay of the teeth which we do not fully realize, or the reason why teeth generally decay, which may be termed vital resistance of the tooth structure itself or the saving quality of the fluids of the mouth. The all-wise Creator when he created man with his chewing apparatus saw to it that the fluids of the mouth were so well arranged that decay of the teeth probably would not take place, and I believe it is through the general system itself that teeth decay more readily than from any ordinary external causes.

I want to question the advisability of the use of the silk ligature as a tooth cleanser. I do not believe that a thread is a good thing to clean teeth with. I have somewhat the same objection to the thread as I have to the wooden toothpick, which is the very essence of villany, and the use of a thread for such a purpose is a mere imitation. It does a certain amount of harm, as it cuts the
gums in nearly all cases. If we wish to use something of that kind a rubber band would be better; it is less likely to injure the gum and has enough foreign substance in it, so that by drawing it between the teeth it has a cleansing surface. The rubber itself has a cleansing surface and will cleanse the teeth.

The older members, those who have known me for considerable time, will think that I must touch on the question of soap. I have thought I could detect the effects of soap in the mouths of individuals who had used it for any considerable time.

I wish to say a word or two now with reference to dentifrices and mouth washes. A gentleman, learned in our profession and an authority on matters pertaining to chemistry, has examined the various mouth washes and has found nearly all of them have an acid reaction. The inference is that it is dangerous to use an antiseptic as a mouth wash which is slightly acid. I am not prepared to accept that, nor am I prepared to defend my position. It is a well-known fact that in a bacteriological culture the waste product of the microbe itself produces an acid which is destructive to the microbe eventually. We know one thing—at least I do—and that is in running an old-fashioned pancake factory and it gets very acid we inhibit the growth of the yeast plant, but we restore it very easily and quickly by the addition of an alkali, such as the bicarbonate of soda. I am not sure but what an alkaline dentifrice would be more injurious than one that was slightly acid. I should certainly think that one containing soap is more dangerous to the health and appearance of the teeth than one which is slightly acid.

Dr. Gilmer: May I ask Dr. Kester a question before he takes his seat? If it is true that teeth not cleansed do not decay more rapidly than those that are cleansed, why is it, where we find a mouth with all the teeth clean perhaps except the buccal surfaces of the upper molars, and these covered with microorganisms and particles of food, the enamel is decalcified and decayed there, when there is no decay in any other part of the mouth?

Dr. Kester: Well, there was one thing that suggested itself to me in regard to cleansing teeth. One of my young ladies was in my office to-day and I noticed on the left side of her mouth there was a considerable accumulation of foreign matter of a very disagreeable kind. It consisted partly of tartar and of the remains of food. The reason for this was that she had a tender
tooth which she was not using. In an ordinary healthy mouth, with the teeth clean and healthy, I believe it would be a difficult matter to find a place on the buccal surfaces of molars that is not self-cleansing. There may be an accumulation of tartar, but I believe they are self-cleansing. I do not wish to be understood as saying that it is not a good thing to clean the teeth, because it is. I believe there are other things that are very important in the consideration of it, such as the remedies and dentifrices that we use.

Dr. George B. Perry: I did not hear Dr. Wassall's paper, nor did I hear the first part of Dr. Gilmer's remarks. Possibly what I am about to say is well known to every dentist here, yet I believe it will bear repetition. As a convenient thing to use in removing food which accumulates in the interproximate spaces, one of the best and most judicious ways of preparing a toothpick is to whittle down the sides of a quill so they are about three-sixteenths of an inch in diameter, then round the end of it, leaving the portion which you use to dislodge the food three-quarters of an inch to an inch long. In using that between the teeth, after having rounded it carefully, you do not injure the gum tissue in any way. It is much better to use as a pusher instead of a lever. In addition to that, the quills do not splinter, which is a serious fault with wooden toothpicks. This is an old method, but I did not know whether every one was familiar with it.

Dr. Gilmer: Do you use large or small quills?

Dr. Perry: Either one. If you make them narrow, and round the end, it removes the debris without any trouble whatever and does not injure the gums or cause irritation.

Dr. Edmund Noyes: No one for a moment believes that Dr. Kester meant to insinuate that cleanliness does not diminish the liability of teeth to decay. It is true, however, that we find certain mouths which appear to be immune from caries notwithstanding the lack of anything like complete or adequate cleanliness. What reason there is for that I do not know, and I would very much like to know, and I am not without hope that some day we may understand that better and may possibly be able, after we understand it, to produce it by therapeutic treatment in some way or other. We have all seen people without clean mouths whose teeth were free from decay, and we have seen people whose mouths appeared to be as clean as is possible for anybody to keep
them in which the teeth decayed rapidly. I have not seen any sufficient explanation of it that I remember. I wish we might find one.

It seems to me that a tooth powder has some little service besides the removal of tartar, as suggested by Dr. Cattell. In many mouths the mucous secretion is exceedingly viscid, and this stringy viscidity is cut to pieces and the sticky mucus is removed from the teeth much more readily by a tooth powder than by brush and water, or by soap or anything which is slippery. I do not understand the value of soap as a cleanser in the mouth. The action of soap upon the skin is very well known. It is a solvent for the surface of the cuticle and is appropriate for skin cleansing, but we do not clean the surfaces of enamel upon any such plan, or with reference to any such conditions or relations, and so far as I understand the case, we depend for the cleansing of teeth upon friction. Soap is slippery and diminishes friction, and the alkali of soap, we have been told over and over, and some of us think we have observed it, tends, if used continuously, to change the color of the teeth, making them yellow, and probably the action of soap is more injurious at the necks of the teeth above the margin of the enamel than it is upon the enamel itself. I must confess I cannot give an absolute reason, nor can I speak from positive knowledge on that point, but that is the opinion which I have entertained in regard to soap for a long time.

Dr. J. G. Reid: I am at sea. Five different kinds of toothbrushes have been mentioned to-night, and I have not mentioned mine yet. But I have been thinking what a happy thing it would be if Wassall, Talbot, Bonwill, "The Dentist," and Reid would get together and get up a toothbrush that would be suitable for everybody, have all the names on the handle and dispose of it in that way. The fact of the matter is, that I have not seen a toothbrush in my whole experience in dentistry that I considered an ideal one, and I am not a genius enough to make one. However, I would really like to see a good toothbrush put on the market to-day. I do not know of one now. Some of the toothbrushes have good points, and it is possible that these points might be combined in one toothbrush. I do not know why they cannot be. I think it would be a most admirable suggestion to incorporate the good features of the different toothbrushes into one toothbrush.

Dr. Wassall (closing the discussion): There seem to be as
many opinions on this subject as there are individuals here, and it has been more or less profitable to hear those who have expressed themselves. It is not my desire to take issue with any one to-night. I thank the gentlemen who have taken part in the discussion and the Society for the interest shown in my brief paper.

The Odontographic Society of Chicago.

The tenth anniversary of this society was celebrated February 21 and 22, 1898, by clinics, the reading of papers and discussion.

Monday afternoon, February 21, the society and its guests met in the lecture room of the Northwestern University Dental School, with the President, Dr. George B. Perry, in the chair.


Dr. G. W. Cook opened the discussion: Little did I expect when I made these experiments last summer for Dr. Woolley that I would be called upon to say anything on the subject in a public way. Of course, I met with some difficulty in my experimental work, especially in regard to the temperature. Here I had to take into account two factors, viz.: The destroying of the most resistant microorganisms and the possibility of extracting so much moisture from the tooth as to lessen its resisting powers. This required the determination of the minimum temperature at which the root drier would destroy all bacteria generally found in decaying teeth and the amount of moisture extracted by such temperature, and its influence on the resisting powers of the tooth. To do this some means had to be devised for obtaining a definite temperature of my root drier. Through the kindness of Mr. Francis, of the Chicago University, I got an apparatus by means of which I could get any definite temperature desired. I began my experiments, using the root drier heated to about 220° C., which I found to be a temperature sufficient to cause carbonization of the organic matter of the tooth, besides extracting too much moisture.

I then reduced the temperature to a point (about 90° C.) sufficient to kill resistant microorganisms. With this degree of heat of my root drier I could kill all bacteria, even the most resistant, in the root canal. I then set about to determine the amount of
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<th>Weight in m. g.</th>
<th>Weight of tooth in m. g. after first drying and per cent of loss.</th>
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<th>Weight after third drying and per cent of loss.</th>
<th>Total loss and total per cent of loss.</th>
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<td>1290.0 Loss, 8 m. g. or 0.70 of one per cent.</td>
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<td>710</td>
<td>707.8 Loss, 2.2 m. g. or 0.31 of one per cent.</td>
<td>705.5 Loss, 3.5 m. g. or 0.49 of one per cent.</td>
<td>705.5 Loss, 4.5 m. g. or 0.63 of one per cent.</td>
<td>Total loss, 4.5 m. g. or 0.63 of one per cent.</td>
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moisture extracted by such a drying process. The weighing was
done by Dr. Matthews in the Physiological Laboratory of the
Chicago University. I used a temperature of \(130^\circ\) C., but I
also found that a temperature ranging from \(90^\circ\) to \(115^\circ\) C. was
sufficient to kill microorganisms, but at \(130^\circ\) C. the root drier
would kill them in about four and one-half minutes. I made
three applications, one following the other, noting the loss of
moisture each time. The aforementioned table shows the results.

In the case of tooth No. 2 there was a loss of 4 milligrams; in
the application of the root drier the second time there was a loss
of 4.5 milligrams; in the third application there was a loss of 7.1
milligrams, total loss being \(0.40\). In the third tooth I simply
dropped it in the sand bath we had prepared, and allowed it to re-
main in the bath for \(4\frac{1}{2}\) minutes, and I found a loss of 2 per cent
of moisture. In the case of No. 4, the first application, there was
a loss of 4 milligrams; in application No. 2 there was a loss of 6.5
milligrams; in No. 3 there was a loss of 8 milligrams, total loss
being 0.70. In the case of No. 6 I found a loss, in the first appli-
cation, of 2.2 milligrams; in the second, 3.5; in the third, 4.5,
the total loss being \(0.63\) per cent. In doing this I tried to deter-
mine whether the resisting power had been lessened any. I took
Dr. Black's method of testing the strength of teeth, and made appli-
cation to some eighteen or twenty teeth, finding that they ranged
in resisting power about the same as in the experimental work he
did, and which was published in the Cosmos some years ago.

There is one thing in which I disagree somewhat with the
author of the paper; it is with reference to raising the temperature
too high. I think any one who uses a root drier will see the force
of not heating it to too great a temperature. One hundred and thirty
C. will destroy all microorganisms in the root canal, and I think
most dentists who use the root drier hold it in a blaze until it is
almost red hot, and then introduce it into the canal. In that way
there is too much moisture extracted, thus weakening, without
doubt, the tooth.

Dr. C. L. Hungerford, Kansas City, Mo.: I have listened
with a great deal of pleasure to the essayist and to the supple-
mentary remarks made by Dr. Cook. We have seen the evil
results from a majority of the root canals that are treated and filled
by the ordinary method, especially by the method that resorts to
heating for the desiccation or the bringing out of moisture, whether
serum or saliva that is saturated with microorganisms and ptomaines. These ptomaines have penetrated the surfaces of the teeth, gone deep into the tissues, their poisonous influence being exerted upon the periosteeum which surrounds the roots of the teeth, etc. The mechanic who expects to finish a piece of work does not commence with crocus paper, but with a file; and if we expect to clean out a root canal and render it antiseptic, as well as the body of the dentine, those parts must be reached by mechanical means. By such a method as is advocated the dentist would only put a covering of antiseptic which would coagulate the albumin upon the surface of the root canal. Inside of the body of the tooth structure the ptomaines and the spores would still possess life and vitality in spite of any heat that it would be possible to bring within the root canal, and after the canal was filled they would permeate the dentine, and the so-called desiccation method would bring them to life to exert their detrimental influence upon the teeth. I think I would prefer to clean the root canal out by mechanical means to the extent that my mechanical ability permitted, removing every bit of debris in the canal, working into the body of the dentine until absolute dryness is established as far as mechanical means would do it. Small particles of absorbent cotton wound on broaches would scarcely ever reach the debris in root canals and take them up. With Donaldson broaches we can generally remove debris and dry out root canals, and with broaches of larger size we can enlarge the root canal so as to work freely; then we can use some antiseptic agent, such as an essential oil. I do not think nitrate of silver would be applicable. We want an agent for this purpose that will permeate the body of the dentine, destroy the spores and remove the ptomaines. The immediate method of filling septic root canals should never be employed. When the pulp is removed, then immediate root filling is permissible and should be employed. When a root canal has been filled with microorganisms, ptomaines, breeding by the millions, it is essential that some agent should be used which will permeate to the very bottom, where these spores have reached. We must employ an antiseptic to eradicate them.

Dr. E. L. York: Dr. Woolley handed me his paper a day or two ago and kindly asked if I would look it over. I read the paper, and I must say there are several little points in it in which I take issue with him in a friendly way. I do not like the indiscriminate
use of the term antiseptic. He spoke of treating the teeth and getting rid of poisonous exudates in the canals previous to medication. If he removes all of the debris in the cavity with the root canal drier, why does he want to use an antiseptic for the destruction of pathogenic germs? An antiseptic does not destroy pathogenic germs, but it may restrain their growth. These are points that impressed me while he was reading his paper. However, I may be wrong.

He states also that the conclusion reached from the experiments that were made by the French scientists was that moist steam was the best for sterilization. There is no doubt about that, but where is the doctor going to get moist steam? Not with the root drier. We have the root drier, but cannot have the steam. Then I would have left the steam out. The doctor made experiments with one or two teeth, and then gave us a third tooth with which he had experimented. How did that come in? That was the control test, but he did not say so in his experiments.

Again, the doctor says that some dentists wound cotton around a broach and saturated it with some essential oil to desiccate the root canal. I do not think any one has ever attempted to desiccate a root canal with oil; he might try to sterilize it, but not try to desiccate it.

Dr. Cook is an old friend of mine, and he is better posted in this work than I am, and I would like to know whether I am wrong or not. Dr. Woolley referred to sterilizing the rubber dam. I have never been able to sterilize the rubber dam from the fact of handling it with my hands so frequently, it would no longer be sterile. I would like to know where the benefit comes from sterilizing the rubber dam.

Dr. Woolley (closing the discussion): In the preparation of my paper I was careful not to make my statements too dogmatic. I read the paper for the purpose of throwing out some thought for discussion. In regard to the remarks of the gentleman who did not believe in desiccation by heat, for the reason that it did not entirely rid the teeth of poisonous substances, and that he removed the poisonous exudates from the canal by cutting away a certain portion of the dentine, admitting that he did this, there are still microorganisms left in the tooth structure. Let us suppose that the canal and intertubular spaces has been freed of poisonous exudate, there is still enough of the poisonous substance left in the
dentine structure to cause further disease, and it is not so much
the quantity as it is the quality that is left there. It requires very
little of this poisonous exudate to cause trouble and to lead to the
formation of abscesses. Whatever remains in the pulp canal in
the form of debris or in the dentine the heat dries it out, so that
we can get immediate action of the medicine upon the intertubular
spaces.

In answer to the remarks of Dr. York, they are very good as
far as they go. It is well known that a certain amount of steam is
generated in a pulp canal. After I remove the poisonous exudates
I use my syringe and rinse out the pulp canal, then I use my heat
again, forming steam which really takes place in the tooth and can
be tested by the presence of pain.

Dr. York made mention of the fact that there is no one who
goes through the process of drying by substitution a pulp canal
referred to in my paper. We have good authority for that process
of desiccation, as it is Dr. Black’s method. The only true pro-
cess I find is to thoroughly dry the pulp canal by heat, and then
resort to direct medication. Previous to filling the pulp canal, if
it is thoroughly dried out (and it may be ascertained to a cer-
tainty), the introduction of a gutta-percha filling can be more
easily performed and we can attain the best results.

Dr. C. R. Taylor, of Streator, Ill., read a paper entitled
"Metal Posts for Anchorage for Fillings in Incisors and Cuspids."
See page 257.

DISCUSSION.

Dr. Bowman, of St. Louis, was called upon to open the discus-
sion. He said: I have very little to say upon this subject. I do
not know of anything to criticise unless it would be the anchoring
of an anchor in a substance that is not secure like cement. I have
used these anchors somewhat after the manner suggested by the
essayist for years in cases of this character; that is, little gold screws,
fourteen or sixteen karat, and they have answered the purpose for
which they were intended very satisfactorily. I see no other way
to treat these cases. As the ground has been so thoroughly cov-
ered, I have nothing more to say.

Dr. E. K. Wedelstaedt, St. Paul, Minn.: I do not know that
I can add anything of interest to what the essayist has said with
reference to this subject. It has certainly been handled in a very
thorough manner, and I, like a great many others, have had the
satisfaction of learning a great many points that have been advocated which I have never heard advocated before. I am not very partial to the use of screws at any time, except in extreme cases as they have been advocated here. I think in the majority of cases a broad seat and a step at right angles will meet the indications. I think where the angle is at all times removed from decay or from the lack of dentine at the incisal edge, I believe it is taught to cut the angle away where there is no dentine under it. My experience has taught me that over 90 per cent of the cases, unless they are anchored at right angles, must be filled at some future time.

I wish I knew more about the subject of screws. Like Dr. Bowman, I use a small screw in the extreme cases, and beyond that I do not know anything more about the subject.

Dr. C. N. Johnson: I wish to say a few words in regard to Dr. Taylor's paper. I consider it a clean-cut, carefully prepared paper, and the essayist has covered the subject clearly and accurately. I have very little criticism to make. There is one point in connection with the subject that must not be lost sight of. Some men may go away from this meeting and anchor their fillings according to other principles than those laid down by Dr. Taylor, and they may last well, and the idea may thus be fostered that it is therefore unnecessary to supplement the anchorages with screws or any appliances of that nature. In considering this question we lose sight of the fact that there is the greatest variance in the masticating force brought to bear on or against fillings in different mouths. We must study our cases carefully as they come to us. We must note the landmarks of mastication. If we do not, in many instances where we think we have anchored a filling thoroughly we will find that the filling fails. This is a point I hope the profession will pay more attention to in the future. In one mouth we may safely anchor a filling less securely than in another, and expect it to do better service. Some cases require thorough and heroic treatment in order to make the work permanent. It may not always be necessary to subject patients to such heroic methods of anchorage as the essayist has spoken of, and yet I can see many cases where a filling might be made more secure on the lines laid down here.

There is just one word of caution that I would mention, and that is this: In the insertion of these screws between two plates of enamel as they emerge from the incisal edge, the direction of
the screw is toward the horn of the pulp, and if it is carried to the
depth indicated by the diagram here, in many instances we would
approach the horn of the pulp so closely that the metal would be
a good conductor of thermal changes, and consequently we might
have death of the pulp on account of proximity of the metal post.
This is a word of caution, not for the essayist, but for the younger
men who may grow enthusiastic over this method of anchoring
fillings.

As Dr. Wedelstaedt says, I have been in the habit of making
these fillings with a step at right angles with the axial wall of the
cavity. The essayist in his paper made a statement in regard to
that kind of preparation of cavity, that there was danger of failure
of the labial plate of enamel. In some instances, if we use this
method it may be necessary to shorten the plate and carry the gold
over as a matter of protection. In all my experience with this
form of anchoring fillings, leaving the plate there and properly
beveling it, so that the gold goes to the edge of the enamel, I have
not yet seen a case where I have lost the labial plate of enamel
except in one instance, and this was caused by a railroad accident.
In the ordinary stress of mastication I have never seen a case in
my own practice where the labial plate has been broken away, if
properly beveled and the gold built solidly over it, making it flush
over the lower margin of the plate sufficient to strengthen the plate
and keep it from breaking.

Dr. Taylor (closing the discussion): In my closing remarks
I wish to say that I have never known a case of cemented screw to
ever give way, and in some instances the screws have been sub-
jected to a very severe test. In some cases they have been stand-
ing for nine or ten years, and it would seem that of itself would be
a good test of them.

Dr. Johnson: Would it not be well to cement the post against
the dentine?

Dr. Taylor: Yes, sir, but there would be so little of the ce-
ment on any side that it would not amount to much. I have not
known one to break loose. Of course it may occur, because we
never know what may happen until after it has happened.

A Member: What kind of cement do you use?

Dr. Taylor: I have never found any cement that was very
good, but in such places any good cement will do. There is no
chance for any chemical action to take place or any disintegration.
We might have pressure, and that certainly helps the cement, and in a place where pressure is brought upon the cement we know it gets very hard. I have found the iridio-platinum wire made by the Goldsmith Bros, the hardest and strongest. I believe they put more iridium in it than any other manufacturer I know of, and that gives it a stiffness and molecular strength that I have not been able to find in any other material of the kind.

I believe in all our operations in these places we should satisfy the aesthetic sense as much as possible. Our operations should please the eye. Dr. Harper approves of cutting square steps in these cases. Personally, I dislike to see square steps in teeth. It is our business as artists, in our line, to satisfy the eye without loss of strength and utility on part of the operation.

Dr. Johnson's criticism is a just one, and it is well to raise a note of warning in reference to the introduction of these screws. It is the weak point in these operations, and I expected such a criticism to be made. To the younger men especially, I would say that they should be very careful about where they place these screws so as not to injure the pulp. I called attention to the fact in my paper that there were two essential points to think of, namely, the conservation of the pulp of the tooth and the weakening of the occlusal edge.

I do not condemn the method of Dr. Johnson in reference to extension along here (illustrating) the occlusal edge. As I said, I believe the metal post a stronger method in many cases. But we have seen teeth which, for want of a better term, I will call "wind-shaken enamel." You have seen pieces of boards come out of pine trees. When the trees were growing the action of the wind blowing against them, in this way breaking the grain of the wood into pieces, and so we have the enamel surface in which the rods are separated and are cracked lengthwise of the enamel. If you take away the support of dentine in these cases they are sure to break down; if you cover them with gold they will break down. It is in these extreme cases that I speak of the difficulties in preserving these teeth. The different methods have their place, and I believe the method I have described to you has its place. I have found it so in my own practice of some eight or ten years of the use of screw anchorages in different ways. I am constantly using them more and more in the extreme cases of decay, where there is difficulty of retaining fillings.
DISCUSSION ON DR. BLACK'S PAPER.*

Dr. C. N. Johnson: There is one point in connection with Dr. Black's paper that I wish particularly to emphasize. Dr. Black overlooked it in the presentation of the subject. He spoke of flecking of gold upon the surface of fillings on account of imperfect cohesion of the gold, and mentioned the accumulation of foreign matter upon the surface of the gold, which accounted for the flecking away. There is another element that causes flecking of gold upon the surface of fillings, and I think Dr. Black has pointed it out before, but it was not mentioned by him in his remarks while he was conducting these experiments, and that is the manner of annealing gold. The average operator will pick up a piece of gold with his pliers, carrying it through the flame, heating it to a red heat, then placing it upon the filling and condensing it. As Dr. Black has said, in the working of that gold there will not be anything apparent to the operator that he is not getting a perfectly condensed and cohesive filling. As a matter of fact, every particle of gold which is grasped by the pliers is not properly annealed, and every atom not properly annealed gives one place in the filling for this flecking he referred to. A great many fillings put in seemingly under the most favorable circumstances and finished beautifully, in later years or months will show flecking at particular places, and in many instances it is traceable to improper methods of annealing the gold. Flecking of gold may also arise from imperfect condensation and imperfectly serrated pluggers, but this matter of annealing must not be overlooked.

Dr. J. Taft: The defective annealing which is obtained by using the pliers can be wholly remedied by using an alcohol lamp with a mica plate over it and gold upon that, or, which is better, an electric annealing plate, as prepared by Dr. Custer. The method of annealing with an alcohol lamp or ordinary gas is imperfect always. There is the difficulty that has been referred to. There is, furthermore, a product of combustion in the flame that necessarily to some extent is caught by the gold and remains upon it. Neither of these difficulties occur when an annealing plate is used, and the difference in the welding of gold when annealed in that way will be apparent to any one. Its cohesive properties are perfectly brought out. If the gold is not heated enough its welding property is not fully developed; if overheated, its welding property

*See Page 278.
is deficient—I mean the part that is passed in the flame and receives its influence—so that both or any of these difficulties are remedied by the use of an annealing plate such as I have indicated.

Dr. J. E. Hinkins: I heard Dr. Black’s remarks this afternoon and was very much interested in them. I desire to ask him a question. When he annealed the two first pieces of gold this afternoon and immersed them in ammonia, I believe he left them in thirteen minutes. What is the shortest space of time, doctor, you would submit them to the ammonia gas to produce the results you did?

Dr. Black: In answer to the question, I will say that I do not think we will get perfect noncohesive gold in less than ten minutes in ammonia gas. I do not think the carbonate of ammonia would answer the purpose so well as the ammonia. My experience leads me to prefer ammonia for producing noncohesive gold. The noncohesive gold produced by subjection to ammonia is properly the gold to use. We may use from the same book the most perfect cohesive gold and the most perfect noncohesive gold, or from the same sheet, for that matter. My notion and my practice have been to get the most perfect cohesive gold I could buy. I know then just what I am doing, and I can have my gold perfect either as noncohesive or cohesive gold, that is to say, I get my gold from my dealer as clean as I can get it. That is the most perfect cohesive gold.

As to the annealing lamp, a point spoken of by Dr. Johnson, it is one that I have often urged, namely, that we fail to anneal the gold perfectly when held in the flame with the pliers. The plier points should be small, and they should be held in the annealing lamp with the gold sticking up, so that the plier points receive the greatest heat. Of course, as I pointed out in my remarks, the annealing plate or the tray gives us the most perfect result, more perfect than we could get possibly with the annealing lamp and pliers.

I have been asked to give a résumé of my remarks this afternoon. It is a little difficult to do that hurriedly and cover the salient points, but I will give some of them.

In the first place, my excuse for bringing this matter up at the present time is that we have had no discussion on this subject for many years, and the young men coming into the profession know almost nothing about it. Our books on operative dentistry give a short paragraph about it, and often the subject matter is not cor-
rectly stated, and not stated sufficiently fully for one to well grasp it. It is for this reason that it was brought up rather than for anything new that I had to offer. The points are that the cohesion of gold is obscured by a film of gas condensed upon its surface, or otherwise stated, when the surfaces of gold actually come in contact they weld together at once. This contact is prevented by a film condensed upon its surface. This film may be composed of gaseous ammonia condensed into a film; it may be composed of chlorine; it may be composed of carbonic acid, of hydrogen, of sulphurous acid, of sulphuretted hydrogen, or the phosphorous gases, or of still others. Any of them we may find condensed upon our gold obscuring the welding property.

The object of the experiments I made were to give you an ocular demonstration of the material condensed upon the surface of the gold. We will get this material just the same if we expose a sheet of gold without any rolling, as we did when we rolled up the sheet this afternoon. Of course it is difficult to make that experiment unless you have a wide-mouthed jar, but we may do this and get the same results. This I wish the profession to understand who have not seen such a demonstration before. It was my desire to give them an opportunity of witnessing this ocular demonstration of how this condensation takes place.

The next point is that this condensation does not occur immediately. With some gases it occurs much more quickly than with others. It begins at points or flecks, the same as the rusting of a polished surface of steel begins at the points and flecks, and spreads over the gold. When we have fixed salts formed by the condensation of various gases these will spread over and make small flecks in the gold, leaving the interspaces coherent when annealed. Our gold may appear to work well, may appear to weld, and yet the welding be imperfect through a considerable part of the mass, and we will be deceived in thinking that our gold is welding well, when it is welding but imperfectly. I think this occurs in a great many fillings that are made, hence the necessity of care to keep the gold in an atmosphere composed largely of ammonia or partially of ammonia gas, if we would keep our gold in a condition to get the best results. We keep the gold in ammonia gas in preference to any other for the reason that ammonia forms volatile salts that may be removed by heat. These are the principal points I intended to bring out in what I said this afternoon. The points
with regard to annealing gold are very, very important. Our gold should be annealed with great care, and especially when we are building up surfaces that will be exposed to abrasion in mastication, in those cases where the teeth have been worn, or where for any reason the gold will take unusual stress in mastication. This is particularly to be noted in those cases where persons have a strong bite, using great force during mastication, and wear their teeth badly. In all those cases where the landmarks of a heavy bite are apparent in the denture we should redouble our efforts to make strong, perfectly coherent fillings.

**Evening Session.**

This session was held in the rooms of the Chicago Medical Society, in the Stewart Building, with the President, Dr. George B. Perry, in the chair.

Dr. J. Taft, Cincinnati, Ohio, read a paper on "The Influence and Power of Association in the Dental Profession." See page 167.

**DISCUSSION.**

Dr. C. E. Esterley, Lawrence, Kan.: It is, indeed, a surprise to me to be called upon to make any remarks on this occasion, but I assure you that if there is anything that has contributed to my happiness as a practitioner it has been affiliation with dentists, and I am quite sure that all of us have appreciated the paper that has been read, and we cannot help being benefited by it. The influences of association work are bound to develop and grow, and I am sure a greater perfection of this work will make us better and more useful in our respective communities. It is for this reason that I have during the few years that I have been engaged in the practice of dentistry attended every meeting within my power, and I am sure that no young man can afford to miss meetings of this kind. He should attend his State society, and then such others as may be his privilege to attend. I thank you.

Dr. Cravens, of Indianapolis: I was very much pleased with Dr. Taft's paper, and I presume there is no one here who has had more experience in association work than he. He has been present at the baptism of more State associations and other dental associations than any other man, perhaps, alive to-day. He has seen a generation of associations disappear. He is our patriarch in that respect. It seems to me in looking over and thinking of
the various State society meetings I have attended, and whose proceedings I have read, that some of our State societies are losing ground. It is not because of association work, but because we are learning to assemble in a different manner. We are assembling in sectional work, so to speak. Dental associations are springing up in different parts of the State. Papers are read and discussed and clinics held. I believe you have two or three dental societies in this State outside of Chicago. We have two or three in Indiana. It would seem that some of the State societies are losing ground. Illinois, Indiana and Michigan have lost very much in importance and interest, and it is on account of the changes that are taking place in association work. Ohio, Indiana and Michigan have formed a Tri-State association, widening their field of work in this manner, so that it is difficult for us to keep up our State association in Indiana. We have fallen off very much, although our society is much more complete in its working machinery than it ever was. We have seen the American Dental Association gradually wasting away. No one has worked harder for it than Dr. Crouse, and for years he was the executive committee. It has been waning away until at last it has gone up into smoke.

Dr. Taft mentioned one point that impressed me very forcibly with regard to associations among students of the different dental colleges. When I was a student at the Ohio college, if we had formed an association for mutual improvement there would have been just about enough for president, vice president, secretary, treasurer and executive committee, and that would have been about all. There are enough students there now to form a respectable association.

Dr. C. N. Johnson: I wish to put Dr. Cravens right in speaking of State societies. What he says does not apply to the State of Illinois. The best dental meeting I ever attended in my life was the recent meeting of our State society at Peoria. It was an ideal meeting. If the State societies in other States are beginning to wane we want the good men to join with us.

Dr. T. W. Brophy: The pessimistic ideas advanced by my friend from Indiana (Dr. Cravens) have made it necessary for me to make a further explanation than that made by Dr. Johnson in regard to the membership of the Illinois State Dental Society. At the last meeting forty-five new members came in; the society is
still growing, and everything indicates that there will be a larger acquisition to its membership at the next session.

So far as the American Dental Association is concerned, it has not gone into dissolution because it was not strong enough, but it has formed a union with the Southern Dental Association and a new association has been formed, bearing the name of the "National Dental Association," and quite likely there will be at least one hundred new members admitted to that body at the next meeting to be held in Omaha. I would not be at all surprised if the number would be greater. In Chicago our dental societies are all prosperous, and the Odontographic Society of this city claims (and I think justly so) to be the largest dental association in the United States except the National. It has a membership of more than three hundred. From what has been said, it will be seen that we are growing.

Dr. Watling, of Ann Arbor, Mich.: The Michigan State Dental Association was never in a more flourishing condition than it was at our last meeting.

Dr. W. C. Barrett, Buffalo: Since New York has been referred to, I will say that we have certain district dental societies, but all are subordinate to the State society. I am sure our State dental society was never in a more flourishing condition than it is at present. I want to give this as a little testimony. I am heartily in favor of dental associated effort. We always expect something good from Taft, but somehow there is no chance for any difference with him of opinion; there is no chance for very much discussion. When he says a thing he seems to get on the right side, and the consequence is there is no wrong side. There is no question about the value of associated effort, of associated industry. We know that associated effort will accomplish things that individual effort will not. We know that by associated effort we have raised the status and standard of the dental profession away above what it was thirty or fifty years ago. We know, furthermore, that associated effort, if continued, will in time raise a tide of influence that shall sweep over the topmost crags and crannies of ignorance, and that which we now call quackery in its worst form, that which is low and vulgar and dirty, shall be swept away by the tide of associated effort. When this can be done there will be no question about the utility of associated effort.

Dr. Cravens: I was just beginning to think that I was a val-
usable member of association work. I am glad to know that the gentlemen who are present heard this paper when it was read tonight. Dr. Barrett spoke of the remarkable accuracy of Dr. Taft's statements, saying they were plain and thorough, and that nobody could differ with him. That is true. It seems my great virtue is inaccuracy of statements, as nobody agrees with me.

Dr. C. R. Taylor, Streator, Ill.: This is a subject that I am very much interested in, and I want to say this, that I have no great sympathy with any particular creed or ethics, but I do believe that the great work which is being done for the profession is by the association of men who have ideals of life and of their profession, and not by any particular statements that they may make on paper. I wish that I could feel as Dr. Taft does, that nearly all the quackery was out of the organized dental profession. It is not near out, but it will be if we are true to our highest ideals of life. I do not know of any place where this work can be done so grandly as it can be in our smaller societies. Some of you may think that I am a crank on local societies, but we ought to have organizations wherever there is half a dozen or ten dentists, with no basis of fellowship, only that of manhood, and I would not insist on too much of that either. I do not believe half a dozen men can come together and talk about things in which they are interested and believe in, and then go out and act mean toward each other. Association work gets rid of bad feelings. If a man makes a statement that is unjust or untrue, it reflects back on him. By association with his fellow dentists it makes him a better man, as well as the men he comes in contact with. Large associations will not do this, as the members cannot come into such close contact. There is not that fellowship that there is in the man who has an office next to you. You meet him as a man, and not simply as a professional man. It is here that I believe that our great work is to come.

In speaking to a young man who is working in one of the leading dental parlors in Chicago, he told me that the day of the dental parlor had gone by; that people no longer expected as good work as they could get from regular dental practitioners. The people are beginning to realize that there is a difference in the "dental parlor," and if there are any dentists who put the words "dental parlors" on their windows, I would urge them to remove them, as the people begin to think that you are quacks right away.
Dr. J. N. Crouse: Of the dental associations in the United States, less than one-quarter of the dentists belong to any society. This does not argue well for the taffy that has been given here tonight about what dental societies do. It is true, these societies do first rate considering their number; but they do not do enough missionary work. They should solicit new members and give them to understand that it is for their good. Following out this thought, every member of the Dental Protective Association should try to get his brother practitioner into it, and instead of the thirty-five hundred members we now have we ought to have ten thousand. With a membership of ten thousand we can command the situation, and nobody will command us.

Dr. Taft (closing the discussion): Reference was made to various points by the speakers, and several suggestions were thrown out. My brief paper was not intended to be an exhaustive one; it consisted largely of a few isolated ideas thrown hurriedly together with a view of bringing out such a discussion as we have had. We could spend an hour profitably in discussing the points that have been brought out.

There was one point brought out that should be emphasized a good deal more than it was, namely, the good derived from small associations. It is a grand, good thing to have large associations like this, but it is better to have small associations of a dozen or twenty members who can get together, put their ideas together, and discuss subjects of interest to them. Much good is derived from a man speaking face to face with his friends. Get close to a man and you get near his heart. With these small associations there will be the greatest harmony, and the greatest good will be accomplished in anything they undertake to do. Let us try to get all the members we can to join our dental associations, and make them work in cooperation as one harmonious whole for the up-building of this, one of the noblest professions in all the land.

Dr. E. S. Talbot, of Chicago, read a paper entitled "Degeneracy as Applied to the Deformity of the Jaws and Irregularities of the Teeth." See page 262.

Discussion.

Dr. W. C. Barrett, of Buffalo, was asked to open the discussion. He said: The subject is an interesting one, but it is rather one of to-morrow than of to-day. Our knowledge of these facts is not sufficiently advanced to form positive data upon which to base
certain opinions, and I am sure that the subject will not under such circumstances appeal to the members present as something perhaps of another thing would. It is fortunate for our profession and for the world that there are a few such faithful ones as Dr. Talbot to take up this subject and follow it and give us the benefit of his studies and his deductions.

Dr. A. W. Harlan read a paper entitled "Some Thoughts on Alveolar Abscess." See page 268.

DISCUSSION.

Dr. Callahan, of Cincinnati, was asked to make the opening remarks. He said: It seems that every time that sulphuric acid is mentioned I am called upon to say something. I have never used the agent as spoken of by the essayist this evening. It is rather a new method to me—a new idea, perhaps. It has been my custom, after I get through a root canal and have filled the roots, and subsequent trouble arises, to treat it from the outside surgically. I should like to try the treatment advised by Dr. Harlan, and I shall do so if it will answer. It will save my patients some little suffering, perhaps. I do not know that I have anything to say in regard to the action of sulphuric acid other than the essayist has said.

Dr. W. C. Barrett, of Buffalo: I have not had any experience with the remedy to which the essayist has referred. He has so often presented new things that have proved beneficial in the past, that I am willing to accept a new declaration from him and at least to try it. My impression concerning the use of sulphuric acid, from my own experience, is that it is very apt to erode and make still rougher a surface that might be rough in the first place, instead of smoothing it and dissolving the spicula. However, I shall try it after the manner recommended by the essayist.

Dr. W. G. A. Bonwill, of Philadelphia: So far as the treatment of alveolar abscess is concerned, I have had very little trouble in my own original practice in having these abscesses. More than one-half of my practice comes from the hands of others, and the great trouble has been that the alveolar abscesses were treated too often. When you come to hear dentists talk or write upon this subject, you learn that the constant application of agents in the treatment of alveolar abscess interferes with the healing process, and you cannot cure your cases under such circumstances. One
or two treatments is the best advice you can have if you take the proper remedies to remove the necrosis, which is not always the case.

You may laugh at me when I tell you that for forty-two years I have filled pulp canals. In the early part of my practice, with tin, oxyphosphate, gutta-percha and other things; but for forty years I have filled them with cotton or zephyr, and when the cavity is thoroughly cleansed you will find, as I have found, that you will have but 2 per cent of cases that will give you trouble. I have used nothing but zephyr cotton, which is nearly allied to bone. I am not ashamed to show the results of my practice. I have nothing to complain of, in the majority of cases.

Dr. Pruyn: What do you mean by zephyr?

Dr. Bonwill: Zephyr cotton, finely spun wool, which comes nearer bone structure than any other one thing, and is less destructive than anything else you can put in a tooth. That has been my practice, but it is just as good if you can fill the cavity with cotton. Hundreds of my cases I have filled with cotton and nothing else. You must do your work aseptically. Thoroughness and cleanliness are the great points.

The Southern Minnesota Dental Society met at Mankato, April 12, 13, 14, 1898, and held an interesting meeting.

The Dental School of Paris has named five members to represent it in the organization of the congress of 1900 as follows: MM. Godon, Papot, Viau, Richardchauvin and Martinier. The Société d’Odontologie has named MM. d’Argent, Lemerle, Dr. Sourey and Dr. Maire.

“I have been treating an upper right second molar for about six months. It had been treated previous to this by two dentists. Last night the gentleman came up and wanted it out. I extracted it, but a small piece of the anterior buccal root remained. I felt for it, but as soon as I touched it it fell into the antrum. I enlarged the opening and worked for about three hours trying to locate and remove it, but failed to even find it. I have consulted all the surgical works (dental and medical) and can find no similar case recorded, and never heard of it. Please tell me how to treat it. It is strange it has not been brought before the profession before now. Awaiting an early reply and hoping I am not putting you to too much trouble, and thanking you in advance for the information, I remain, yours fraternally.”

What would you do in such a case?
These meetings are the real post-graduate school. If you are living within the radius of territory surrounding Iowa, Illinois or Kansas you can attend any one of these meetings in May. If near New York be sure and go to Albany.

Illinois, May 10, 11, 12, 13. Iowa, May 3, 4, 5, 6, 7. Kansas, May 10, 11, 12. New York, May 11, 12. There will be clinics, papers and discussions. If you are interested in exhibits, there will be supplies at all the hotels. You need just such friction as is found in a live state meeting. Be sure and go to one of the above and bring along anything new you may have to show.

"Secret" and "Proprietary" Preparations.

The editor of The Dental Cosmos in the April issue quotes an extract on this subject which does not quite flatter the intelligence of the "dentist himself." A secret preparation is always proprietary, a proprietary remedy or substance may be secret or not, as seems best to the advertiser.

We consider that all remedies, preparations which do not state the exact contents of the article are secret. None of the much advertised substances, mouth washes, give the exact formula, not even boro-bornyl or listerine, both of which are advertised in the pages of The Dental Cosmos. Such an old remedy as phenolsodique does not have the formula printed on the label. Many of the secret preparations are harmless, it is true, but that does not prove that "phenalgin" or "gerofen" or "tongaline" are not secret preparations. The whole trouble lies deep down in the period
EDITORIAL.

of teaching dental medicine or dental therapeutics. The student does not go into the subject as he does into crown or bridge work, or some other "practical" subject.

He is then ready to prescribe anything that he reads about in a dental journal. The makers of all secret preparations who advertise much are always trying to get their particular pet mentioned by the editor or trying to get him to publish an extract (specially prepared) which does mention it. Either the editor of the Cosmos failed to see the point of the extract which he reprinted, or his words have a double meaning which stamps him as being very astute and clear headed on this bothersome subject. We have tried for years to keep from being caught in the trap of the wary advertiser, but along comes an innocent (?) contributor who relies on "Brown's iron bitters" or something else, and we are in it up to our neck. So it goes, not only with "secret" and "proprietary" preparations, but with lots of other things made by rival manufacturers, all eager to have their goods specified or mentioned in original matter or in discussion. We suppose things will go on just the same, but we have had our growl and any one interested can continue it.

Organic Germicides.

In a recent paper by Dr. Geo. S. Allan, "Treatment of Pulpless Teeth with Hydrogen Dioxide, Ethereal Solution,"* occurs the following: "None of the organic germicides, such as creosote, carbolic acid, or any of the essential oils, will meet the condition. Most of them are simply antiseptics, temporarily inhibiting the growth of germs. Very soon they become an additional cause of danger, for in time they are acted upon by the germs and destroyed, and so add fuel, as it were, to the flames. A pledget of cotton, soaked with any of the above named agents and placed in the open cavity of a tooth, in a few hours becomes offensive and exhibits all the characteristics of decomposition and destruction." The writer says that he believes formaldehyde is the most perfect germicide that we are acquainted with. The remainder of the paper is devoted to an elaboration of the value of \( \text{H}_2\text{O}_2 \) as a destroyer of putrescent matter, such as is found in the root of a tooth, etc.

We feel it necessary to take issue with the author of the paper

*International Dental Journal, April, 1898.
concerning his dictum of the valuelessness of some of the substances mentioned. Even such an old and somewhat useless agent as creosote is more valuable as a dressing in "the open cavity of a tooth" than $H_2O_2$. First, it is not soluble in water or saliva. Second, it is a disinfectant because it destroys the infective power of infectious material; and it will still be and remain in the tooth when $H_2O_2$ is evaporated therefrom. Carbolic acid will longer remain in a tooth with an "open cavity" than either $H_2O_2$ or formalin; both of the latter being freely soluble in water while carbolic acid is not. As regards the essential oils, cloves, cajeput, cinnamon, peppermint, cassia, myrtle and eucalyptus, we feel sure that we speak exactly and scientifically when we state that less than one-half of 1 per cent of each and every one of them would be dissolved in twenty-four hours in "an open cavity of a tooth," while $H_2O_2$ or formalin or both of them (unless protected by some impervious covering) would be completely washed out of the cavity in a few hours and all the evidences of putrefaction and decomposition would be found beneath the cotton pledget (unless it were pressed firmly in the cavity) in the tooth crown.

The disinfection of a pulpless tooth is accomplished in many ways with satisfaction to an operator, but such misleading statements cannot go unauthorized in the light of recent bacteriologic investigations.

List of Medicines Suggested for Use by Dentists.

By A. W. Harlan, M. D.

Iodol.
Alcohol.
Menthol.
Eucalyptol.
Myrtol.
Alumnol.
Eugenol.
Hydronaphthol.
Lysol.
Tinct. Capsicum.
Tincture of Iodine.
Tincture of Aconite (root).
Compound Tincture of Iodine.

Tincture of Cannabis Indica.
Arsenic.
Cocaine Hydrochlorate.
Ammonia.
Dialyzed Iron.
Chloroform.
Ether.
Nitrite of Amyl.
Glycerine.
Alum.
Boro-Glyceride.
Liquid Vaseline.
Bichloride of Mercury.
Peroxide of Hydrogen.
Chloroform Water.
Pyoktannin, Yellow.
Aluminum Chloride.
One Grain Quinine Pills.
Chloral Camphor.
Cosmoline.
Papaine.
Camphor.
Fluid Extract Tonga.
Fluid Extract Jamaica Dogwood.
Citrate of Caffeine.
Resorcin.
Sulphate of Copper.
Phenol Camphor.
Trichloracetic Acid.
Tannic Acid.
Tartaric Acid.
Boric Acid.
Lactic Acid.
Sulphuric Acid.
Carbolic Acid.
Acetic Acid.
Aromatic Sulphuric Acid?
Two per cent Sulphuric Acid
in cinnamon water.
Oil of Cassia.
Oil of Cinnamon.
Oil of Wintergreen.

Oil of Cloves.
Oil of Cajeput.
Sulphate of Zinc.
Iodide of Zinc.
Chloride of Zinc.
Stearate of Zinc.
Carbonate of Magnesia.
Sulphate of Soda.
Spirits of Camphor.
Formalin.
Sulphate of Atropia.
Fluid Extract of Hamamelis.
Aristol or Loretin.
Nitrate of Silver—Crystals.
Nitrate of Silver—40 gr. to oz.
Wine of Opium.
Silico Fluoride Sodium.
Ammonol 10 gr. powders.
Calcium Sulphid, \( \frac{1}{10} \) gr. pills.
Sulphonal.
Phenacetin.
Permanganate of Potash.
Chlorate of Potash.
Acetanilid, 5 gr. powders.
Eucaine solutions are made by
boiling. Use boiled or dis-
tilled water for making solu-
tions.
Apomorphia \( \frac{1}{16} \) gr. Tablets.

DOMESTIC CORRESPONDENCE.

Baltimore, April 1, 1898.

Editor of the Dental Review.

Dear Sir:—In February 15, 1898, number of The Dental
Review, under the title of “Foreign Correspondence,” appeared a
letter from Dr. L. C. Bryan, of Switzerland, which relates to a
dental student named Frantz Stauber, of Basel, Switzerland, and
which is a perversion of facts. By a singular obstinacy Dr. Bryan,
notwithstanding evidence to the contrary has been furnished him
by letter, and also a copy of our catalogue for 1897–98, persists in
stating that Mr. Stauber was admitted to our senior class on his arrival in this country at the commencement of the session of 1896–97, and that he will graduate from the University of Maryland, dental department, after one year’s or session’s attendance.

The facts of this case are that Mr. Stauber was admitted to our first year’s or freshman class, as the catalogue referred to shows. Also, that Mr. Stauber has not since the close of his one session, that of 1896–97, which he attended as a first-year student, been in Baltimore, and has not appeared at our school, but is now, I learn, a resident of Philadelphia. Whether Mr. Stauber is pursuing his dental studies in Philadelphia I do not know, as no college of that city has notified me of any desire of his to matriculate. I received Mr. Stauber as a freshman student for the session of 1896–97, in strict accordance with the rules of the "National Association of Dental Faculties," and his unsuccessful application to the Baltimore college for matriculation was made after he had matriculated at the University of Maryland, dental department, with the hope that he would be admitted to the senior class of that college after finding that he could not be so classed in our school. I have a written statement from Mr. Stauber to this effect.

Respectfully, etc.,

Ferdinand J. S. Gorgas,
Dean of University of Maryland, Dental Department.

LETTER FROM NEW YORK.

NEW YORK, April 8, 1898.

TO THE EDITOR DENTAL REVIEW,

Dear Sir: If Eugene S. Talbot, M. D., D. D. S., had been present last month at the March meeting of the First District Dental Society, and read his own paper on "Degeneracy in its Relation to Deformities of the Jaws and Irregularities of the Teeth," it would have evoked much more discussion than such a treatise did.

There were several present who were competent to speak to the subject, and would have given expression to their views had Dr. Talbot been present to discuss the subject.

As it was, the paper was read and practically passed without comment. It was rather a disappointment to many, for a rather large attendance presented at the meeting rooms to greet the essayist.

The treat of the month in professional circles in New York
was the refined afternoon clinic, known as the Dwinelle clinic, and the highly interesting evening meeting of the Odontological Society, who made the announcement and fulfilled the promise to have A. W. Harlan, M. D., D. D. S., of Chicago, present, both as clinician and essayist.

At his clinic he demonstrated the diagnosis and treatment of pyorrhœa alveolaris, exhibiting the practicability of application of the instruments devised by him for the removal of calcar deposits from teeth.

Their delicate working faces and edges and well calculated curves to shanks of instruments, together with the rigidity of same is, as Dr. Harlan says, the keynote to his success in the treatment of this almost omnipresent malady. Most in the dental profession believe that could we reach and remove all calcar deposits from the teeth (that were not beyond redemption) the pyorrhœal symptoms would disappear and in many instances, even without medical treatment. Recurrence of the trouble is probable, of course, under conditions which conduced to the original discomfort. Local therapeutic aid and hygienic precautions on the part of the patient will do much to cause an abatement if not a positive cure. One of Dr. Harlan's favorite remedies is 5 per cent solution of trichloracetic acid, used with the abscess syringe in pockets about teeth affected.

If the teeth are loose the figure of eight ligature of stiffened silver wire (silver 95 parts, gold 5 parts) is used—silver wire, not only because of its virtue as a ligature, but also for its therapeutic effect, the silver acting as a destroyer of pathogenic organisms.

Dr. Delos Palmer, one of our respected patriarchs, was one of the clinicians also. All enjoyed his contribution, which was a demonstration of his method of treating root canals. Balsamo del deserto was first used, and then (the detail which he wished to impress) metal pins of copper or other material were wrapped with cotton, which in turn was medicated and carried to place in the root canal.

The main object in the use of these pins was the easy removal of such a root filling in the event of subsequent peridental disturbance. The simple application of heat softens the dressing sufficiently to remove easily. A cataphoric outfit, with transformer to regulate the heat, was shown to be the neatest way to do this.

Dr. St. George Elliott's pneumatic mallet was one of the features of the clinic. It is a beautifully constructed instrument.
The softness and refinement of its action appealed to all. The doctor has come closest to solving the problem in this application of pneumatics to any previously seen by the writer.

Dr. S. G. Perry, the magnetic president of the Odontological Society, presided at the evening meeting (March 15). This society has about the walls of its rooms glass enclosed cabinets, which contain a collection of comparative anatomical crania. There is possibly not a dental society in the world that can boast of such a magnificent collection. An acquisition was made to its dental museum the evening of the last meeting by Dr. Van Vleck, of Hudson, N. Y., of an old time extracting instrument somewhat on the plan of the turnkey, but probably antedating same. The doctor was quite sure that it was 175 years old, and possibly older. Quite a history accompanies the gift, for which the doctor received the thanks of the society.

The essayist of the evening was then introduced, Professor A. W. Harlan, of Chicago ("Some Thoughts on Pyorrhoa Alveolaris"), who premised his remarks by passing among those present his set of twelve instruments such as he uses for the removal of calicular deposits, also some specimens of teeth showing calicular deposits of various character. The doctor gave as his excuse for presenting a paper on this subject, "to keep it awake." We have been attributing pyorrhoa alveolaris to our present methods of existence, but as we have evidences that the ancients suffered from the same disease when mercury was not used, nor salt pork, etc., and when they lived closer to nature and had their teeth loosen, we must look elsewhere for the causes. Pyorrhoa does not evidence itself the same on the mountain side as it does on the lake shore, the seacoast, or metropolitan center. There is a difference. Some of the causes which conduce to it are the overcrowding of teeth in the arch or to extra spaces, wrong medical (systemic) treatment, abuse of the toothpick and silk, and many other factors cause loosening.

He also scored the family dentist for his lack of attention or skill in the management of these cases as they present to him in their incipiency when it can be best combated. Heredity, he admits, plays quite a part.

Particular stress was laid upon the necessity for removing all the deposits from beneath the gum margins and between the teeth that it is possible to reach. One must follow the deposits in pockets formed, and if not successful the first time or the tenth
time (sitting), go over the surface again until one is sure they can reach no more. Trichloracetic acid is then used in solution, 5 to 8 per cent. Boro-glyceride solutions are also used frequently. There have been cases that have required treatment every day for a time and then slightly longer intervals for three months before they would show signs of yielding, and even then have recurred after a short rest, but operations were instituted again even to another few months with most gratifying results.

Dr. Hill, of Brooklyn, seemed to feel surprise that Dr. Harlan did not mention the use of sulphuric acid, which he had found very successful in the treatment of pyorrhœal conditions for the last twenty-five years. Wine of opium is used in conjunction. One case came under his care recently of a child about nine years old whose incisors were denuded of the gum fully one-half their length. He thought Dr. Harlan was convincing in his remarks, and so did Dr. Jarvie, who followed in the discussion.

The doctor's rule which he adheres to is to remove all deposits, but that is very difficult either by the use of instruments or medicine. There is a surgical aspect to pyorrhœa, which he believed in.

Dr. Carr had been very successful where other people had failed; he extracted the teeth, and so does Dr. Rhein, according to his verbal statement made at that meeting. There were a number of us there who were surprised that he should take us into his confidence to such an extent as to admit that. He must have met his Waterloo since the meeting of the First District Society, some years ago, when his statements were broad enough on the pyorrhœal question to leave no doubt but that he had saved everything. Dr. Harlan is willing to admit he saved almost all; the remainder he brings to New York for our inspection.

Dr. Rhein said it was often a hopeless and thankless task, and little paid for. Dr. Harlan's response to that should have shown the former gentleman wherein he lacked the true professional spirit. He said that if he could succeed in making those loose and diseased teeth comfortable he was willing to devote much of his life to that end and the compensation would care for itself. Dr. Harlan deserved applause for that statement. There are too many that regard the monetary remuneration as paramount. If the essayist had incorporated that in his paper as one of the main factors, possibly conducing to the heredity of the disease, he may have sounded the keynote to the whole situation. The profession
in general is not willing to bestow their greatest skill unless paid for. Of course, there is a limit to one's magnanimity. Dr. Mills' philosophy—"We have our encouragements and our discouragements"—may account for some of the discrepancies.

Dr Harlan, in closing the discussion, seemed to think that those present rather discouraged the treatment of pyorrhea. He thought the treatment of pyorrhea much more important than the filling of root canals or the making of bridges or what not, and because we have done a few of these successfully we must not think we have conquered all problems in dentistry, for anything that will correct irregularities (of function, etc.) in the oral cavity has contributed in some particular to the benefit of humanity.

Withal, the Odontological Society was so pleased with Dr. Harlan's work for it and the profession that it voted him an honorary member on the spot, honoring itself by so doing.

A very interesting remembrance of one of the old school by one of the new school, who received instruction under the old, was brought forth last month (March 9) at a meeting of the Alumni Association of the New York College of Dentistry, by Dr. Wilbur M. Dailey, who read a paper on "The Advantages of the Method Used for the Filling of Teeth with Soft Gold Foil, by the Dunning System." Dr. Dailey's paper should be published for the benefit of the profession at large. It would benefit both that association and the doctor if that were done. It has not been the practice of the alumni association to do that with any of its contributions, unfortunately.

The First District Dental Society, of New York, have seen fit to institute the blanket ballot which will be used at its next regular meeting, when officers will be balloted for for the coming year. It is a good move and will remove all possibility of charges of irregular methods such as was made last year. Not even nominations had been make then. The President announced that "we will now proceed to the election of officers." Gentlemen will please name their choice on slips passed about by the tellers, which was done, but as one of the tellers (who passed a majority of the slips) delivered same, his instructions were "Vote for Dr. ——." It is strange that the older members of the society will remain away from business meetings so persistently. We hope that last year's happenings will tend to instill them with a sense of their duty toward their society, and that we will see the First District Society move forward to the place it should occupy, and which it did in the past, instead of backward.

Fraternally,

THE BOROUGH.
REVIEWS AND ABSTRACTS.

Park's History of Medicine. By Roswell Park, A. M., M. D., Professor of Surgery in the Medical Department of the University of Buffalo, etc. Illustrated with portraits and other engravings. One volume, royal octavo, pages xiv-348. Extra cloth, beveled edges, $2.00 net. The F. A. Davis Co., publishers, 1914 and 1916 Cherry Street, Philadelphia; 117 W. Forty-second Street, New York; 9 Lakeside Building, Chicago.

Accurate and interesting to every medical and dental student. The last chapter contains an epitome of the history of dentistry, which is concise and well written.


This is a handsomely illustrated volume on thick paper, which the dentist needs. Much of the matter has appeared in various dental and medical journals, and is now collected and placed in a shape for use. The dentist who does not know anything about electrical osmosis will find here a safe guide. We do not care to analyze the contents, as one who knows little of the subject will not read, and one who knows will be able to add to his knowledge by reading it.

This is certainly one of the books of the year which you cannot do without. The historical part is nearly perfect, and if we cared to criticize it we would not do so on that score. Some of the "cases" might have been left out, perhaps, but on the whole we like it and commend—all but the price of it.

Pamphlets Received.


Proceedings of the National School of Dental Technics, 1893, 1894, 1895, 1896.

Instrument Nomenclature. By G. V. Black, M. D. Read at a meeting held in Chicago, December, 1897.
MEMORANDA.

Do you use nosophen?

Dr. Alonzo Boice, of Philadelphia, is dead.

Dr. J. C. Whinnery, of Omaha, was a visitor in Chicago in April.

The Hollingsworth Crown and Bridge Work School has been established in Kansas City, Mo.

Drs. F. H. Robinson and F. T. Bell called upon the editor the other day from the city of Aurora.

Dr. H. B. Resfinger is the German editor of the _Odontological Journal_, of Switzerland. Dr. Resfinger is a graduate of Ann Arbor.

The Iowa State Dental Society will meet in Des Moines, the State capital, May 3, 4, 5, 6, 1898. All dentists are invited to be present.

Picric acid is recommended for the treatment of burns in a saturated solution. Paint the surface and dress with oiled silk and cotton wool.

New dentists by the hundred are seeking locations in the United States. More than 300 were graduated from Chicago alone early in the month.

A 10 per cent solution of antipyrin in a 1 per cent solution of carbolic acid is said to be a local anaesthetic. Wonder if it is not the carbolic acid which is the anaesthetic?

The Wisconsin State Board of Dental Examiners will meet at Dodgeville, May 4 and 5, 1898. The Southern Wisconsin Dental Association meets at the same time and place.

Xeroform is recommended as a substitute for iodoform. Many of the substitutes containing iodine have failed so far in taking the place of this old standby. We prefer iodol to any of them.

The next meeting of the Illinois State Board of Dental Examiners will be held in Springfield, May 9, 1898. All persons wishing to take the examination should notify the secretary of their intentions previous to date of meeting.

J. H. Smyser, Secretary.

The fourth annual meeting of the Southern Wisconsin Dental Association will meet at Dodgeville, Wis., Wednesday and Thursday, May 4 and 5, 1898. A cordial invitation is extended to the profession at large to meet with us.

Dr. W. J. Funston, President.
J. H. Reed, Secretary.

MEETING NOTICE.

The Illinois State Dental Society will hold its thirty-fourth annual meeting at Springfield, May 10-13, 1898. Dentists who are not members of the society and dentists of other States are cordially invited to attend. Hotels and railroads will make the usual reductions. A large and profitable meeting is anticipated.

A. H. Peck, Secretary, 92 State Street, Chicago.
MEMORANDA.

333

The Tri-State Dental Meeting, comprising the dental societies of Indiana, Ohio and Michigan, will be held at Put-in-Bay June 21, 22 and 23, 1898. Reduced railroad fare has been secured, and the meeting will be held at Hotel Victory, one of the best and finest summer hotels in America, and the program is filled with good papers. We feel assured the Ohioans will take care of us in a manner becoming their finances.

J. Ward House.

HAIR TONIC.

Dietrich recommends the following wash: Quinin hydrochlorate, 4 grams; tannin, 10 grams; alcohol (60 per cent) 880 grams; tincture of cantharides, 10 grams; pure glycerin, 60 grams; Cologne water, 40 grams; vanillin, 10 centigrams; pulverized sandal wood, 5 centigrams. For external use. Set aside five days and filter. Apply and rub well into the scalp every other day.—Prog. Med., Feb. 26.

EASTERN ILLINOIS DENTAL SOCIETY.

The following officers were elected for the ensuing year: President, Dr. I. B. Johnson, Onarga; Vice President, Dr. J. R. Rayburn, Fairbury; Secretary, Dr. W. M. Griffith, Kankakee; Treasurer, Dr. S. A. Campbell, Mattoon; Librarian, Dr. W. H. Watson, Chebanse; Supervisor of Clinics, Dr. A. M. Hudson; Executive Committee, Dr. W. A. Hoover, Gibson City; Dr. F. M. Conkey, Homer; Dr. A. S. Cutter, Kankakee; Committee on Arrangements, Dr. S. F. Duncan and J. R. Tourer, of Joliet. Joliet was selected as the place of holding the next convention.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the C. D. A. of N. N. J., held on February 21, the following officers were elected for the ensuing year: President, F. Edsall Riley, D. D. S., 474 Broad Street, Newark; Vice President, C. S. Hardy, D. D. S., Summit; Secretary, H. S. Sutphen, D. D. S., 24 East Kinney Street, Newark; Treasurer, Chas. A. Meeker, D. D. S., 29 Fulton Street, Newark. Executive Committee—F. G. Gregory, D. D. S., Chairman, 7 West Park Street, Newark; Fred. C. Barlow, D. D. S., Jersey City; C. W. Hoblitzell, D. D. S., Jersey City; Wm. H. Pruden, D. D. S., Patterson; Wm. E. Truex, D. D. S., Freehold.

H. S. SUTPHEN, D. D. S., Secretary.

CHICAGO DENTAL SOCIETY OFFICERS 1898-9.

President: J. E. Hinkins.
First Vice President: D. C. Bacon.
Second Vice President: E. A. Royce.
Recording Secretary: Elgin MaWhinney.
Treasurer: E. D. Swain.
Corresponding Secretary: C. S. Bigelow.
Librarian: C. J. Merriman.
Directors: G. H. Cushing, term expires '90; J. N. Crouse, term expires 1900; J. G. Reid, term expires 1901.
Board of Censors: A. W. Harlan, Chairman. W. V-B. Ames, C. N. Johnson.

NATIONAL DENTAL ASSOCIATION.—DIVISION OF THE EAST.

At the request of William Jarvie, V. H. Jackson, W. W. Walker, of New
York; S. C. G. Watkins, B. F. Luckey, of New Jersey; E. T. Darby, D. N. MacQuillen, of Pennsylvania; L. D. Shepard, of Massachusetts; H. A. Smith, of Ohio, and G. E. Hunt, of Indiana, a meeting of the members of the National Dental Association residing in the East is called at Odd Fellows' Temple, Albany, N. Y., on Thursday, the 12th day of May, 1898, at 2 o'clock, to organize a branch of the National Dental Association and to transact any other business which may properly come before them.

As this meeting is coincident with that of the New York State Dental Society, any member obtaining a certificate when he purchases his railroad ticket will be entitled to reduced return fare.

Reduced rates at Kenmore Hotel.

Thomas Fillebrown,
President National Dental Association.

James Macmanus,
Vice President National Dental Association for the East.

NATIONAL DENTAL ASSOCIATION.

Will you please call attention to that section of the by-laws of the National Dental Association which relates to the appointment and qualifications of delegates, which is as follows:

"Article III. Section 3. All delegate members shall be practitioners of dentistry. They shall be received only from permanently organized State dental societies. They shall be elected by ballot at some regular meeting of their society, and shall be members who have done meritorious work for the profession; but no person shall be received as a delegate who is in arrears for dues to this Association."

Also "Article IV. Section 1. Each State society may send one for every ten of its active members as delegates to this Association for one year, upon complying with the requirements of its constitution; but no society shall be entitled to representation that does not adopt or substantially recognize the code of ethics of this Association."

The fact that the American Dental Association received delegates from both local and State societies renders it necessary to call attention to the fact that delegates to the National Dental Association will be accepted only from the State societies, and that such delegates must be elected by ballot at a regular meeting of the society.

By request of the President.

Emma Eames Chase,
Cor. Sec'y National Dental Ass'n.

April 4, 1898.

ILLINOIS STATE DENTAL SOCIETY.

1. Annual Address by the President, Dr. J. A. W. Davis, of Galesburg.
2. Report of the Committee on Dental Science and Literature, by Dr. A. W. Harlan, of Chicago.
3. Report of the Committee on Dental Art and Invention, by Dr. J. E. Keefe, of Chicago.
6. "Cataphoresis" (Electrolysis), by Dr. W. V-B. Ames, of Chicago. Discussion opened by Dr. W. W. Morehead, of Aledo.

7. "Oral Surgery," by Dr. T. W. Brophy, of Chicago. Discussion opened by Dr. R. N. Lawrence, of Lincoln.


11. "Essential Oils; Results of Recent Experiments," by Dr. A. H. Peck, of Chicago. Discussion opened by Dr. G. V. Black, of Chicago.

12. "The Ceramic Art in Dentistry," with some original methods and experiments, by Dr. J. E. Nyman, of Chicago. Discussion opened by Dr. C. B. Rohl, of Alton.

13. "Amalgam," by Dr. C. P. Pruyn, of Chicago. Discussion opened by Dr. T. W. Pritchett, of Whitehall; Dr. J. G. Reid, of Rockford; Dr. W. A. Johnson, of Peoria.


CLINICS, ILLINOIS STATE DENTAL SOCIETY.

1. C. P. Pruyn, Chicago, Ill. Method of applying the rubber dam in cases of extensive decay in approximate surfaces of molars and bicuspids.

2. Dr. G. W. Schwartz, Chicago. Porcelain crown.

3. Dr. W. H. Taggart, Chicago, Ill. Carving porcelain.

4. Dr. J. W. Wassall, Chicago, Ill. Bridge attachments to teeth with living pulps.


6. Dr. L. E. Custer, Dayton, Ohio. Will demonstrate new process of fusing platinum, using Edison 110-volt current.

7. Dr. J. W. Cormaney, Mt. Carroll, Ill. Either gold or amalgam filling.

8. Dr. George McMillan, Alton, Ill. Bleaching a tooth discolored from the absorption of disintegrated pulp tissue.

9. Dr. George D. Sitherwood, Bloomington, Ill. A practical case in orthodontia, using the Angle method.

10. Dr. R. N. Lawrence, Lincoln, Ill. Making and tempering instruments.


12. Dr. Calvin S. Case. "Something in Orthodontia."

13. Dr. H. J. Goslee, Chicago, Ill. An exhibit of the method of the carved cusp system in crown and bridge work.

14. Dr. C. B. Powell, Jacksonville, Ill. Gold filling in bicuspid, demonstrating the use of the Perry separator and formation of contact point.

15. Dr. H. A. Potts, Bloomington, Ill. Approximate gold filling in central incisor, using Rowan's gold rolls and plat. gold finish.


17. Dr. J. H. Kennerly, St. Louis, Mo. Removal of pulp; cataphoresis.
18. Dr. J. N. Crouse, Chicago, Ill. Use of oxychloride of zinc instead of clamps in application of rubber dam.
19. Dr. G. A. Bowman, St. Louis, Mo. "Pot pourri" table clinic.
20. Dr. M. R. Windhorst, St. Louis, Mo. Gold filling. Large disto-occlusal cavity in lower molar, using solila gold.
22. Dr. R. C. Brophy, Chicago, Ill. "Cast Aluminum."
24. Dr. C. N. Johnson, Chicago, Ill. The preparation of cavities in natural tooth forms.
25. Dr. Thos. L. Gilmer, Chicago, Ill., will give surgical clinic if suitable case can be procured.
26. Dr. A. W. Harlan. Pyorrhoea.
27. Dr. George A. Thomas. Porcelain Crown and Bridge.
29. Dr. E. J. Perry, Chicago. Pyorrhoea.
30. Dr. Truman W. Brophy, Chicago, will give surgical clinic if suitable case can be procured.
31. Dr. F. H. Stafford, Chicago, Ill. New method of reproducing gutta-percha carved cusps in fusible metal, the same to be used as dies for solid gold reproduction.
32. Dr. Josephine Pfeiffer, Chicago, Ill. Frosting aluminum plates.
33. Dr. R. T. Good, Chicago, Ill. Pyorrhoea.
34. Dr. L. W. Skidmore, Moline, Ill. Demonstrate a method of preserving what natural teeth a patient may have when the last are extracted, to serve as a guide in setting up the artificial ones.
35. Dr. John G. Harper, St. Louis, Mo. To be announced.
36. Dr. G. V. Black, Chicago, Ill. Results of amalgam experiments.
37. Dr. F. B. Noyes, Chicago, Ill. Amalgam demonstration.
Any one having a new appliance or instrument please send same immediately, with full description, to J. E. Keefe, 34 E. Washington Street, Chicago, chairman dental art and invention committee, Illinois State Dental Society.

DOES FORMALDEHYDE DISINFECT?

To the Editor of the Medical Record.

SIR: During the past year much interest has been manifested by sanitarians in the promise of a new disinfectant—formaldehyde.

This substance has been lauded by several writers in the medical press as the disinfectant par excellence, a substance which, in its gaseous state, none of the lower forms of life could successfully resist. Experiments undertaken by some investigators known to the medical and scientific world have been cited by the manufacturers of formaldehyde and by the makers of the different forms of apparatus for the generation of formaldehyde gas. Most of these experiments have been conducted in laboratories where it would seem that every necessary convenience would be provided for determining the true efficiency of this new agent. Laboratory experiments are not, however, always borne out by work in practice. For instance, many of the laboratory experiments undertaken with
formaldehyde are found to have been made upon dry cultures of diphtheria, typhoid, and anthrax bacilli exposed to an atmosphere of formaldehyde gas for varying lengths of time. Experiments may have been made upon plate or tube cultures, but favorable reports of such experiments have not come to my notice. Laboratory experiments conducted with dry cultures do not seem to be all that is necessary in practice. In practical disinfection where diphtheria or tuberculosis occurs (the two chief diseases for which a gaseous disinfectant is wanted), we do not always find the bacilli dried and hung out ready for a disinfectant. If cleaning is done in an infected house into which the practical work of disinfection is carried, and any nests of infection remain, there will necessarily be closely associated with these foci of infection a certain amount of moisture. Under such conditions formaldehyde disinfection has not been successful in our hands. On the other hand, if cleaning is not used before formaldehyde disinfection, there would necessarily be a large number of foci of infection to be destroyed. The action of formaldehyde in vapor must necessarily be very great, and its penetrating power far greater than has been proven by favorable experiments. Recent teaching based upon bacteriological studies has been that thorough cleaning with good soap and clean water intelligently applied is the best means for ridding premises of infectious material, and that after thorough cleaning disinfection should be used as a supplementary measure. From some of the experiments with formaldehyde, it would appear that, as formaldehyde operates best on dry media, cleaning should be dispensed with because of the necessary moisture.

A series of five experiments has been conducted in the laboratory of the Rochester Health Department—four of them to determine the efficiency of formaldehyde in practice, the fifth to determine the efficiency of sulphur as compared with formaldehyde.

Experiment 1.—Apparatus used according to directions in a room containing less than fourteen hundred cubic feet and having a considerable amount of laboratory furniture. Amount of formaldehyde vaporized, six ounces. Material exposed, three tubes of mixed cultures of diphtheria bacilli upon nutrient blood serum in open Petri dishes, a quantity of sputum containing tubercle bacilli in a shallow wide-mouthed bottle, and four tubes of mixed cultures of diphtheria bacilli. Time of exposure, five hours. Result: Tubes inoculated from the cultures all showed good growths at the end of twelve hours.

Experiment 2.—Cultures of diphtheria and sputum containing tubercle bacilli were exposed in the same way and under the same conditions for six hours. Amount of formaldehyde vaporized, eight ounces. Inoculations from the cultures exposed upon appropriate media all showed that the diphtheria and tubercle bacilli in the cultures and sputum had not been destroyed, nor had their power for growth been perceptibly interfered with.

Experiment 3.—Cultures of diphtheria bacilli and sputum containing tubercle bacilli exposed as in experiment 1. Result: Similar to those of experiments 1 and 2. In this experiment eighteen ounces of formaldehyde was used.

Experiment 4.—As objection was made that the room in which experiment 3 was conducted was not tight enough, although the door casings and casings about the transoms were fitted with rubber weather strips, additional means were taken to prevent the escape of gas by caulking with paper the spaces about the door.
casings and transoms. Amount of formaldehyde vaporized, thirty ounces. Time of conducting the experiment while the lamp of the apparatus was still burning, forty-five minutes. Material exposed similar to that in experiment 1. Result: Similar to that in experiment 1.

Experiment 5.—Four pounds of sulphur burned in the same room in the presence of steam generated from two quarts of water in a basin eight inches wide placed over a two-flamed Bunsen burner. The cultures made after six hours' exposure showed no growth. Furthermore, several unused tubes of Loeffler diphtheria serum inadvertently left in the room were afterward found to have been rendered useless by the sulphur fumes. No growth could be obtained in these tubes, even though carefully inoculated with an abundance of mucus from the throats of patients having diphtheria.

The results of these experiments lead me to believe that the value of formaldehyde as a disinfectant, with a sufficient penetrating power thoroughly to disinfect in practice, has not yet been proven.

G. W. Goler, M. D.,
Health Officer, Rochester, N. Y.

March 12, 1898.

OBITUARY.

Mr. C. W. McCluer.

In these days of the sudden taking off of many well-known dentists we pause to consider the demise of our old friend, Mr. McCluer. For more than ten years he was the faithful and conscientious proofreader of The Dental Review. He was most careful and painstaking, and we sincerely regret his demise, even though at an advanced age when the summons was to have been expected. Mr. McCluer was a gentleman of the old school, and the patience and ingenuity he displayed in our work in the early years of the existence of this journal we do not expect from another. We extend our sympathy to his family and friends, with the earnest hope that his future existence will not be disturbed by bad "copy" or undecipherable manuscript.
ORIGINAL COMMUNICATIONS.

Doctorate Address.*

By Truman W. Brophy, M. D., D. D. S., LL. D., Chicago, Ill.

Gentlemen, Graduates of 1898: Yesterday you were undergraduates; the mantle of professional responsibility had not yet fallen upon you. To-day you have passed the gates which during three long years you have eagerly sought to enter, and we cordially welcome you to the ranks of the profession, whose mission it is to alleviate human suffering, preserve health and promote the happiness of mankind.

In conferring the degree of Doctor of Dental Surgery upon you to-day we have paid you the highest compliment within our power. Whether your admission to our profession will be appreciated fully by you, whether you distinctly realize the responsibility which you have assumed, whether you will be exponents of principles which will not only elevate yourselves but others to places of usefulness and honor, whether you will labor to attain the best results in the performance of your professional duty, whether the conferring of the degree upon you will be a matter of regret by your faculty, whether some of you will forget or disregard the lessons in ethics you have learned and take a place with the lowest strata of the profession, remains to be determined by the lapse of time.

To engage in unprofessional methods or quackery is to make boastful pretensions to skill which one does not possess, the object of which is to deceive the people for pecuniary gain.

The dental profession is so young, however, less than sixty

*Delivered to the graduating class Chicago College of Dental Surgery, April 6, 1898.
years having passed since the first college of dentistry was
organized, that it is not at all surprising that so many people, even
people possessing a great fund of general information, people of
culture and refinement, do not appreciate the skillful dentist, and
consequently fall into the hands of charlatans, not knowing how
important it is for the proper performance of the functions of the
other organs of the body that the first act in sustaining it, the im-
perfect performance of which must be detrimental to the whole
organism, is perfect mastication of food.

"A chain is no stronger than its weakest link."  The strength
of the human body is dependent upon the strength of its compo-
nent parts.  Your most important duty, therefore, will be to teach
those who employ you professionally how they may guard against
conditions which are not only destructive to the dental organs, but
lead to many complicated diseases of adjacent parts and often of
the entire organism.

The great field for scientific research, known as bacteriology,
has claimed and always will claim our earnest consideration.  It
bids us come and study and acquire a knowledge of those hitherto
mysterious, though ever present, factors of disease.  It is well
known that disease-producing germs of the oral cavity are often
destructive to the general health; that these pathogenic bacteria
from and through the mouth, more than by any other avenue, find
entrance into the system, and thus infectious diseases are con-
tracted.  The mouth is the great rendezvous of infection, within,
avround and beyond which these noxious germs migrate and the
tissues of the body yield to their destructive invasion.

It will be your highest duty to teach the people.  Teach them
the law of oral hygiene, for comparatively few observe this law
and obey it, while those who violate it often pay the penalty in
suffering, unconscious of their own ability to have made such
physical distress impossible.

Your work in the bacteriological laboratory has taught you
that an unclean mouth not only hastens the destruction of the
teeth, but contains millions of germs which are inhaled into the
lungs or carried with the food into the stomach, and thus become
poisonous to the tissues of the body.

During the past few years many representative dentists have
advocated the examination of the mouths and teeth of the children
of our public schools.  The teeth of many of these children receive
absolutely no care, not even the daily cleansing that is essential for their preservation. On inspection we find accumulations of sordes or thick deposits in an active state of fermentation. The gums are swollen, suppuration far advanced, the teeth loose, abscesses formed, the contents of which are discharged through fistulous openings into the mouth, intermingling with the food and are thus carried into the system. The abscesses may find outlets through external surfaces, causing fistulous openings upon the face or neck, thus disfiguring the patient through life.

A movement has already been made in the city of Baltimore to bring about the enactment of a law that shall require the examination of the teeth of the children of the public schools. The importance of this movement, at first thought, may not seem to be as serious as it really is; but if we consider it carefully it will be found grave enough to enlist our more careful consideration, fraught as it is with serious consequence both to the present and to the future, and a law of this kind should be enforced in every city of our country. The time of life the school years cover is very important to the child from a dental standpoint, as decay of the teeth is a disease more prevalent in childhood and youth than later in life; therefore, if the teeth are cared for during this period, the chances favor their more perfect preservation. It is for this reason, if for no other, this movement should be urged and encouraged by every intelligent dentist and meet with the approval of every humanitarian.

In an article appearing in the Journal of the American Medical Association, March 19, 1898, Professor Andrews, of Boston, makes this statement: "I doubt if there is a better culture medium to be found for the growth of the pathogenic bacteria than the exposed decaying dentine after the enamel is destroyed and the dentine decalcified. In it we have a substance which is perhaps more favorable for the growth and development of these organisms than any other tissue. This in itself is a very significant fact of which we should not lose sight while considering this subject. There should be special care on the part of those who of necessity are brought in close contact with persons suffering from contagious diseases. Many children in our public schools inherit a tendency favoring a development of these troubles. In our crowded, hot and insufficiently ventilated schoolrooms, the inhalation of micro-
organisms in decaying dentine may be and probably is the cause of disease and death. Of all the ills that mankind is heir to, the most appalling in its dire results is tuberculosis. To-day it is known to be communicative by infection, the infecting agent being the bacillus of the disease. It blights all who come within its grasp, sapping the life-blood and making a wreck, followed by misery and death.”

In an article on carious teeth and tuberculous cervical glands, Dr. Stark, in the Review de la Tuberculose, July, 1896, notes the frequent association between carious teeth and the enlargement of the cervical lymph glands. He found many children having enlarged cervical lymph glands infected with carious teeth. They correspond in situation, in time of development, and in the degree of enlargement with the condition of the teeth. As a prophylactic, the teeth should be better cared for, and Dr. Stark advocates with Dr. Rose the placing of all school children under supervision.

In answer to the opposition raised on the part of parents to such a procedure, on the ground of interference with personal liberty, we remind them of the fact that vaccination as a preventive of smallpox is made obligatory in our public schools.

Besides the many general diseases which may arise from neglect to observe the laws of oral hygiene, there is a danger which always threatens those who use the cups of public drinking fountains; especially is this true as applied to the cups in use in schools, both public and private. The infectious diseases transmitted from one child to another in our schools by means of drinking cups are no doubt more numerous than ever has been told.

The improvements in methods of dental practice have been phenomenal, but changes are often advocated which are not improvements.

During the last five years a revival has taken place on the subject of amalgam. Amalgam, like an evil spirit, seems to hang over our profession and its dark, dangerous and demoralizing influence is again at work. The amalgam question appears periodically for discussion; simultaneously with the great and destructive panics which cast their gloomy shadows over the commercial and monetary world. The most enthusiastic advocate of free
silver would not find it possible to equal the modern amalgam man
in the support of his peculiar views. The advocates of free silver
and the advocates of amalgam in dentistry use the same argument.
Amalgam, like silver coin, has a place, and it is useful; but as com-
pared with gold as a filling material for teeth it falls far short of a
ratio of 16 to 1. Chemists and manufacturers of dental sup-
plies have endeavored to prepare for the use of dentists some
cheap method with which to arrest the most prevalent disease
known to the human family, caries or decay of the teeth, but cheap
methods are usually unsuccessful methods. Like the great array
of politicians who have labored under the delusion that paper and
copper and nickel and silver are money, many dentists hold views
equally erroneous, namely, that amalgam as a material with which
to fill teeth is as good as gold. As a material for filling teeth, as
in monetary matters, there is but one standard upon which to rely,
and that standard is gold. There is no such thing as a medium
good filling. A filling in a tooth must be perfect or it will be a
failure.

Gentlemen, be not misled by the statement so freely circulated
as to the merits of amalgam; I have only to point to the literature
of the subject to show you that it is not a reliable material for our
use. You must keep in mind and impress upon your patients the
fact that the disease known as caries or decay of the teeth is never,
with rare exceptions, cured by nature’s efforts. Tooth structure
once broken down and lost is never reproduced, as are the other
tissues of the body. The skill of the dentist, therefore, unaided
by nature, is the only means by which this disease can be arrested;
and the material with which he will obtain his greatest success in
preserving teeth, if he skillfully employs it, is gold. Notwith-
standing the fact that diseases of the teeth are more prev-
alent than other diseases, the teeth generally are the most
neglected, the least understood, and the least regarded of any part
of the body. You will teach parents the necessity of bestowing
great care upon the teeth of their children, of newly erupted teeth
of infants, and faithfully caring for them until the child has
attained an age to be able to care for them himself.

The growth of dental education during the past decade is to
be noted by the following statistics. On commencement day, 1888,
in an address delivered to the graduating class of this col-
lege by me, these figures were given in evidence of the status of the dental colleges in the United States at that time:

Number of practitioners, 16,000.
" " colleges, 30.
" " teachers in dental colleges, 503.
" " students, 1,735.

The growth from that time to the present is shown by the following figures obtained from the deans of the various dental colleges of the United States during the past month:

Number of practitioners, 26,000.
" " colleges (recognized), 43.
" " teachers in dental colleges, 1,055.
" " students, 5,835.

Increase in ten years in number of practitioners, 10,000.
Increase in number of schools, 13.
" " teachers, 552.
" " students, 4,100.

The question naturally arises, Where will this large number of young dental graduates go, and what will they do? Is the dental profession soon to be overcrowded? In answer to this question, let me call your attention to the fact that there are seventy millions of people in the United States; that diseases of the teeth are more prevalent than any others, as nearly every one is subject to them. Moreover, not to exceed twenty per cent of our people employ dentists for the preservation of their teeth, and the remaining eighty per cent for want of a knowledge of the possibilities of dentistry, for want of a knowledge of the benefits derived from the services of dentists, suffer destruction of their teeth, which is attended by pain and, in many instances, loss of health. There are about fifty-six million people to be educated in regard to the important subject pertaining to the preservation of their teeth and the diseases resulting therefrom. The lawyer of little learning and unprofessional methods; the physician and the dentist of very limited skill and knowledge, with no desire to improve themselves or to elevate and honor their professions; and the minister, whose sole aim in life is to collect his salary, are respected by nobody. They complain about the professions being overcrowded; they move frequently, but they manage to live. On the other hand, the professional man who knows his profession, who works hard to acquire a broader knowledge of it, and to elevate it in associa-
tions and in literature, and conscientiously discharges his duties will be a busy man, and will be respected and honored by his fellow-men. Graduates of 1898, to which one of these classes will you belong?

It became my duty during the past two months, accompanied by two professional friends, to visit in an official capacity the dental colleges of the West. Our mission led us to the Pacific slope, and as we were comfortably seated in a palace car with an every-ready porter to attend to our wants, a dining car abundantly supplied with substantial food and the delicacies of the season, a library car containing good books, stationery, etc., I thought as I looked out of the window upon the great deserts of sand and sage brush of Nevada, how different was the journey of my father in 1852. His conveyance was a covered wagon drawn by horses, mine was a palace car; he slept with a blanket around him on the ground, I slept comfortably in a bed; he was surrounded by wild animals and hostile Indians, I was surrounded only by warm friends; he required three months to cross the mountains and plains, I completed the trip in three days; he was without news from home ninety days, I received news almost daily; his food was prepared at the camp-fire, mine with all the facilities of the culinary art.

In this connection I thought how similar to my father's experience was that of the pioneer in dentistry. My father voluntarily faced and endured the hardships named that his family might be benefited thereby. The pioneers in our profession were not able to enter a great temple of dental science and art, provided with sixty-five teachers to impart a knowledge of the technique of dentistry, including anatomy, chemistry, physiology, histology, materia medica, therapeutics, pathology, bacteriology and all the collateral sciences bearing upon our vocation, an understanding of which you have acquired and which you will employ for the benefit of your patients; but these pioneers struggled alone, unaided by a master's guidance. They made the few crude instruments which they used, you procure instruments of the finest form and quality; they carved their artificial teeth from ivory, you procure from the manufacturers porcelain teeth in perfect imitation of natural ones; their life work was devoted to filling teeth and constructing artificial dentures, your sphere has become more extended, not only including what they did, but studying and treating all the diseases of
the oral cavity. The fathers of our profession worked that our pathway might be less arduous than theirs; that the mountains and plains over which you travel may be crossed not in drudgery and uncertain footing, but upon the smooth, oft-traveled road which their labor made it possible for you to enjoy; and as you have plucked the fruit of their planting, you, in gratefulness, should plant for others yet to be.

Ladies and Gentlemen, as the great work of educating and enlightening the human family goes on, as millions upon millions of dollars are subscribed for purposes of general education, we view the scene and join others in heartily applauding the noble men and women whose generosity has made it possible to found and maintain these famous institutions of learning. And then as we look back at the efforts we have made and the ends we have accomplished in teaching young men without financial contributions or endowments, a science and an art, and so molded their minds and trained their hands that they may go forth into the world, employ this science and this art and teach the great lessons of health that will, if comprehended, contribute largely to the physical comfort, longevity and usefulness of their fellow-men, we point with pride to our Alumni Association and we rejoice in our achievement.

Gentlemen of the class of '98, again on behalf of my colleagues of the faculty, I bid you welcome to our profession. In its practice the fatigue you will experience oftentimes will be compensated for only in a full realization of having done your duty well. By an act of yours there appears upon the wall of the great lecture room of the college, the seats of which are now vacant, a motto, Perfectio Semper ad Finem. So deep are these letters carved in enduring bronze that they will stand emblematic of the life work of the class of '98 many years after its last surviving member shall have passed away. Like the brave soldier in battle, who sees to it that his ensign is always kept in view, let your motto, "Perfection Always to the End," become more cherished by you from year to year, and from your memory never be effaced.
The Protection and Maintenance of the Gum Tissue in the Interproximal Space.*


Much has been written upon this subject in recent years, and yet it would seem from observation that some of the most important points connected with it require renewed emphasis. We are continually meeting cases where the effective use of the teeth is impaired by a failure to observe the principles underlying the normal order of things in the management of these cases. When the teeth stand in regular array with their proximal contacts in good condition, the gum filling the interproximal space assumes the form of an arch from buccal or labial to lingual, and this form assists in keeping the space free from food debris or other foreign material. In the process of mastication the contact on the proximal surfaces of the teeth prevents severe injury to the gum, and when the food has been crushed between the occlusal surfaces the arched form of the gum results in a deflection of the comminuted food buccally and lingually, instead of permitting it to be packed into the interproximal spaces. If this arched form of the gum is destroyed the resulting pocket in the space furnishes a catch-basin in which food may lodge and decompose, producing decay of the teeth and serious injury to the peridental membrane.

In the normal contact of the teeth the gum tissue ordinarily fills the interproximal space, but when decay takes place on the proximal surface and the teeth begin to drop together the gum is forced out of the space and the arched form is destroyed. Where extensive decay exists the teeth may approach each other so closely at the gingival line that little or no gum is left midway between the teeth, and the buccal and lingual festoons of gum stand further crownwise than the gum in the space. This results in an inverted arch which is the worst of all possible forms for the retention of debris.

The proper management of these cases consists in wedging the teeth apart to their original position and then building the fillings into such contours that they will be maintained there.

The methods of wedging must be governed by the special requirements of the case in hand. Where the decay has not been

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very extensive and therefore only a slight movement of the teeth together has resulted, waxed linen tape may be used to gain space, supplemented by a judicious use of the separator at the time of the operation. In the anterior teeth cotton may often be employed to advantage, packed between the teeth dry and allowed to expand from the absorption of moisture. In molars and bicuspids where extensive wedging is necessary the movement of the teeth must be gradual to prevent undue irritation and loosening of the teeth.

A good method is to apply the separator, lifting the teeth slightly apart, and then pack gutta-percha firmly between them and remove the separator. This gutta-percha wedge may be worn for several weeks, allowing the force of mastication upon it to gradually press the teeth apart. In those cases where the cervical wall of the cavity slopes rapidly rootwise from the axial wall so as to present an incline down which the gutta-percha may slide into the interproximal space instead of exerting lateral pressure, the cervical wall may be somewhat flattened before the insertion of the gutta-percha to form a seat for it to rest upon.

Where this method proves ineffective resort may be had to rubber, but in no case should rubber be used for separating teeth without adequate protection to the gum tissue. The danger with rubber lies in the fact that it is liable to insinuate itself along the slope of the tooth rootwise into the interproximal space, thus imbedding itself into the gum tissue and setting up severe inflammation. Whenever rubber is used a guard of gutta-percha or cement should be placed along the cervical third of the cavity and across the interproximal space to protect the gum.

In most cases the use of the separator during the operation is advantageous. It maintains the space already gained, secures a little greater space if needed, and holds the tooth rigid against movement from the use of the mallet. In some instances sufficient space may be obtained by the separator without any previous wedging.

Where the teeth have been moved any distance with such rapidity as to result in inflammation of the peridental membrane, sufficient time should be given before the operation to allow the soreness to subside, the space meanwhile being maintained by the use of a gutta-percha plug. Whenever gutta-percha is used for this purpose or for any other temporary expedient before operat-
ing on proximal cavities it should be so extended buccally and lingually over the festoons of the gums as to press down the festoons on a level with the gum midway between the teeth. This not only does away with the inverted arch before mentioned, but keeps the festoons out of the way so that the performance of the operation is facilitated and the festoons are not lacerated by files or strips in finishing the fillings. Gum tissue protected in this way will creep up into the interproximal space after filling and occupy it in a healthy condition in much less time than it will where there has been severe laceration.

The form and density of the contact point on a proximal filling have much to do with the proper maintenance of the space and the protection of the gum tissue within it. The contact should be small and somewhat rounded. If the surface is broad and flat particles of food, such as fibers of meat are caught and held between the teeth to decompose. Some operators are in the habit of making broad flattened contact points built firmly against the proximating tooth with the idea of preventing food from wedging between the teeth. The error in this lies in the fact that no two teeth can be built so tight together that food will not at some time in mastication be forced between them. Nature makes narrow contacts between the teeth of all animals who habitually or occasionally use meat as an article of diet, and wherever this narrow contact is broadened by wear of the enamel on the proximal surfaces it results in a corresponding discomfort to the individual.

This question of wear brings us to a consideration of the density of our fillings at the contact point. They should be made as dense as possible in order to maintain their form against friction in the individual movement of the teeth one against the other. Where gold is used the malleting should be especially thorough at this point, and should be continued for some time on the theory that repeated blows will harden gold even after it has become dense.

All proximal fillings should be trimmed to form and polished as perfectly as possible at the time of their insertion. If left till another sitting the gum will creep up over the cervical portion of the filling in the interval and prevent a perfect finish at that point. Where gold is used the proximal portion of the filling should be polished before the removal of the rubber dam. This permits a more perfect view of the margins and avoids any laceration of the
gum septum by the finishing strips on account of the protection afforded by the dam.

With amalgam the greatest care should be exercised in shaping the proximal surface of the filling, and especially in trimming away all surplus amalgam from the interproximal space while the amalgam is plastic. If an excess of the material be allowed to extend over the cervical margin of the cavity till it becomes hard the operator will experience great difficulty in its removal, and the gum tissue will never remain healthy in a space partially filled with nodules of amalgam. All fillings at this point should be finished flush with the margin, and be made as smooth as the best skill will permit.

I have prepared some drawings illustrating the main points in the paper. Fig. 1 shows the sound proximal surface of a lower molar with the gum covering the tooth to near the contact point in a normal arched form. Fig. 2 shows the same tooth with extensive proximal decay and the gum septum destroyed so as to produce an inverted arch or pocket. Fig. 3 represents the buccal aspect of the two lower bicuspids and first molar with a normal condition existing between the bicuspids and a disastrous state of affairs between the second bicuspid and first molar. Decay has occurred upon the proximating surfaces of these teeth and they have fallen together so as to nearly obliterate the interproximal space and force the gum tissue from between the teeth. The small buccal festoon of gum may be seen opposite the point where the space formerly was. This festoon under such conditions is invariably congested and unhealthy. Fig. 4 illustrates the buccal aspect of these same teeth after they have been wedged apart and
contour fillings made to maintain the interproximal space and protect the gum. Fig. 5 shows the occlusal aspect of the case with the outlines of the fillings and the extent and location of the contact point. Fig. 6 shows a longitudinal section of the two teeth mesio-distally with the fillings in place and the interproximal space so preserved that the gum tissue may occupy it in a normal condition.

Crystal Gold.*


Crystal gold has been on the market about forty years as a filling material in dentistry. Dr. Townsend reports that tests made at the United States mint in 1854 of 1,000 parts of crystal gold, showed 993½ pure gold, and this was declared to be equal to any gold in use at that time. The necessity for purity is apparent when we consider that other metals in combination with it impair its ductility, and also cause it to harden under the action of instruments. When A. J. Watts introduced his crystal gold, about forty years ago, it was imperfectly prepared, unreliable and uncertain of results. His early preparations were made by treating the precipitate with nitric acid, the acid was then neutralized by ammonia, which left the gold in a crystalline condition; this was afterward washed and heated in a muffle when it was ready for dental use.

Great progress has been made since crystal gold was manufactured by electrolysis, this gold as now placed upon the market is beautifully crystalline, possessing cohesiveness and plasticity in high degree. Crystals of gold produced by electrolysis are capable of being brought into inseparable union by compression the same as foil gold.

The crystal mat gold of the S. S. White Co. is an electrical deposit and holds the claim of its makers to be 1,000 fine. The crystal gold of A. J. Watts is also claimed by its maker to be 1,000 fine. The "solila" gold of E. de Trey & Sons is not claimed to be 1,000 fine, but it is 999.35 fine. Their claim is that this fineness is the best that can be given at the market prices of gold to-day, and that 1,000 fine would cost the manufacturer more than the present selling price of foil to dentists. I am not prepared to take

*Read before the Odontographic Society.
up this question, but will rather yield to the manufacturers, believing their statements to be honest and truthful, and so quote each as he represents himself.

The appearance of crystal gold is very unattractive, varying from light to dark brown in various makes. This color changes to darker hues upon becoming annealed, and changes again in condensation, assuming the rich yellow of foil fillings. Some manufacturers claim that their gold "as it comes to the dentist is in the best possible condition for its application to the cavity, hence any unnecessary handling or any condensation of the gold before it reaches the cavity is all against securing the best results from its employment."

Other manufacturers recommend annealing first to bring about the best results from its employment.

Annealing is resorted to in order to destroy the hardness caused mechanically in manufacture; to restore the toughness and cohesiveness lost by age; and to dissipate the gases and deleterious effects of extraneous substances which are ever present and affect the cohesiveness and purity of gold. This can readily be done over any flame that does not contain sulphur, chlorine or phosphorus, where it is raised to a point as Dr. Black suggests "until it glows." This information applies to foil and is not wholly admissible to crystal gold, as the latter would become overannealed and difficult of management. To anneal properly crystal gold should be heated upon a mica slab. This causes a uniform degree of annealing and all parts of the mat are heated alike. When heated with the pliers, that part between the plier tips becomes either condensed too soon, or not annealed at all, thus hazarding the cohesion at that point, and causing that part, if superficial, to eventually scale off. When thoroughly annealed the color of crystal gold is changed from the light brown or straw color to a deeper shade of brown, stopping just before reaching the glowing red of annealed foil gold. The test of this thorough annealing is the facility with which the mat of crystal gold may be doubled upon itself, rolled into a ball, manipulated with the fingers in a somewhat rough manner without it at any time breaking into fragments or crumbling between the finger ends of the operator. Care should be observed and practice persevered in, until that degree of annealing can be steadily maintained. In over-annealing, as well as underannealing, crumbling seems to remain
a constant property in this form of gold. Cohesiveness though restored by annealing, is gradually lost after twenty-four hours. Some operators anneal in the morning enough gold for the day's use as an additional precaution to secure thorough annealing beside subjecting it to heat at time of insertion.

There are two hypotheses given to account for the phenomenon of loss and restoration of cohesion, one being "that the atmospheric and accidental gases become occluded with the gold in a state of coldness which prevents the layers of gold from coming in contact, and therefore makes impossible the welding of the metal and that when, by heat, these gases are driven off, the gold may be brought into union simply because no adventitious substance intervenes. The other hypothesis is that heat induces certain molecular changes in the gold which develop the properties of cohesiveness." Crystal gold, therefore, being more porous, would require a longer period of time over the flame to dispel all gases occluded upon its surface.

The next and equally important consideration is the question of instruments. Unless proper instruments are used the filling material will be sadly torn, much gold will be wasted and considerable valuable time lost in repairing the damage. The instruments should possess at least two qualities—fineness of serrations and adaptability to the case. Instruments of the fineness of those used by the electric mallet are especially desirable. The de Trey and the Barker sets, for large-handled instruments offer a sufficient variety to meet the requirements of most work, as they both possess fineness of serrations, freedom from sharp angles or cutting edges, permit the oscillatory motion of the hand necessary to condense a larger surface of the filling material in a shorter space of time and can be readily kept clean by being dipped in alcohol and wiped dry. Dr. Royce has added several new points to his excellent set to be used with rapid mallets or hand pressure. They are now being manufactured by the S. S. White Co. and will be on sale in a few days. They seem to possess greater possibilities than any points now upon the market, and their general usefulness seems to consign our already well stocked drawer of plugger points to oblivion.

Hand pressure is the ideal method of manipulation. Its use calls for strength in the hand of the operator, exactness and accuracy of touch, and in general a closer calculation of mechanics than
other forms of gold, but its use is without doubt a greater tax upon the vitality of the operator, greater upon the dentist in proportion as its insertion is more agreeable to the patient. There should, however, remain no idea in one's mind that hand pressure is the only method of manipulation of this form of gold. When the crystal gold has been properly annealed it may be carried out over the enamel edges and back to the body of the filling by the electric or mechanical mallet, making 4,000 to 9,000 revolutions per minute, similar to other gold, without break or waste.

In commencing a filling undercuts or pits, if used, should be filled with crystal gold by use of small points, preferably points with flat surfaces and fine serrations, in order that gold may be carried ahead of the plunger points and this part of the cavity become securely filled with the filling material before lateral pressure is brought to bear against the walls. The extent to which crystal gold can be carried ahead of a flat plunger point was illustrated by a specimen made by Mr. de Trey where the root canals of an upper molar were solidly packed with "solila" gold to the apex, being as complete and perfect a root filling as any other substance known to the dental profession. Many operators, however, do not consider this precaution of filling undercuts necessary, trusting to the spreading qualities of crystal gold to reach a secure anchorage in all parts of the cavity. Having secured the floor of the filling the afterwork is only a matter of dexterity upon the part of the operator.

The surface of the filling should be kept level or even, and any pits occurring upon its surface during the process of manipulation should be promptly filled by small pieces of gold with smallest points. Large instruments should be mainly used to carry the mat of gold to place, and by tapping it lightly make cohesion complete. Never should it be considered, at any time, that a large surfaced instrument has completely condensed that piece of gold in question, but smaller points should be used, going over the entire area of the last piece of gold until there can remain no further doubt of complete condensation. While there is ever present the danger of overmalleting, it is especially true of crystal gold—but this, in no way, is to stand as an excuse for incomplete condensation. The lack of thorough condensation can only be laid to carelessness and dishonesty, but it should not militate against the use of crystal gold more than foil gold.
Crystal gold has repeatedly been taken up by the profession, used for a time and then discarded. These cycles of activity follow the appearance of gold with the manufacturers' assurance that new qualities have been developed. After being used for a time the careful operator decides he has gained an acquisition to his supplies. The operators who discard the use of the material do so for various reasons, the principal one being that the ease with which the filling material may be inserted and the gold condensed into a compact mass, invites haste and neglect. Its desirable qualities stand in its own light and act as a menace toward perfect manipulation. The error of manipulation is best exemplified in a case cited by Dr. H. W. Gillett: "Only a few days ago I saw a case from the hands of a young operator, who gives evidence of being competent by doing good regulating work. Fillings in the same mouth made but one year ago have failed completely. When they remain in place I find upon picking off the condensed surface, that the rest of the filling is one of the plastic golds, still retaining its characteristic brownish color. In most of them I am readily able to push a slender exploring point through this gold in any direction to the bottom of the cavity."

Whenever a burnished surface occurs, careful cleansing with alcohol and thorough drying will permit the operator to continue his work without impairing cohesion, by using crystal gold in small pieces.

Because crystal gold does not readily "ball up" in its packing, the temptation is ever ready to make rapid progress by using it in large pieces. Clinicians who have become very expert in its manipulation use exceedingly large pieces of crystal gold in an apparently reckless manner, which leads the observer to readily follow the example. After many failures the observer returns to foil, condemning without further hearing a valuable adjunct to the dental office without its being understood.

A safe rule would be this: The largest piece of crystal gold to be inserted into any cavity should be able to pass to the seat of the cavity without touching the walls. Larger than this is unwieldy to handle and unsafe to condense.

Upon reaching the surface of the filling the opinions of operators diverge, many favor making the surface of crystal gold while others use foil gold. However well they agree upon the economy of time and its consequent lessening of strain upon the patient by the
use of crystal gold during the construction of the mass of the filling, each dentist in reaching the last few layers of the filling clings to personal views as to what form of material he can best manipulate into a perfect finish with artistic effect.

That crystal gold has stood the test of time as a surface making gold is attested to by such men as Dr. Honsinger, who has used nothing else for forty years, and by many of the younger practitioners who have used it for nearly ten years. Crystal gold should receive in finishing the attention it merits—attention which the operator would give to any other gold—careful and thorough condensation by any means most familiar to himself, and then burnish carefully the surface and especially over the edges.

Crystal gold has its place in dentistry. It is not intended to show that this gold has universal use, but owing to its superior plasticity and cohesiveness it is admirably adapted to assist the operator in difficultly accessible cavities, in deep undercuts and against weak walls. No death of pulps can be laid at its door from severe malleting. As a valuable adjunct to other golds, in case of oversight or accident, in pits or faulty adaptation at the enamel edge, its plasticity causes a better reparation than the more difficultly manipulated foil.

Smaller pieces of crystal gold and larger pieces of the Golden Rule will retain the filling, retain the live pulps, retain the patient.

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Formaldehyde; Its Antiseptic and Irritating Properties.*


In one of the pharmaceutical journals F. C. J. Bird gives a very interesting account of the history of formaldehyde. Among other things he says, in substance:

The antiseptic and disinfectant properties of formaldehyde have been extensively investigated during the past two years and the results obtained, both by bacteriologists and in the practice of various industries, have given it at once an important position among bactericidal agents. Formaldehyde is gaseous at ordinary temperature, but is now obtained commercially as a concentrated solution containing forty per cent of the aldehyde. Most of the published experiments have been made with this solution, which is placed on the market under various trade names.

*Read before the Chicago Dental Society.
Hoffman discovered formaldehyde in 1867. Loew subsequently demonstrated its germicidal powers, and Berlioz and Trillat suggested its use as a powerful disinfectant free from poisonous properties. It is a powerful reducing agent, and when oxidized yields formic acid. A solid polymeric variety—paraformaldehyde—is also known. There are several chemical processes by which the aldehyde may be prepared, but the most practical is that dependent upon the limited oxidation of methylic alcohol. If a current of air charged with methylic alcohol vapor be passed over a coil of glowing platinum or platinized asbestos, and the escaping gases condensed in a Liebig's condenser, a weak solution of formic aldehyde in methyl alcohol results. The substitution for the platinum spiral of a roll of superficially oxidized copper gauze gently heated in a glass tube through which the mixed vapors are passed, the product being led into water greatly increases the yield, it being possible by this means to obtain a solution containing fifteen to twenty per cent of formic aldehyde. The commercial solution, "formalin," is manufactured by a process similar to the foregoing.

The forty per cent solution of formaldehyde as met with in commerce is a liquid of a pale sea-green tint, specific gravity about 1.070, acid reaction, and possessing a pungent and very characteristic odor. In more concentrated solutions the formaldehyde tends to pass into the polymeric and comparatively inactive form; this, therefore, is the strongest solution which will remain permanent. The acidity is due to formic and acetic acids, and the faint sea-green tint to a salt of copper, a distinct film of that metal being deposited on the surface of a piece of polished steel when immersed in the liquid for a short time. When exposed to the air, formaldehyde vapors gradually diffuse and the solution loses strength.

With regard to the toxicity or otherwise of formaldehyde in solution, when taken internally, no record of exact experiments relating to its physiological action on the human subject appears to exist, and information such as we possess concerning salicylic acid, carbolic acid, mercuric chloride, etc., is wanting. The solid polymer may be given in doses up to ninety grains as an intestinal antiseptic, its action depending on small quantities of formaldehyde that are continuously liberated; and that is put forward as one proof of the harmless (?) nature of the antiseptic. Dr. Tideal is said to have taken a considerable quantity of a one per cent solution without experiencing any ill effects.
Formaldehyde ranks high as a deodorant. Either as vapor or in solution it almost instantly removes the putrid odor of decomposing animal or vegetable matter, combining with sulphuretted hydrogen, ammonia, and ammonia bases generally, to form inodorous compounds. Putrid meat, broth, brine, etc., are immediately deodorized when treated with a little of the forty per cent solution.

The vapors given off by the solution are extremely irritating to the eyes and to the mucous membrane of nose and throat, so that care should be taken when handling the solution not to spill any on the hands or skin, as it is found to have an effect similar to that of strong carbolic acid. No pain is felt at the moment, but afterward the skin becomes quite insensitive and very rough and white wherever the liquid has been in contact with it.

Gelatin exposed to formaldehyde vapor becomes insoluble, even in hot water, and animal tissues generally are hardened in a remarkable manner. This property is turned to account in the rapid hardening of tissues for microscopical examination and in photography. Dr. C. L. Schleich has also prepared from the formalized gelatin an antiseptic dusting powder for wounds. Dr. Schleich dissolves gelatin in water, adds twenty-five minims of "formalin" to the pound of gelatin and dries and powders the product. This powder, in contact with healthy or inflamed tissue, disengages formaldehyde vapor, thus maintaining an antiseptic atmosphere around the wound. Necrotic tissue, or masses of dried secretion, may prevent contact between the powder and the wound, in which case recourse is had to a weak hydrochloric solution of pepsin, which liberates formaldehyde from the powder equally as well as the living tissue.

As a hardening agent in microscopy, and for the preservation of vegetable structures, formaldehyde solution promises to be of the greatest service. Mr. E. M. Holmes read an interesting paper on this subject some months since and his experience confirms the statements that have been made as to the advantages of formaldehyde over such solutions as chromic acid and mercuric chloride, or even absolute alcohol. Dr. Eccles, writing to the British Medical Journal, has stated that, while the last named reagents required a period of time ranging from four or five to fourteen days, and the tissues either became brittle and unequally hardened or the staining was interfered with, those sections treated with formaldehyde
were sufficiently hardened in three days, did not become brittle, and stained well, the cells retaining their original shape.

Formaldehyde, as shown by Slater and Tideal, when employed of such strength in weak alcoholic liquids as to be fatal to lactic and butyric acid organisms and other bacteria which produce injurious secondary fermentation, does not interfere with the growth of the yeast plant, nor does it hinder in any way the formation of alcohol. This fact has been turned to account in the brewing industry for producing pure cultivations of yeast, and preventing sourness, cloudiness or ropiness in the finished product; it should also prove equally useful in insuring soundness in such fermented liquids as orange and ginger wines, perry, cider, etc. The proportion necessary is from 1 in 20,000 to 1 in 10,000.

This illustrates a striking peculiarity in the antiseptic action of formaldehyde, for while it exerts an intensely powerful inhibitory effect on bacteria generally, especially those of putrefaction; in contrast it has but a comparatively feeble influence in preventing the development of the lower forms of plant life. Hence, vegetable solutions preserved by its aid, though retaining their color and other physical characters to a remarkable degree, are exceedingly prone to develop moldy growths, etc., and if this is to be avoided, the proportion of antiseptic must be increased to an extent far greater than required simply to arrest putrefactive change.

Meat, fish, etc., may be kept for several days during the hottest weather by placing in a well covered dish with a tuft of cotton-wool moistened with from four to eight drops of solution of formaldehyde. The antiseptic vapor does not communicate the slighest odor or taste to the meat, etc., and after considerable experience of this method I have never found it to fail to maintain the articles absolutely untainted for four or five days, even under the severest conditions of temperature.

Disinfection by formaldehyde vapor generated directly from methylic alcohol has lately attracted considerable attention. The simplest form of apparatus for the purpose consists of an ordinary spirit lamp provided with a coil or spiral of platinum extending about one inch above the wick. After lighting the lamp and allowing the platinum to become red hot, the flame is extinguished. The platinum continues to glow in contact with the air and methylic alcohol vapor, and the latter rising from the wick becomes partially converted into formaldehyde, the action being maintained as
long as any methyl alcohol remains in the reservoir. In this apparatus a large proportion of the alcohol escapes oxidation, and, in consequence, several improved forms have been devised. In one, resembling a plumber's blowlamp, a stream of methylic alcohol vapor is directed upon incandescent platinum; there are also air holes, which can be so adjusted as to regulate the proportions of air and alcohol vapor; in this lamp the greater part of the alcohol is converted. Formaldehyde vapor may also be generated in an apartment by spraying the solution into the atmosphere, or heating it in an evaporating dish. Diffusion, however, is slow in the latter case, as has already been stated, and it is much better to allow the solution to fall drop by drop on heated plate of metal. A handy arrangement for effecting this consists of a tin plate tray supported on the ring of a retort stand, and heated by a spirit lamp, the formaldehyde solution being contained in a glass separator held in an upper ring of the stand, and, by regulation of the stopcock, allowed to drop slowly on the heated tray beneath.

Careful experiment has shown that disinfection with formaldehyde vapor is most thorough and effective, the vapor diffusing very rapidly and penetrating everywhere, dust on the walls, in the air, and even in cupboards, being almost immediately sterilized. Owing to the irritating nature of the formaldehyde fumes on the mucous membrane and air passages, it is imperative that, after disinfection by this means, currents of air should be allowed to pass through the apartment for a quarter of an hour, and complete removal of the disinfectant should be insured by free ventilation for at least two days.

Of late the dental profession has taken up this agent for the treatment of pulpless teeth, the treatment of abscesses, and for devitalizing pulps, etc., and many are reporting most wonderful results from its use. Not long since I read an article in one of our journals in which the writer paid a most glowing tribute to this agent as a most efficient and desirable one for the treatment of nearly all conditions of pulpless teeth. Having had some experience with it myself, and because of some negative results experienced, having had my suspicions aroused as to whether it was just the proper thing to be used about the mouth, I decided to investigate it as thoroughly as possible, and first I tested it as to its antiseptic properties, and found it to be a powerful anti-septic. The formalin preparation, which is a saturated solution of
the gas formaldehyde in water, being nearly as potent an antiseptic as the oil of cassia. In 10 c. c. of sterilized mutton broth \( \frac{3}{10} \) D. of oil of cassia prevented development of bacteria, while it required \( \frac{4}{10} \) D. of formalin to accomplish the same result. This renders formalin potent as an antiseptic in 1 to 1,400 parts. Somebody has been so enthusiastic over this agent as to make the statement that it is fully as potent an antiseptic as is bichloride of Hg. This is certainly a mistake. I prepared a 1 to 1,000 solution of bichloride of Hg. and found it required 9 D’s. of this solution to prevent development of bacteria in 10 c. c. of broth. I prepared a 1 to 1,000 solution of pure formaldehyde, which we have now in a solid state—the gas being reduced to such by chemical processes—and of this solution found that it required 30 D’s. to prevent development of bacteria in 10 c. c. of broth. Thus proving beyond the possibility of any doubt that formaldehyde is not so potent an antiseptic as bichloride of Hg., by at least threefold. I next resolved to determine its ability to irritate soft living animal tissue—the same as I have done, during the winter months, with nearly all the agents we use. I took a small pellet of cotton, saturated it with formalin, placed it in a small rubber cap to prevent evaporation, placed it on the surface of the skin of the lower part of my right leg, and covered it over with a large piece of court plaster, stuck tightly about the edges. This was placed there three weeks ago last night at 12:30 o’clock. I went to bed and went to sleep. Between four and five in the morning I was awakened by the pain, and could get no rest after that. The pain was quite intense, and of a very peculiar character. It seemed as if something were inside my leg gripping it as if in a vice. Then it would take a turn and twist about, as if tearing the inside of my leg out. It would stop for an instant, and then the performance would be repeated again with renewed vigor. The pain continued more or less severe all day. I wanted to keep it there for twenty-four hours—the time adopted for the other agents, but at the end of twenty hours, the pain had been so constant and the tissues began to look so ugly, that I concluded to remove it, and well it was that I did. The tissue to which it was applied and for about two inches in all directions was as white as pure snow, as if all the blood were driven from the parts. The pain was lessened very considerably within a short time after the application was removed. The tissue to which it was directly applied was
perfectly anaesthetized, and to a considerable depth. Just at the circumference of the application there was considerable tenderness. There was much swelling, which latter seemed to be more like that of oedema than of true inflammation. In about two or three days some color began to return to the parts, except the part to which the agent was directly applied, which latter never regained its color. In about two days more a line, purple in color, began forming at the circumference of the point of application—a line of demarkation—and it became apparent there was to be a break in the tissue, and that more or less tissue was to be lost. This break occurred, and sloughing took place; more or less tissue was lost all over the surface of the inflamed area. The tissue in the center raised about the edges, but was very obstinate about coming away. It was only yesterday morning that it did come away, and then only after having been severely persuaded. From the time the agent was thoroughly absorbed in the tissues, physically I was not up to the standard; the appetite being more or less impaired, the digestive and eliminative organs being somewhat interfered with. These conditions continued to grow worse until the climax was reached a week ago last Friday, in the form of quite a severe case of systemic poisoning, the poisonous matter being thrown off through the medium of a severe diarrhoea, and also much vomiting—the former continuing for a period of three days, the latter for one day, since which time my physical condition has rapidly improved. The sore itself, however, is still a very ugly looking affair.

Having seen a number of cases that have been treated by physicians with various per cent solutions of formalin in which more or less sloughing of the soft parts has resulted—one which I saw only the other day in which as low as a two per cent solution was used, in connection with which considerable sloughing resulted—and also because of the very vivid recollections of my own personal experience with it, I have about come to the conclusion that we can get along very nicely without it in the treatment of diseased conditions about the mouth.
Alveolar Abscess.*


Upon this subject so much has been said and written, that it would be difficult for one not engaged in investigation along special lines to add anything outside of opinions based upon observation in active practice. We find the subject almost preëminently engaging the attention of the ablest writers and investigators, and yet finding them obtaining results diametrically opposite in their experimentations, and in the practical use of remedial agents, we find each with a favorite remedy, which leads one to be cautious in dogmatically accepting all, even plausible theories, but yet adds to the interest and stimulates individual observation.

The disease is usually found in two forms, acute and chronic, after the primary attack known as threatened abscess; we find them following each other in that order, if not arrested by proper means during the progress of their course.

Of its etiology in a brief paper, it seems unnecessary to speak, suffice it to say that accidents occasionally, but death of the pulp and its infection more often are the chief causes, though no dividing line has been established. The chronic form when found, has usually followed an acute attack not infrequently due to the careless and imperfect work of the operator.

A case presenting itself, it is important to make a diagnosis not only of the pathological condition, but of the stage of the disease. The degree of tenderness and pain and swelling, with the length of time they have progressed will give one an idea of the stage of the disease which, however, will not affect the first steps in the procedure of treatment.

A dead infected and often purulent pulp is suspected in nearly all cases and the escape of the poisonous gases of decomposition through the apical foramen infecting an area of pericementum in the alveolar space, immediately around, the apex of the tooth manifesting itself, first in a condition of hyperæmia, and later inflammation and pus formation, is the condition with which we have to contend.

My first step is always, to adjust the rubber dam, both for the purpose of preventing any further entrance of infectious bacteria from the oral secretions and for convenience in working by always having a dry, unobstructed surface.

*Read before the Chicago Dental Society.
The opening into the tooth is always made at a point on the surface that will serve the greatest convenience in the treatment of the pulp chamber and root canal. This is according to the rules laid down by most operators, and I find it an excellent one, for having thoroughness always in mind, we must take the steps to make thoroughness possible.

Having made an opening large enough to reach the pulp chamber and root canal or canals, as the case may be, easily accessible, I proceed to remove the decomposing contents of the tooth.

The procedure in this part of the preparation is of vital importance so far as thoroughness is concerned, though I follow no prescribed rule in removing the infected material, it is important that each case be treated with equal care.

If necessary, for the purpose of accessibility the root canal should be enlarged; where practicable, I use the drill and broaches, or where difficulty is experienced in a tortuous or small root canal I resort to the use of Dr. Callahan’s method, that is, fifty per cent sulphuric acid, which destroys enough bone tissue to perceptibly enlarge the canal. However, I limit the remedy to this use alone.

Having removed all the debris possible by the use of broach, etc., I cleanse the cavity with hydrogen peroxide, or pyrozone. This agent, by the way, I find indispensable in my practice. I then proceed to sterilize the infected tooth by the use of diffusible, sterilizing remedies for the purpose of rendering aseptic the entire matrix of the dentine, using for this purpose either eucalyptol, oil of cassia, or Dr. Black’s 1, 2, 3. One of these remedies I seal in the cavity for two or three days and then remove and reapply, often as the case may require until complete sterilization is effected. This treatment, carefully applied with counterirritants frequently results in aborting an abscess, even frequently curing cases in which pus has already formed.

If, however, the disease has progressed too far it will result in a typical acute alveolar abscess, in which more radical measures are necessary in the treatment.

The pathological condition in the alveolar space and the consequent disturbance involves more than it would in any other region owing to the characteristic situation of the tooth.

The peridental membrane covering the root of the tooth and lining the alveolus is the first tissue to become involved in the in-
flammation and decomposition induced by the presence of the infectious bacteria. As the disease progresses, the end of the root may become denuded and the wall of the alveolus penetrated by the pus seeking an outlet resulting in a fistulous opening.

If no external opening exists, but the abscess is threatening near the surface, the area is anæsthetized by the use of cocaine, and an incision made, which should never fail to be large enough, for purposes of free access in treatment through the opening and for free outlet of the oxidized material after the use of pyrozone, which so often causes intense pain by its retention and consequent pressure upon the hypersensitive pericementum.

Having a counteropening and the pus cavity treated with pyrozone until there is no further indication of its action by its effervescence, I use one of the many mild cleansing sterilizing agents, of which I prefer borolyptol, this having become a favorite remedy of mine. In an acute, uncomplicated abscess this usually proves successful. In case, however, of failure, I use as a sterilizing agent ninety-five per cent carbolic acid, applied by the use of the hypodermic syringe and blunt platinum needle, inserting the needle deep into the root canal and packing tightly around it cotton saturated with sandarac varnish or gutta-percha to prevent the recurrent flow of the acid. This I find in one or two treatments in recent abscesses to be most effectual. In case some of the acid in its escape spreads over the soft tissues, I find olive oil one of the best antidotes in neutralizing its action. It will be found to act more promptly and effectually than glycerine or vaseline.

If, however, the abscess is in a more advanced stage, such as having a thickened pus secreting wall, I resort to escharotic and stimulating remedies, of which I decidedly prefer chloride of zinc, though I have had very good results from the use of carbolic acid and tincture of iodine, equal parts.

Desiring an escharotic stimulating effect, I use about a 5 per cent solution of zinc chloride, while in milder cases, wishing a stimulating effect only, I use about one per cent solution. I have become partial to this remedy, because of its being self-limiting in its escharotic action, and a powerful stimulant, and not so irritant, as is the case with sulphuric acid, particularly in the soft tissues.

Carbolic acid ninety-five per cent, I find one of the very best agents in the destruction of infectious bacteria, but it does not seem
to afford, as zinc chloride does, the stimulating effect and resulting rapid promotion of a healthy surrounding area when used alone. For this reason, it is combined with tincture of iodine.

During a period of ten years' observation in my preceptor's practice, most excellent results were obtained by the use of carabolic acid alone as a sterilizing agent in the tooth structure. I have under my observation, at the present time, a tooth filled fifteen years ago, from which a putrescent pulp was removed and the tooth sterilized by the use of carabolic acid alone—the tooth never having given a moment's trouble, and is at the present time in as good condition as ever.

In the treatment of persistent or recurrent abscesses assuming the chronic form, I resort of course to more radical measures. Before the application of the remedy, I curette the wall of the abscess thoroughly, destroying the membrane as completely as possible. The cause of the persistency of many of the chronic abscesses being a serumal deposit upon the denuded root, I always examine carefully with instruments to determine if any is present, which is readily detected by imparting a feeling of roughness to the touch with the instrument. It is important that this be thoroughly removed, which I do by the use of a scaler of a shape best adapted for reaching the deposit. In case necrosis is present upon the alveolar wall or the end of the root, I resort if necessary, to the use of the bur or bone curette, for which purpose I find my various shaped excavators well adapted. If the external opening of a fistula is not freely penetrated, or not directly over the affected part, I never hesitate to make the opening large enough by carrying the incision to the most convenient part for operating; enlarging the opening with the bur if necessary, particularly in cases where it is necessary to amputate a part or a whole of the root end as the case may require. I have in the past used sulphuric acid as a solvent in cases of slight necrosis, but find the surgical means giving more satisfactory results.

As a local application within the abscess for the promotion of granulations, I have had the best results from the use of nosophen, though, possibly, this remedy is not as effectual as iodoform; my results have been sufficiently satisfactory to justify me in dispensing with iodoform and its objectionable odor.

The sinus I keep open with sterilized gauze or cotton as long as is necessary.
In the more chronic cases where there seems to be a depraved condition of the blood, I find it usually advantageous to supplement the treatment by advising the use of restoratives or tonics, such as iron or compound syrup hypophosphites.

With this line of treatment I have usually had good results. Among the various treatments that have from time to time been highly recommended, I have found no specific.

I would emphasize the fact, however, that the milder antiseptic solutions, such as boracic acid, saturated solution, or some of the mild proprietary compounds have proved efficacious in a great per cent of cases.

Upon the subject of the diffusibility of certain coagulating remedies and its consequent bearing upon their use, my convictions are not fixed.

As before mentioned, I have met with good results with carbolic acid, but have adopted the use of the well-known diffusible sterilizers, such as the essential oils which have proved so successful that I seldom prepare a tooth without their use.

President’s Address—Our Dental Society.*

By John G. Harper, D. D. S., St. Louis, Mo.

Members of the St. Louis Dental Society: As your president, it becomes my duty to make you an address upon taking the chair of the presiding officer. It was your duty on election night to select a good set of officers. To say that you did not succeed would be a reflection on your good judgment.

As your president I am your servant, and will endeavor at all times to do my duty. Of the other officers, the most that I can say is that I am perfectly satisfied and know that each one will do the duties pertaining to his office. The title of this address is “Our Dental Society.” Each member can say this is my society. How did it become your society? Some member asked you to join the society. Why did he ask you to join? Because he thought it a benefit to himself, and would be of value to you, and that you would be of use to the society. How can the society be of use to you? There are many ways.

1st. It gives you a standing in the profession and community.

2d. It gives you an opportunity of meeting the members of

*Read before the St. Louis Dental Society, February 1, 1898.
the profession in this city and vicinity; you become known to
them and they to you, and thus you make your reputation among
the members of your profession.

3d. The members of any profession or calling must be
students all the time—much must be learned by experience and
observation—here we meet to give and exchange ideas. If you
know anything new it is your duty to give it to your associates; if
you are in the dark and have been having failures, here is the place
to seek the much needed knowledge, to turn failures into successes.

*Items* says, regarding professional honor, "Honor and glory are
not nourishing, but to the true professional man dearer than
wealth. Every man has two reputations, one among his profes-
sional brethren and one with the public; the first is most dear but
the latter brings his living, and often we find a man with no profes-
sional standing who succeeds for a time in deluding the public to
the benefit of his exchequer. Many of us in the dental profession
are woefully lacking in business principles, and perhaps the adver-
tising dentist is better endowed than his fellows, but the advance-
ment of dentistry has not come through the advertising offices.
They are simply parasites who lives on the work of others, pulling
them down by defrauding the public, they contribute nothing to
the upbuilding or advancement of the profession, or the investiga-
tion of new problems. * * *

When we consider the preliminary educational requirements,
the time and money expended, the standing of dentistry as a profes-
sion is not to be despised or lightly traded for a mess of pottage
by lowering it and your *alma mater* by resorting to the tricks and
wiles of trade. "Be good and you will be lonesome," says the
humorist writer, but the only permanent foundation of a dental
practice is honesty and ability. The same writer, writing of "Ad-
vantage of Fraternal Associations," says: "Every man should
join his local dental society and take an active part." This is one
of the best ways to advertise. No man is sufficient unto himself.
If he be a superior dentist he owes it to his profession to join the
society and demonstrate his superiority. If he feels himself de-
cicient he should join the society, that he make himself more pro-
ficient by exchanging ideas and methods with his fellows. It is
not claimed that all of the able men of the profession are society
members—speed the day when this may be true—nor that any
man who advertises in an unprofessional manner is incompetent, though this is true as a rule.

Our duty to our society: Each member should make it his first duty to be present at all meetings. Set aside each first Tuesday in each month as a previous engagement and let nothing except sickness prevent you attending our society. If called upon to perform any duty accept and do your best. There are a number of good men in the city who, for some cause, are not members; if you know of such in your neighborhood bring him. If you know of some one who is not near you, ask some member in his locality to invite him to be one with us. During this year try to get into our society all who are eligible. If they are indifferent ask them to come as a visitor and judge for themselves.

We have been considering our society and naturally one is led to ask, “When and by whom was this society formed and handed down to us?”

I cannot answer the question, but I have in my mind one who can, if given a little time, and I ask Dr. A. H. Fuller to give a history of “Our Society” at some future time.

Here I wish to repeat something I found in the Dental Cosmos of August 1, 1897, from the pen of Dr. James Truman in the annual address as president of the American Dental Association. “The organization of societies in dentistry in the United States is but little over half a century old. The condition of things in the dental profession in the ‘thirties’ can scarcely be conceived by the liberal minds of the present. It was a period of isolation. The hand of every man was against his fellow practitioner. The walls of prejudice were erected everywhere. Doors were bolted and barred against intrusion. Lips were sealed, lest they might disclose important method of practice. Nowhere throughout this progressive land in dentistry was there any light upon the mediæval darkness. It, however, proved to be the period before the dawn. From behind all the cloud and shadow there was heard a voice proclaiming in no uncertain tones the old cry “To your tents, O Israel,” but it fell upon deaf ears. It was the voice of Horace H. Hayden. With true prophetic inspiration he ceased not to demand that the dentists of the time should come forth from their isolation, and with something of the spirit of the old crusaders unite and arm for the approaching conflict. The day came when Horace H. Hayden conquered, and in New York the first society was born
into life, but died in birth. Again we find this courageous pioneer at the head of the American Society of Dental Surgeons, and then for the first time on this continent began the true life of associative dental effort. We rear monuments to our great men and women, but the only monument yet reared to Horace H. Hayden lies in the historical record of his deeds. Upon his neglected tomb I would lay this chaplet, that the dental profession may never forget what it owes to this one man who labored that we to-day may live.

Prophylaxis in Bridge Work.*

By F. F. Fletcher, D. D. S., St. Louis, Mo.

There is probably no class of work that our profession is called upon to do that requires the careful diagnosis, combined with artistic taste, and prophylactic measures, necessary in successful bridge work. Almost any tooth can be filled or even crowned, and the case dismissed without further thought, or future attention, on part of the operator. When a plate is fitted accurately, and articulated properly, the dentist's work is done; the patient is capable of cleansing and keeping in order without further aid from the dentist unless in case of accident. With bridge work, however, all is different; comparatively few of the cases presented are suitable for this work at all—either fixed or removable. No conscientious operator will insert a bridge in a mouth that is a stranger to the modern conventionalities of brush and pick—knowing full well it would receive no more courtesies than the older residents. Neither would he heap a double burden on piers already half undermined by pyorrhoea or disease of any kind. Common sense teaches him that such members must be gently cared for and nursed back to health in order to be saved and made useful at all, and any additional weight or work put upon them only hastens their loss. He will refuse to span from cuspid to third molar, even on perfectly healthy teeth, or do it under protest, even though it be a mental one. He knows any bridge on a curve from bicuspid to lateral or central is foreordained to speedy collapse. So it is readily seen that the field for successful bridge work is quite limited. Yet within its proper sphere no more artistic, useful or satisfactory work appears in any oral cavity. After a most thorough and careful diagnosis of the

*Read before the St. Louis Dental Society.
case you decide that a bridge is indicated; the problem is only half solved. If, perchance, the piers are parallel, or nearly so, your case may have a long and useful career if properly constructed and adapted to tissues, both hard and soft. But if they stand at different angles you may, as I said in a former article, take this for a rule: "A bridge is ill fitting in proportion as the piers diverge from the parallel; consequently the length of its life and usefulness can be measured by the same rule. The piers in a majority of cases should be devitalized and roots filled. Then, after shaping properly and fitting crowns, the subject of replacing the lost organs comes up. I mention crowns only as attachments, as bands, lugs, open faced crowns, etc., have long since been discarded by careful operators, except as temporary expedients. The dummies may be all porcelain, all gold, or a combination, as the case seems to indicate. If not conspicuous, or entirely hidden from view, the all gold, resting on or saddling the ridge, is probably the strongest, cleanest and more nearly restores shape and contour of lost organs than any other form, unless it be all porcelain, constructed in a similar manner. But here care must be exercised. If it rests too firmly on the ridge tumefaction may ensue. If it does not rest on a ridge it is a source of annoyance to the patient, as food is sure to lodge in any pocket. The saddle resting properly on the ridge, seems to have given the best satisfaction. When the case is ready for insertion, many of our best authorities recommend that it be fitted and worn a day or two before finally cementing in place. When you are satisfied all is right, set permanently, being careful that the piers occlude normally, and dummies but slightly. Care should be taken in removing all excess of cement from under and around bridge, as any left will cause irritation until expelled. This seems but a rehash of what most old and careful operators are doing daily, and may be of but little interest to them; but may still furnish a point now and then to some who have not had so much experience, and be appreciated by them. Arriving at this point, the average bridge worker is through with the case, except collecting his fee. The patient is dismissed, and leaves the office with the idea that so far as that bridge is concerned, he never needs see his dentist again, as it will outlast anything else in his mouth. This, I think, is a vital error. In most cases the bands do not fit anywhere near accurately, no matter who makes them, and in time the cement washes out, irritation ensuing. The case
cannot be removed and cleansed by the patient; minute particles are sure to lodge under saddle, between teeth and in all angles. The patient does not, and cannot keep it clean, any more than he can his own teeth, which all agree need the dentist's care at least yearly.

In my opinion every bridge case should be seen by the dentist once in six months; cleansed on every surface, with floss, pumice, washes, etc., and put in as perfect shape as the operator is capable of; by so doing, you add greatly to the life of the case, show to your patient your interest in him and in your work.

No patient will leave your office without a sense of gratitude, knowing you have their interest at heart. Your work will be much more lasting, and infinitely more satisfactory. Again, I would urge you to take no step in bridge work without due deliberation; but when you have put the case in place, as the best sample of your handiwork, do not forget that it will need your watchful care to add to its usefulness and beauty, remembering the old adage, that "Little things make perfection, but perfection is no little thing."

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**PROCEEDINGS OF SOCIETIES.**

**Chicago Dental Society.**

*Meeting of March 1, 1898.*

Dr. Josephine D. Pfeifer read a paper on "Alveolar Abscess."

**DISCUSSION.**

Dr. Ira B. Crissman: In considering the subject of alveolar abscess I shall speak of the practical, essential and potent factors which we sometimes neglect in the treatment of it. The subject of alveolar abscess should be always with us, and the matter of diagnosis is the important factor to the dentist, therefore the patient. In the first place, dentists, as a whole, are a peculiar set of people and it is difficult for a practitioner who is slovenly about himself, both external and internal, to be very successful in treating any disease either from a hygienic or a therapeutical standpoint. Therefore, I say, the dentist who does not observe strict rules concerning himself and case under treatment cannot be successful.

One of the principal and most prevalent causes of alveolar abscess is placing a filling too near the pulp, thereby causing
destruction of the pulp from thermal changes leading to the formation of gas, pus and abscess. Operators, as a whole, recognize this fact to be true; and yet when patients present themselves for treatment the dentist will apply tincture of iodine, perhaps listerine, and tell the patient to wash his mouth out with hot water, when they really know within a few days an abscess will form and the patient will be subjected to a great deal of suffering. The patient will return to the office with his face swollen, when he could have been relieved the first time. Certain symptoms manifest themselves in connection with the formation of alveolar abscess. If a patient has been treated by the dentist prior to this time he knows the conditions present. He can gain ready access to the cavity by drilling through the tooth into the pulp chamber, allowing vent which will relieve the patient immediately.

In the treatment of alveolar abscess one of the first and essential points is to obtain free access in order to liberate the gases. After the soreness has subsided and a sufficient time has been allowed to elapse for the patient to become comfortable some operators then make a larger opening into the tooth, working through a small opening into the bulbous portion of the pulp, and not into the canals. We will find that septic matter is forced into and through the root canal to the part that is affected, therefore the injury which is already present is only enlarged or perhaps magnified by the pressure exerted in forcing the septic matter through the apex of the root. It is difficult with a Gates or Donaldson drill to drill through the apex of a root. There are other ways more sure of reaching the apex. By taking a good stiff broach and working it gradually into the root canal we can make an opening up to the end of the root and in this way gain access. Even after gaining access many operators find that they do not relieve their patients immediately, consequently they wrap shreds of cotton around a broach and force medicine into the canal. By so doing they are forcing septic matter into the cementum through the apex of the root and are increasing the trouble present. We as dentists should use water freely in washing out the root canals of teeth when there is pus present. After the canal is opened up freely you can wash it out. The water may be introduced into the canal with a hypodermic syringe or with fine shreds of cotton on a small broach. We may have free access to the apical end of the root, and yet the patient suffers from the effect of the pus pene-
trating beyond. The best way to relieve these patients is to flood very hot water into the mouth, as hot as can be tolerated. It will relieve them quicker than anything else.

We have abscess without a fistula, and those with a fistula. It is obstinate to get a tooth with no fistulous opening, the abscess penetrating the bone infiltrating the muscles. It is difficult to treat such cases. Even when we introduce remedies into the root canal in such cases and seal it the patient is not relieved. If we have cases with no fistulous opening, that we cannot treat properly, I believe we should force an opening. We should drill through the alveolar process opposite the root that is infected, drilling through the apical foramen as near as we can and force medicines through to the end of the root. In this way there will be absorption of the medicine around the foramen or into the abscess even posterior or perhaps to the buccal side, and you afford the patient relief.

In the dressing of root canals a mistake is made by many dentists after introducing one of the essential oils into the canal, imagining that they can place cotton with sandarac varnish in the cavity. By so doing they are not hermetically sealing the cavity. They are inviting disease, simply allowing the cotton to absorb a certain amount of the disease already in the mouth, thereby causing infection rather than curing the trouble present. It is better to fill a cavity with gutta-percha after the canals are treated properly, and if the patient suffers, to make a small opening through the gutta-percha in order to allow the gases to escape until the patient can tolerate dressings in the root. The small openings we have are not many, but they are treacherous to deal with. Take the buccal roots of a superior molar, and we know how difficult it is to get free access to them. The difficulty of getting into the root itself causes much trouble. A great many dentists congratulate themselves they are filling these root canals, or at least trying to, and yet they are not filled; and we find patients as a result with little gumboils which they prick with the finger in the morning when they get up, and relief is afforded. If the same thing presented itself on any other part of the body these patients would be scared to death. We should tell our patients what is likely to happen from the formation of these abscesses. I make it very strong sometimes by saying that they are liable to have necrosis and die.
When a dentist uses a broach that he has used in the mouths of five or six different patients and passes it into a root canal which is already infected, he is causing the microbes to multiply and migrate there very rapidly. Of all men on earth some dentists are the most slovenly operators. We may talk about surgeons being slovenly, but if we were to watch the work of some of our dentists we would be ashamed of them. They do not seem to know what hygiene or cleanliness is, let alone giving advice about it to their patients. In the treatment of alveolar abscess a dentist needs to be cleanly himself before he commences to treat a patient, otherwise he must not expect to be successful.

There is another point in connection with the treatment of alveolar abscess that I wish to refer to, and that is, a great many dentists make a mistake in looking upon alveolar abscess as a very insignificant thing. It is practically a running sore in the mouth, and we should educate our patients that it is essential that they should pay according to the treatment. If you render a big bill for the treatment of an insignificant gumboil, the patient thinks it is unwarranted and does not amount to anything. The same is true of the treatment of alveolar abscess. We should be paid liberally for treating these cases. We have some men in our profession who are posing as wonderful operators and are getting wonderful prices for treating these abscesses. These men are simply hoodwinking their patients. It seems to be fashionable among some people to have abscesses in the mouth. Some fashionable society people go around with five or six alveolar abscesses emitting pus from the mouth, they are constantly throwing out fetid matter to those with whom they come in contact, and it is time that we as dentists should wake up and place this thing on the right line.

Treatment: Wash with hot water, $\text{H}_2\text{O}_2$, apply rubber dam, absolute dryness, oil of eucalyptus, dress with oil cassia, etc.

Dr. George J. Dennis: I wish to say a few words in regard to a subject that is interesting to me and I hope it will be of interest to the other members of the society. Within the last three weeks I have had two peculiar cases of alveolar abscess; one of them seems to have been an infection following typhoid fever, in which a cuspid tooth, perfectly sound in every respect, two weeks after the attack of typhoid fever suddenly became sore to the touch, and after opening it and finding the pulp apparently well, except
a slight congestion, the abscess formation in the alveolus went on until it was finally opened, allowing a copious discharge of pus. The attack was very similar to the usual infections following typhoid fever, taking the form of an osteomyelitis. The other case was one which had been standing since last June. The trouble arose from a lateral incisor which had been treated, and to all intents it was filled perfectly, so far as one could judge. I saw the patient quite recently and found one of these little gumboils that Dr. Crissman has referred to on the labial surface of the alveolar process. I took out the pulp filling and made an opening through into the alveolar process again. After entering through there I discovered that the usual suppurative material was not present, but instead a bluish green pus. Since then the tooth has been under treatment and there has been no return of the bluish green pus.

It seems as though the infection in this last case might be similar to that described in our text-books on bacteriology under the head of pus caused by the bacillus pyocyaneus. Both cases were so interesting that I thought it would be worth while mentioning them. To have carried out the first case more scientifically the pus should have been examined for the bacillus of typhoid fever, as it is found in cases of osteomyelitis following such fever. In the other case I attempted to make a slide to find out whether the bacillus pyocyaneus was actually present, but my microscope did not work well and I could not demonstrate it.

Dr. Thomas L. Gilmer: This subject is so large that I do not know where to attack it. I was pleased with the paper. It was well written and contained many good points. In opening into pulp chambers when an abscess is impending it is not my custom to endeavor to thoroughly remove all of the debris at the first sitting, but only a portion of it, disinfecting that which remains, and at another sitting remove it. I do this in order that I may not force the infected material through the apical foramen into the periodental membrane and cause a greater trouble. Often we have patients presenting themselves with these impending abscesses, when there is much soreness of the periodental membrane and contiguous tissue, so much so that we find it difficult to open into the pulp chamber on account of pain. In such I am in the habit of molding to the linguo-labial or linguo-buccal surfaces modeling composition. By this means I am able to hold the teeth
steady while drilling into them, and the patient is very materially,
or wholly, relieved from pain by this process. If there is much
pain when the patient arrives, and I am unable to allay it by local
applications, I feel that it is my duty to use an anodyne of some
sort. If a patient is going directly home, and is not far from home,
when there is much pain I employ morphine hypodermically
injected into the gum; and have often not only relieved the pain
but aborted what seemed to be an impending alveolar abscess by
use of one-quarter of a grain of morphine. Pain begets pain, and
if there is pain there is a determination of blood to the part, and
the increase of blood to the part not only causes greater pain, but
increases the conditions which form the development of an abscess.

In the treatment of chronic cases, or those which do not seem
to yield to antiseptic treatment, if they are the anterior teeth,
before I would extract a tooth, I would after treating and filling
the canal, amputate the end of the root. I have done this fre-
quently and have saved teeth which it seemed could not be
controlled by antiseptic treatment only.

There is one other point that is often neglected. For instance,
we find that an abscess has formed on the lower jaw and the patient
has reached us so late that it must open on the face; at least, by
palpation we may find that there is a good deal of fluctuation
indicating that there is pus just under the skin. In these cases it
is better to take the bistoury and make an opening on the outside
of the face under the base of the jaw than to permit nature to make
the opening. I know this procedure is condemned by a great
many, but experience has taught me that it is better when an
abscess is going to open on the outside of the face that we antici-
pate it and make the opening. If we make an opening low down,
evacuate the pus, and wash out the cavity thoroughly with oil of
cassia water, we will not have a noticeable scar, which we certainly
will have if we permit nature to make the opening.

Dr. Albert E. Morey: I would like to ask Dr. Gilmer a ques-
tion. Where there is necrosis above the central and lateral
incisors over to the cuspids, taking in about the area of bone I
described on the board, would it be well to drain such a cavity at
the lowest point, the same as we do the antrum at times?

Dr. Gilmer: As a rule, yes. Drain at lowest point possible.

Dr. A. E. Matteson: I am very much pleased with the paper
and with the remarks that have been made. There are one or two
thoughts that have occurred to me that are mechanical rather than pathological. When it is necessary to enlarge the nerve canal for the purpose of cleansing and treatment to and beyond the apical foramen I have been more than fairly successful in doing so by the use of flexible drills made of mandolin wire.

As these drills are not on the market, a description of my method of making them may not be amiss.

The wire is cut in suitable length wherein it is drawn taut and flattened to about one half its original diameter. It is then removed and one end held in a pin vise and with a pair of pliers is twisted its entire length. The uniformity of the twist will be according to the skill. The flattening and twisting is accomplished without drawing the temper.

A section \( \frac{3}{4} \) or \( \frac{7}{8} \) of an inch is cut and soft-soldered into an engine bit having a socket drilled to receive it and is then sharpened.

These drills are sufficiently hard to cut dentine and are so flexible that they will follow an opening made with a Donaldson broach and will enlarge the canal sufficiently to admit a Gates-Glidden if desired. I have had them come unsoldered, but never had one break in a tooth.

In reference to nerve broaches, I must say that I am not satisfied with any in the the market. They are not as fine as I desire and the finest are so weakened by the cut in making the barb that there is danger of leaving a portion in the canal to be heard from later. The ideal broach, to my mind, is made of (jeweler's) "extra fine Swiss," annealed as soft as can be. They are then twisted as with the drills, and being five-sided form a screw which will entangle a nerve pulp or a fiber of cotton which may be unscrewed and left in the canal if desired. I will say, furthermore, that these broaches can be as thoroughly sterilized as any instrument.

In the treatment of abscess it is my practice to open freely in the crown so that all canals may be entered. Then wash copiously with warm water, followed by three per cent pyrozone after the removal of the putrescent pulp. A free opening is made through the foramen, and with a narrow strip of rubber dam I wrap the point of my syringe sufficiently to form a packing in the opening in the crown. Medicament is forced through the canal and fistula, or if a blind or cold abscess evacuate by pinching the bulb of the syringe before inserting. I believe, however, that more satisfac-
tory results obtain by making an external opening when such conditions are of long standing.

Dr. George W. Cook: I do not know that I have anything of interest to add to what has already been said. I have enjoyed both the paper and the remarks of Dr. Dennis. I have had a similar case in which there was the bluish green pus that he spoke of, not following typhoid fever, however, but the grip. There was no apparent cause for this other than the condition of the patient, and after the patient recovered from the grip some two or three weeks this abscess developed. The pulp canal apparently had been filled for some time, and the green pus formed in the manner in which Dr. Dennis explained that it is in his case. I am very glad to hear Dr. Matteson's method of reaching through the pulp canal. His suggestion is a good one in regard to getting through small canals.

Dr. B. J. Cigrand: I would simply ask that the president give us his experience along this line, giving us his ideas regarding the replantation of teeth. Before taking my seat, I desire to say that I wish some specific method might be adopted in the treatment of this form of disease. We are much in the woods about this matter. Every one seems to have a method of his own, and some of those who are giving the matter considerable attention ought to give us some deductions that are positive and scientific; those making a speciality of the treatment might get together and agree on some specific method and the practitioners could then adopt it and receive more decisive results.

The essayist has given us a very instructive paper, and she dwelt on the importance of applying agencies which might afford immediate relief and cure; she intended to emphasize the usefulness of such medications as would bring about these desired results, and I agree with her in pronouncing pyrozone as an efficient drug in cases where there is pus formation. I have used it and have attained excellent effects; and where there is hyperæmia, I employ iodine and it acts very satisfactorily.

I believe Dr. Crissman stated in his remarks that he would prefer to extract the dead tooth rather than leave it. I believe he intended to say that he would rather extract the pulpless tooth than leave it.

I hope the President will give us his experience regarding
transplanting teeth which are affected with pyorrhoea, and detail his methods of procedure.

Dr. A. H. Peck: I will simply say that I have four cases in mind now which I have treated in this manner. One was an acute abscess, the other three were chronic, and the last mentioned seemed exceedingly unwilling to yield to any form of medication that I was able to adopt or use in treating them. I extracted the teeth, removed the abscess sac, which came away with the apex of the root in each case. I cleansed the canals, filled them, filled up the cavity and cleansed the socket. All of this work was done under aseptic precautions by the use of mild antiseptics. The teeth were replanted and banded so as to hold them firmly for a time. One case was done three years ago, one about two and a half years ago, and the other about six months ago, and so far all three of them are doing very nicely indeed. The abscesses have healed in each case, and apparently there is no trouble. The acute abscess, in which I extracted the tooth and replanted it, I will confess it was not necessary to do it; but the patient was willing that it should be done, and under the circumstances, I did it for experience’s sake. This was done about ten months ago and the tooth to-day is just as firm apparently and doing as well as any other tooth in the mouth.

Dr. Perry: How long approximately were the teeth out of the sockets before they were replanted?

Dr. Peck: In no case was the tooth out of its socket over one hour. The teeth were extracted, cleansed, filled and replaced just as quickly as I could complete the work.

Dr. Thomas L. Gilmer: I have been doing more or less of replanting, transplanting and implanting for twenty years. I have never seen a tooth which was extracted and replanted that was not lost in from two to six years, and the manner in which they are lost is that the roots are entirely absorbed and the crown thrown off just as the deciduous teeth are. They do not grow or vitally unite with the jaw. I have made microscopical examination of slides of extracted replanted teeth and there are bay-like excavations absorbed out around the root into which the bone of the jaw fills. It is by this means that they are so solidly held in place. If we strike such teeth with an instrument it gives out a different tone from other teeth having a peridental membrane. The reason I prefer when it is practicable to amputate the root in situ in prefer-
ence to extracting and replanting is because by this means I have all of the root except the end covered by a peridental membrane which prevents absorption and loss of the root. True, there may be some absorption of the cut end of the root. This is much more limiting and we have a reasonable prospect that it may be retained for many years.

Dr. George W. Cook: I have two cases that I have treated after the manner spoken of by the president, extracting the teeth and then replanting them. One case was done five years ago, the tooth being a lateral incisor. About a month ago I saw the patient, and that tooth is quite loose. It was replanted five years ago last June, and if it stays until June of this year it will be as long as it will probably remain. Another one I replanted two years ago which seems to be in a good condition at the present time and doing good service. That was a first bicuspid.

The suggestion that Dr. Gilmer has made in regard to amputation of the root is preferable to replantation.

Dr. A. E. Matteson: I have had some experience in connection with the replantation of teeth. Perhaps some of you will remember my reporting a case before the American Dental Association meeting at Minneapolis in 1885. It was the case of a boy who had two of his front teeth knocked out. These were replanted and splints applied. I saw the case two years afterward, they were loose. I took them out with my fingers very easily. The alveolar plate was broken off around the front of these teeth—lateral and central incisors; the cuspid had not erupted and has not done so to the present day, although in sight. The boy was about eleven years old.

Another case I had was where the tooth was very loose from pyorrhoea alveolaris. I had given up any hopes of saving it. I took it out, made a splint for it and replanted it. This case was a failure in two years' time. That tooth was out a week before it was replanted.

I had another case the same week, a lateral incisor, which I crowned. This was done during the World's Fair year, and it is as firm as any tooth in the mouth, and I doubt if any person could tell by the looks that it had ever been taken out. It seems to have a peridental membrane and surrounding tissue normal. This root was replanted after a week of rest.

I have had a number of other cases, but it seems from my
experience, where there has been long standing abscess, that better results are obtained by leaving the tooth out for several days than mangling the new formed tissue and inserting the tooth in the socket.

Dr. Garrett Newkirk: While I think the paper was a excellent one, well written and up-to-date in reference to therapeutics and management, there was one thing that I thought I should not let pass without a word of caution. I have not found it necessary for many years in my practice to use strong medication in the treatment of an abscess with a fistulous opening, no matter what the condition may be, as ninety-five per cent carbolic acid. I prefer not to use so strong a solution. If we simply depend upon repeated injections of pyrozone, which in itself is very destructive of false tissue, we shall find that in nearly all cases it will be found sufficient. After several treatments, if there seems to be something more required, we may add, say tincture of iodine and oil of cloves to the pyrozone. These we have then remaining to act after the effects of the pyrozone or peroxide of hydrogen have passed away. I have not had any occasion for years to use pure creosote or carbolic acid in such strength as has been mentioned by the essayist, or even the chloride of zinc. On general principles it is better to be conservative in the use of strong agents, except where they are imperatively required.

Dr. Pfeifer, in closing the discussion, said that she had used stronger remedies where the milder ones had failed. She had been very successful in using carbolic acid and iodine in equal parts.

A regular meeting was held April 5, 1898, with the President, Dr. A. H. Peck, in the chair.

After the transaction of routine and miscellaneous business the society listened to the “President’s Annual Address,” Dr. Don. M. Gallie being in the chair.

Dr. A. W. Harlan was called upon to open the discussion. He said: I have experimented some with formalin, and without having tried any formalin on the skin of my own leg, I have tried it on quite a number of living and dead pulps, and two or three months ago I published a paragraph or two relating to its action on dead pulps. If you leave the pulp in the tooth and cover it
with forty per cent formalin, and seal it, in about sixty days you would have the same putrefactive odors and gases that you would if you left it alone. I concluded from a number of experiments that it was better to remove the pulp of the tooth and fill the root than to try to leave the dead pulp in there, and try to preserve it with formalin.

Since Miller read his paper before the Columbian Dental Congress in 1893, at Chicago, a great many people have been searching for something to preserve the dead pulps in teeth so as to obviate the necessity of removing them or filling the roots, and formalin has been presented as one of the agents that could be used for preserving this kind of corpse.

In the April number of the International Dental Journal, Dr. George S. Allan, of New York, published a paper on the treatment of pulpless teeth with an ethereal solution of hydrogen dioxide. Among other things he says it has been found that such agents as creosote, carbolic acid and the essential oils, which he calls organic germicides, are useless, and he goes on to state that formalin is the ideal disinfectant. He further states that an ethereal solution of hydrogen dioxide is the double star disinfectant. A disinfectant, Mr. President, is an agent that destroys the infectious power of infectious material. An antiseptic is simply an agent that restrains or inhibits—as the president has said in his remarks—the growth of microorganisms and their spores; that is, they will, when the antiseptic influence is removed, still be able to propagate and to sporificate, etc. A disinfectant is an agent that absolutely destroys, kills, incinerates, burns, pulverizes, annihilates, the same as any other kind of an agent. Formalin, or formaldehyde, is an irritative, penetrating agent, which is soluble in water, and its influence is soon lost. If any of you gentlemen have a desire to introduce formalin into a tooth which is not protected by an insoluble covering, you will find very soon that its influence is dissipated; it passes away, becomes nil.

I am very glad to have listened to the president's address, because I was afraid he would present one of the stereotyped, dull, uninteresting, useless addresses. So I wish to present him my thanks. I think this is a very timely address.

In conclusion, I would like to say that the paper of Dr. Allan, in the International Dental Journal, for April, is most misleading and incorrect, not only theoretically, but scientifically. He says
that creosote, as an organic germicide, is useless. Anybody who is present in this room must know that creosote is one of the agents that is almost insoluble in water; consequently if saliva, tobacco juice, water, and various other things, in passing through the mouth, come in contact with it, they will not dissolve except in proportion of 1-80, and it will take days, weeks or months for it to be dissipated. If you take carbolic acid, which is soluble in water, very sparingly, about five or six per cent, according to whether it is made synthetically or otherwise, it will take weeks for it to be dissipated. Take any one of the essential oils which are germicides, say peppermint, cassia, cinnamon, myrtol, cajeput, cloves, etc., you all know that they are not soluble in water. Scarcely one-half of one per cent would be soluble in water after exposure for ten days. Certain conclusions arrived at in Dr. Allan's paper are absolutely and totally incorrect. The paper of our president this evening goes far to prick the bubble of that great powerful disinfectant. I do not care anything about antiseptics, if you are treating pulpless teeth you want a disinfectant, you want something that will destroy, kill, annihilate. Antiseptics do not do that.

Dr. J. E. Hinkins: About a year ago Dr. Cook was very enthusiastic over this agent, and after using it in two teeth he abandoned it. I had a similar condition in the mouth to what Dr. Peck described as having occurred in his leg, and I have not since used formalin.

Dr. George B. Perry: I would like to ask Dr. Harlan what he uses to cover the formaldehyde with after he puts it in a tooth.

Dr. Harlan: After the formalin was introduced into the tooth I sealed it with gutta-percha in one case, and in the other with oxyphosphate of zinc.

Dr. Perry: With the same result?

Dr. Harlan: Almost exactly, except that in one case it was sixty days, and in another ninety days, before I had it opened.

Dr. C. E. Bentley: I would like to ask the essayist if I understood him to say that formaldehyde acted upon all putrefactive substances, or the ptomaines, with the exception of butyric and lactic acids.

Dr. Peck: Not to a very great extent. They do act upon butyric and lactic acids, but in what per cent of the cases I am not able to say.
Dr. Bentley: If formalin acts on lactic acid, would it not be a good mouth wash, in diluted solution?

Dr. Peck: I believe it is recommended by a great many as a mouth wash when diluted.

Dr. Bentley: Does it act upon the leptothrix buccalis?

Dr. Peck: I cannot say.

Dr. Harlan: The reason why it will never become useful as a mouth wash is because it has an intense acid reaction. I have some teeth now that are in a weak solution of formaldehyde, and they are gradually disappearing.

Dr. Bentley: What is the objection to using an acid mouth wash if the alkalinity of the fluids is in preponderance in the mouth?

Dr. Harlan: If the alkaline fluids preponderate in the mouth you do not need a mouth wash. Whenever the secretion from the salivary glands is slightly alkaline all the time you do not need a mouth wash, as the teeth will not decay, and the objection to any mouth wash containing formic or acetic acid is the exceedingly diluted solution of these acids, because you take one-tenth per cent solution of acetic or formic acid, place it into a tooth and leave it for thirty days, it will leave a finely powdered surface over the whole, showing that it acts energetically on the inorganic material of the tooth. If you place a tooth in a forty per cent solution of formic acid at the end of thirty days it would only be dull, not destroyed.

Dr. J. G. Reid: I advocated and used formalin about two years ago. I think it was about this time when Dr. Cassidy presented this agent to the profession in the Ohio Dental Journal, and my attention was then attracted to it. I obtained some formalin and began to experiment with it. I soon found out that it was not an agent that I wanted to use, from the little experience I had with it. I saw the sore on the president's leg about the third or fourth day after the application of the formalin, and I must say it was one of the most aggravated looking sores I ever saw. I did not suppose that such an agent could really make one's leg so bad.

Dr. Elgin MaWhinney: I have had probably a dozen very unpleasant experiences with formalin, none of which proved serious. I had a case of a superior left wisdom tooth, with a discharging fistulous opening opposite the second bicuspid. I thought the bicuspid, which was crowned, was the cause of the trouble at first, and on
probing I found it was not. I found that both the first and second molars had live pulps in them, and that the pulp in the wisdom tooth had died under the filling. After opening it and dressing the tooth, as an afterthought it occurred to me to wash out the fistula and canal with formalin. I washed out the cavity with water, in which I put an emulsion of oil of cassia. Ordinarily, I use carbolic acid for such purposes, but the canal was so long that I did not use it in this particular case, and so after closing my dressing in there, I used Dunn's syringe with which to inject two per cent formalin. The next day the patient returned with the face greatly swollen under the eye. The agent had caused no pain at any time. The same day I had the good fortune of being called in by a specialist to observe the result of a one-half of one per cent solution of formalin in a case of eczema of the face. The whole of the patient's face looked as though it had been scalded with hot water.

Odontographic Society of Chicago.

The banquet at the Palmer House on Tuesday evening, February 22, 1898, was the closing feature in the celebration of the tenth anniversary of the Odontographic Society of Chicago.

The Banquet.

There were 225 in attendance. At about 6:30 P. M. the members and invited guests began to arrive. They first went through the customary preliminaries of shaking hands, then began to exchange ideas, make new and renew old acquaintances. An hour later they filed into the dining room and partook of the very palatable dishes that were placed before them. The tables were tastefully decorated, and it was a typical representative dental gathering. At one of the tables sat editors and professors, men who have reflected the highest honor upon themselves and renown upon the profession by the work they have done in the past.

At 8:30 Dr. C. N. Johnson rapped for order, and presented Dr. George B. Perry, the president of the society, who acted as toastmaster, in the absence of Dr. W. C. Barrett, of Buffalo, who had been assigned to discharge the pleasant duties incident to this office.

Toastmaster Perry, before introducing the first speaker of the
evening, said in part that he felt deeply sensible of the honor which had been bestowed upon him by the society in placing him in a position that was the highest in their gift, and he was also deeply sensible of his inability in filling it as creditably as it deserved. He then touched briefly on the organization and growth of the society, saying it was composed almost entirely of young men, and that its inception dated back ten years. On the 12th of December, 1887, there gathered in one of the rooms of the Chicago College of Dental Surgery thirteen of its alumni, who talked the matter over of forming a permanent society for the benefit of the graduates of that school. Dr. A. W. Harlan suggested the name Odontographic, which was accepted and the society was christened. The society began to take in members gradually for three years, until it decided to enlarge its scope and include graduates from all reputable dental colleges. Now the society has grown to the large membership of 375.

In his closing remarks the toastmaster said: The Odontographic Society extends a cordial welcome and the right hand of fellowship to the visiting fellow practitioners and to the guests. We feel that the clinicians who have come from afar, many of them celebrated, having not only a national but international reputation, have done a great deal to advance our cause and to enlarge our field. It has required a monument of work to accomplish the purpose of this meeting now drawing to a close. We realize also that the exhibitors have done their share in working for the interests of the society, and we wish to thank them for their efforts in our behalf. We are very grateful to the Chicago College of Dental Surgery and Northwestern University Dental School for courtesies extended. We feel this society is equal to anything that it undertakes, and its enthusiasm insures success. Our aims are along broad lines. We mean to develop and progress aggressively but carefully. We hope before long to be considered the largest dental society in the world, not sacrificing quality for quantity. We are also particular about the tone of our members, and those who apply for admission must be the right sort of people or they will not be accepted. I thank you for the honor that you have bestowed upon me.

The Toastmaster: The next toast upon our list, "Our Profession," is to be responded to by a man who needs no introduction, whose name extends from ocean to ocean, and it is only nec-
essay for me to call upon our genial friend and co-worker, Dr. G. V. Black.

Dr. Black arose amid great applause, and spoke as follows:

Mr. Toastmaster and Gentlemen: The subject assigned to me this evening, "Our Profession," is much too large a subject for me to deal with adequately. When my voice was first heard and my eyes saw the light of this planet through the chinks of a log cabin down in Central Illinois, some men in Baltimore, of whom Chapin A. Harris was one, were endeavoring to teach dentistry as a specialty of medicine in a medical college in that city, forming a portion of the corps of instructors in that school. After some years of effort in this direction these men pulled away from the medical school and established a dental school, and dentistry as a profession was born. It then became distinct from the medical profession and has remained so to this day, though claiming close kinship and close fellowship with it, a part indeed of the healing art, yet distinct in its methods, distinct in its schools as that school was distinct from a medical school and in its plans of teaching. With this first dental school there were eight teachers and about eight pupils. There were at that time in the United States, all told, about 300 dentists. Part of these figures I have obtained from Dr. Harlan, who sat by my side, since I came here, and you know he remembers everything. Now, in the year 1898, there are about 21,000 dentists in the United States; and instead of one school with eight teachers, we now have forty-four schools with 1,500 teachers. Instead of eight pupils, we have now 5,000 pupils in our dental schools. This is enough to show the advancement the dental profession has made as a distinct profession. We need not go back and compare methods then and now; we need not go back and compare scientific attainments then and now. There are gentlemen who sit here by my side who knew Chapin A. Harris and his corps of teachers in that period, and here is a gentleman who sits by my side (pointing to Dr. Bonwill) who was a pupil of Chapin A. Harris. You see, then, gentlemen, it is not so long ago; it was within the life and memory of some of those whom we have with us to-night. All of these things have happened within my own life, not within my memory, properly speaking, although I almost feel that I myself knew Chapin A. Harris personally. We have made great strides in our profession since then. To continue, we have only to live and act toward our
people as professional men, not as tradesmen, not as men who have skill to sell, but as men who are intent upon doing the best thing under the conditions for those who put themselves in our care, independently of the fee we may receive after it is done. (Applause.) If we do this and continue in the future, as we have in the past, to study carefully the underlying principles and advance in our scientific attainments as a profession, all is well with us, and we will enjoy the prosperity we have had in the past. (Loud applause.)

The Toastmaster: The toast, "Dental Legislation of the Future," is one which should interest every member of the dental profession, and particularly those members located in this State, for we have labored hard to raise the standard, and I call upon Dr. E. K. Blair, of Waverly, Ill., to respond to it.

Dr. Blair was warmly received. He said in part: I have been associated on committees with men of ability regarding matters of dental legislation, such as Drs. Koch and C. Stoddard Smith, and I wish they were here to-night to speak to you upon this subject, because they could do it much better than I can. They could give you some reminiscences to enable you to judge of future legislation because it is by the past that we must judge what the future is to be. As much as we have regretted failure in our efforts to succeed in carrying through bills that have been suggested to us by men high in the councils of our profession, there is something gained even by failure, because I regard it as certain that in the course of time the growth of the dental profession, so marked in its progress, will assert itself strongly before the people of the State of Illinois, and in time we will have better laws than we can obtain now. We will become potential factors as societies and as individuals, and after a while when we knock at the door in the halls of legislation at the capital of this grand State we will be heard, because we are not only recognized as men of ability, but as men of strength, and men they will have reason to fear. There is something in organization. I have no fears of our having an efficient dental law in time. I believe in the American people and that ultimately they will solve every problem properly. To the sentiment of this toast, "Use every man after his desert, and who should 'scape whipping," I wish to say that when a law is enacted that is prompted by the best thought of the dental profession it will be a just law and no man need shrink from it. When it is applied to practitioners in our State it will work no hardships upon any man
who ought to have a footing here as a practitioner. It will do what so many people think it will not do—it will benefit patients who cross our thresholds and seek our services. The people need capable practitioners. What we need is a law that will enable the public to secure the services of men worthy of the name of dentists, and I believe we will have it in the course of time. (Applause.)

The Toastmaster: We certainly appreciate the efforts of the pioneer practitioners of dentistry, when they are sufficiently interested in a young organization like this to be willing to prepare a paper to be read at our clinic, to be willing to travel hundreds of miles in order to assist us in the good work, and aid us by their presence. I cannot but feel that great honor is due these practitioners for their efforts, and many of them need no introduction. I take pleasure in presenting to you one of the pioneer practitioners of dentistry, who will respond to the toast "Reminiscences," Dr. Jonathan Taft, of Cincinnati.

Dr. Taft was enthusiastically received and spoke in substance as follows: About the year 1842 I entered the profession, and have watched its growth with interest from that time to the present, being as greatly gratified to-day, and more perhaps than at any period during this time at the growth that has been attained since 1842. It is unfortunate that more of the work done by the noble men of that time has not been placed permanently on record. The early history of the profession is rapidly passing away, and those who are personally familiar with it are becoming daily almost fewer and fewer, and of what they saw and did and knew, we have but a meagre record. The men who were active then in carrying forward the work of the profession are worthy a place upon the tablets of our memories, upon the pages of history. Of the men who were instrumental in developing and causing the profession to assume special form, we have the names of Drs. Chapin A. Harris, H. H. Hayden, Austin, and others, of Baltimore; in Philadelphia, of Samuel Hudson. There were also Leonard Koecker, J. D. White, T. L. Buckingham, E. Wildman, Elisha Townsend, and a number of others that might be mentioned. These were noble men, men of high aspiration, who looked forward into the future, and some of us recognized what was coming, perhaps not to the extent that we realize to-day. But they anticipated for the profession a marvelous growth. There were in New York quite a number of dentists at that time who were active in developing the
profession, and among them were Drs. W. H. Dwinelle, John B. Rich and Foster. There were in Boston Drs. Flagg and Harwood and their confritres, all of whom were active workers for the development of dental science and art. I ought to mention Dr. Amos Wescott, of Syracuse, who was a prominent figure in New York State for many years, and a man who did as much for the growth and development of the profession during the active period of his life as any other one man. A large number of other names ought to be better placed upon record than they have been heretofore. The young men of the profession ought to be informed of their work and be educated in regard to what these men did. They have passed away, but what they did stands to-day, and we are reaping that which they sowed.

In regard to the facilities of those days, almost every man made most of the instruments and appliances he used. I had my first set of forceps made by a gunsmith; other dentists made their own forceps, excavators and files. It was the pride of some dentists in those days to show a case of instruments they had made themselves. Dr. Bonwill engaged in work of that kind. Most dentists familiarized themselves with the methods of making appliances and instruments that were not to be had in America. They not only made the appliances, but had to invent and determine just what they needed for this, that or the other operation.

When I began to study dentistry the first book put into my hand was Fitch's Dental Surgery. Later the first edition of Harris' Dental Surgery was issued; but Fitch's work was the text-book at that time. What about other books? There was scarcely anything else. Some books were written upon dentistry, but they were in the main in other languages, such as French and German, and were not accessible to those of us who were not familiar with these languages. But in 1840 the first volume of the American Journal of Dental Science was issued. Dr. Harris was one of the editors of that journal, and I believe Drs. Brown and Baker, of New York, were the first editors. The journal consisted of two parts, a journalistic part, and a library part. The latter half of each issue consisted of translations from works in French and German, and we had the advantage of reading these. They were thought to be a great acquisition. This was the only journal in the country upon dental science. It was highly prized. What have we to-day? Not one or two dental journals, but perhaps forty or fifty, all told
not only in English, but in almost all languages of the civilized
world we have journals published on dentistry—German, French,
Italian, Spanish, Russian, Japanese, Chinese, etc., etc.

We had very little of the benefits of the profession then as we
consider them to-day. Many dentists received students in their
offices and took fees such as they could get. Dr. Harris and the
late Dr. James Taylor, of Cincinnati, were coworkers in the same
town in Ohio. These men, who started dental colleges away from
Ohio, were friends in their younger days in Bainbridge, Ohio.
They talked over the matter of organizing dental colleges. Dr.
Harris subsequently went to Baltimore and put his plans into
execution by organizing the Baltimore Dental College; and Dr.
James Taylor came to Cincinnati, and in a few years afterward
established the Ohio College of Dental Surgery. That was the
beginning of a systematic dental education. The growth of
the profession has been great since that time. There is hardly
any other occupation among men that has grown so much in so
short a time and has reached such a status as we find in our pro-
fession to-day. Some are proud to be dentists; others have said
to me that they were ashamed they were dentists. Every such
man ought to get out of it. (Applause.) The man who does not
recognize what his profession is and does not take pride in follow-
ing it as his life work ought to abandon it and select some occu-
pation which is more congenial to him. Every man who practices
dentistry, who reaches out to relieve and redeem humanity from
disease and affliction, from sadness and sorrow, ought to have his
heart thoroughly in his work. There were some men in those days
who looked upon dentistry with high aspirations and feelings, and
reverence really, as there are others to-day who look upon it
slightly. These ought not to be in the profession. There are
men, too, of high aspirations, men of ability, who have been willing
to go along upon a certain level that ought to have been elevated,
and those of you who have the opportunity of helping such men
I charge you to assist them, to bring out the possibilities that are
in them. We frequently find men who come from the rural
districts or from small towns who astonish us by their attain-
ments. These men ought to be helped and pushed forward.
Let us do all we can to help them; let us be careful in the selection
of men whom we encourage to enter the profession, and if students
apply for entrance to our colleges who have but a vague conception
of what the profession ought to be, they ought to be rejected. (Applause.)

I take some satisfaction in looking back over our profession. It is sometimes sad for me to look over the past. But I am glad, I am proud, to look over the profession and see many men who stand like giants working against opposition to accomplish marvelous results. I look to the next two years, when the century shall be rounded, when our profession shall have a glorious status and be a prophecy of the future for a noble profession that shall be recognized by all classes and all people of the world according to its deserts.

On motion, Dr. Taft was requested to publish the early list of subscribers to the Dental Register for the edification of the younger dentists.

The Toastmaster: The next toast will be responded to by the Chairman of the Executive Committee, Dr. C. E. Bentley, who has been an indefatigable worker, and has personally written something like three hundred and forty letters to different men in the dental profession throughout the country. These facts have not been known to the members generally, and we ought to appreciate the work he has done as well as that of the members of different committees who have had this work in charge. I take great pleasure in introducing to you Dr. Bentley, the first president of this society, who will now respond to the toast, "The Absent."

Dr. Bentley was received with applause. He said in part: A number of gentlemen have written me to the effect that they would have been here had there not been other important dental meetings in other parts of the country, one in session at St. Augustine, Fla., and the other at Trenton, N. J., both of which are holding banquets to-night. I have received a number of letters from prominent men regretting their absence, and I will mention a few of the names of those who have sent us their greetings and who wish the society Godspeed in its endeavors to do for the profession what organized dental societies are supposed to do for it, Drs. Catching, Ottolengui, Guilford, Pierce, Fillebrown, Walker, Rhein, E. H. Smith, Weeks, Perry, Truman, Frederichs, Gordon White, B. Holly Smith, Noble, and last, but not least, George H. Cushing. (Applause.)

Before taking my seat, it appears to me that in responding to a toast which involves the sentiment, "Those Who Would but
Could Not Be Present," we should pay some respect to the great army of men who have done so much for the profession and who have made our meetings and clinics a grand success. I refer to Taft, Black and others. That great army of men who submerge self to do everything in the way of personal sacrifice, who gave the profession an impetus, and by reason of its own momentum has gained the enormous proportions of which we glory in to-night. Dr. Harlan informs me that Dr. Hudson, in 1785, in Philadelphia, was the first man to fill the roots of teeth and condense gold. From Hudson down to Evans we have had a great number of men who have gone that would be glad to be with us to-night. I, for one, cherish the memories of those men, and trust that they will live with us as an organization and as individuals.

I would violate the courtesies of the occasion did I not, in representing the executive committee, return thanks to the many agencies that have made this eventful epoch in the history of the profession of Chicago a grand success. I thank The Dental Review, The Dental Digest, and Dr. Ottofy, who have rendered valuable service in doing what they could for us. I desire, too, to thank Dr. Harlan, who wrote over thirty letters himself, Dr. Zinn and others. Furthermore, I thank the dental colleges for the kindness shown to us and the clinicians who have responded so graciously and willingly to our invitations to make this affair a success. And lastly, the executive committee extends to you the right hand of fellowship, and God bless you.

The toastmaster then read two telegrams, one from Dr. Ottofy, expressing his compliments to the society and regretting his absence; the other from the Southern Dental Association, assembled at St. Augustine, Fla., extending greetings and hoping the society would have an interesting meeting and good papers.

The Toastmaster: This is a fitting occasion for this society to close its first clinic upon the anniversary of the birthday of the Father of Our Country. We appreciate the significance of the fact, and we have with us to-night a man whose reputation is extensive, who is a legal light, and who will respond to the toast, "Our Country." Permit me to introduce our excellent friend, Mr. C. S. Darrow.

Mr. Darrow arose amid the plaudits of the audience. He said: This day, I suppose, is especially appropriate for the toast to which I have been asked to respond. For the first time I find
myself in the presence of dentists where I am allowed to talk (laughter) and that is the reason I thought I would attend your banquet and take advantage of it for once.

Patriotism is one of the oldest sentiments of the human breast; I do not know whether it is one of the highest, or the most sacred, or the most useful. I have often thought it was not; it is certainly one of the oldest. It is not found in the Americans alone, but in the English, the Germans, Spanish, Indians—in all races and nations and people, in all the history of the world. They are mostly born with it. They take it in as they take in their ideas of home and family and kindred and all sorts of associations. We are apt often to be carried away with the sentiment of patriotism and love of country. It is a good thing its place, but I have frequently thought that it has caused as much evil as good, like many other sentiments of the world. There is a patriotism which is high and ennobling and helpful; there is a patriotism which is degrading and harmful and bad. This is Washington’s birthday, the anniversary of his birth, and a great deal has been said throughout the length and breadth of the land to-day upon patriotism. As I was coming here this evening I picked up a daily paper and I saw under an illustration in the paper the sentiment which we have heard so often, “America, may she always be right, but right or wrong, America.” I have no sympathy with that sentiment; I have no sympathy with that sort of patriotism. We should condemn our own country for being wrong sooner than any other country. We should think so much of it that we should not tolerate it when it is wrong, but should demand that it be always right. (Applause.)

Sentiments like those are the sentiments of politicians who laugh and prey upon public opinion, regardless of the right and of the wrong. We, the latest of the great nations of the earth, should be the best, and probably are the best. This nation, especially remote from any great political power, away from any enemies that can harm it, should be left free to work out its own salvation, untrammeled by the customs and ages gone by. It has the greatest opportunity of any nation on earth, and it may improve it in many respects wisely, or, as some would say, unwisely, too. Our fathers in establishing this nation were animated by the love of human liberty. It was this which brought them so far from their home and native land, remote from any hostile power on earth; that
here, unhampered by customs, they worked out the great problem of self-government among men. We should teach the other nations lessons in what a nation ought to be, not lessons in war, but lessons in that which is higher and grander and rarer—lessons in peace and industry and humanity and brotherhood. It was never meant that America should be like Rome, or like the empire of Napoleon, or like any of the great empires of the past, a nation of military power, a nation whose history should be written in human blood. It was meant that it should be a nation of brothers, a nation of men, who should teach the world human equality, who should teach the world that there should be no difference between rich and poor, between high and low, between the weak and the strong; and I sometimes think, especially in these troublous times, that we have wandered far from the teachings of our fathers and we have forgotten what is the highest good of this common land of ours. I have thought of late, when I hear the thoughtless world crying for blood and war, that it is time the American people stopped; that it is time they hesitated; that it is time they thought of the traditions of their country and of that which makes the betterment of the human race. This is not an age of war, and the lesson which America can teach to the world is not the lesson of bloodshed and strife. The greatness of our country, its mission to its people and to the world can never be taught upon the field of battle; it can only be taught by our adherence to human brotherhood, by our adherence to peace and good will among men, which is far higher and nobler and grander than the sentiment of war. I have thought again that this fair land of ours—a land in which all are equal, in which we have no king and no potentate—that this land is good enough, great enough in area, in all that goes to make a nation great, so that we can afford to stay at home and leave other islands and other lands to work out their own destinies for themselves. (Applause.) We of America have our problems to solve. And I want to say that the true patriot does not close his eyes to the evils of his own land. We of America have the greatest problems to solve within our gates and cannot afford to go out upon unknown seas and foreign lands in search of problems that we never ought to solve. The dangers that confront us are not from foreign lands or foreign foes; the dangers are here at home, dangers that are ever incident to democracy, dangers that are ever
incident to power and greed and accumulated wealth. We, here in America, are meant to work out, as I have previously said, the problem of self-government, the problem of equality among men. We should see to it that we are neither destroyed by an aristocracy, like the nations of the Old World, nor by a plutocracy, such as threatens us to-day. (Applause.)

Let me say, in closing, that at this time all men who think—and I know that this body of men are scientific men, men not swayed by passion and emotion and wild, unworthy sentiment, but men accustomed to think and study for themselves—know that these days are troublous days for the American people; are days when the true patriot should make his voice heard and his influence felt in the settlement of the affairs of state. We of America have a mission: It is to show the world a better land than the world has ever known, a land of greater plenty, of more equality, of purer democracy; a land wedded to the best and the higher sentiments of man. We should lead the van. We should turn our faces from those days of the past, when the nations surrounded themselves with forts and guns and bristling cannons to the days of the future when all men shall be brothers, when forts and guns and bristling cannons shall pass away, and we shall be brothers for a' that. (Loud applause.)

The Toastmaster: As a man of mechanical genius we have few in the profession as celebrated as the one who is to respond to the next toast. He has brought forth many ideas which have made our work lighter and suggested other thoughts for us to work out. We will be pleased to listen to Dr. W. G. A. Bonwill, of Philadelphia.

Dr. Bonwill: Mr. Toastmaster and Gentlemen: There is one feature about such occasions as this that I have noticed in my intimacy with professions that should bear greater significance to the relations we bear to each other.

The merry bells jingle melodiously while the marriage ceremonies are going on, and the banquet to our hosts is in merriment, and good feeling and love to all is passing freely and unstintedly around the festive board until we pass to our respective homes to sever again our intercourse with the world. How soon we seem to forget that we pledged ourselves as brothers in united bonds of love to do for each other and our noble profession, to uphold all in one grand architectural structure to defy the tooth of time.
Personally, I cannot complain, for no one among you has had more deference shown him, outside of his own home, and more real love and attention wherever he has gone over this earth’s surface. I could fold my arms and lie down to eternal rest, feeling a proud satisfaction that I must have done some little to have made your labor and successes more to your keeping, and that life had been no failure to me in this constant effort for you.

Few, if any among our profession have realized the substantial benefits that accrue from invention and methods. I realize your efforts to promote good feeling and to draw out talent and genius to make our calling respected and adored. You must, in such meetings as to-day and yesterday, and each year, add a mite, at least, and make the year the more profitable in every way. But, my boys, let us not forget each other when far away. That we are in close compact and united to keep ourselves and each individually above reproach, and move on in one solid body to show the world we not only love our profession, but each other.

I thank you so much that you have called me from my home to join you in your revelry, and shall hope many years yet may be spared the members of the Red Cross to mingle with the throng. It is inspiring to sit side by side with such soldiers as are my associates to-night. I know what they have done, and it does me proud to be recognized in age, at least, with them. (Applause.)

The Toastmaster: Such a subject as the next one upon our program “The Fair Sex,” is always of interest to us and calls for a variety of sentiment; reverence, delicacy and wit. Our neighborly State of Wisconsin has a representative here that will give us his views upon the subject, and I will call upon Dr. C. C. Chittenden, of Madison, for that purpose.

Dr. Chittenden spoke in part as follows: When the subject of the fair sex is mentioned, there appears in every man’s mind a picture, and before his mind’s eye it stands as ideal and representative of that sex. You will remember the old song of Annie Laurie and the story told of it, but when it was sung every man in the audience thought of another name than hers. There is no set of men who comes so closely in contact and learn so much, and whose treatment and relations with women should be so high and pure, as the dentist. His sympathy is enlisted constantly, and the man who violates his trust under such circumstances in his pro-
fessional relations is unworthy to be connected with our profession. The American woman, I think we will all agree, represents the highest model of womanhood to-day. She has been given all sorts and kinds of liberties, which she has made use of, and she goes into foreign countries with a freedom and certainty of receiving the respect that the women of the lands through which she passes cannot command in their own homes.

The Toastmaster: We now come to a toast that includes under its heading our own society, and it is to be responded to by a man from the frozen North, but who has a warm heart and sympathetic feeling for "Local Societies," Dr. C. M. Bailey, of Minneapolis.

Among other things he said: It is not necessary to speak to a body of men who have been present during the past two days of the work which local societies may do. We have all seen the success which has attended the efforts of this society, and what your toastmaster told us about the increase in the membership of your society speaks more loudly than anything I can say to you to-night. "Join we together for the public good in what we can," expresses the idea of our society that should actuate us. We, perhaps, have at the apex a society that we all honor, that represents the whole country. I refer to our national society. We cannot reach the people much through it; we are to help ourselves, that is, hold up and sustain our State and district societies, but they are only supported by our local societies, which reach men individually and stimulates in man the highest and best that there may be in him; and for the purpose given in our sentiment, "We join together for the public good." All dentists can work individually and do much good for the public and for the profession.

Dr. Patterson, in responding to the toast "Progressive Education," said he was very glad to be present and to be honored with an invitation to speak, but the subject assigned him had been covered so well by previous speakers that he had very little to say. He was reminded of an able address that he had recently heard in which it was said that when it came to the final analysis, all human progress lay in individual cultivation and self mastery.

The Toastmaster: It becomes my pleasant duty before we adjourn to introduce my personal friend and coworker, Dr. George W. Schwartz, the newly elected president of this society.

Dr. George W. Schwartz: It is a great pleasure for me to
be placed in the chair to-night as president of this society. This day is also the anniversary of my birth as well as of the birth of this society. I wish to congratulate the charter members of this society for the stimulus they gave the society from its inception; the ripe fruit of their efforts you see in this hall to-night. A more successful clinic and a larger gathering of prominent men of the dental profession is seldom seen. The aim of this society has been to take care of the very young men just entering the dental profession. It is strictly a young men's society; we are always glad to have the counsel and support of the older members, but its management has always been by the young men.

We have the same regard for the older societies that a child should have for its parent, and whatever we have done we hope they will feel in the same sympathy to us. We feel more than grateful to them for the assistance they have given us with this work. I wish to thank the men who gave us their valuable clinics, and the manufacturing exhibitors, we thank all most cordially who helped to make this clinic a success.

While I do not expect to be able to fill the chair as successfully as Brother Perry and others who have gone before him, I will labor as faithfully as I have in the past. I have only missed two meetings since I have been a member, over four years. I am pleased to, say we, as a society, have always been as a family of grown-up boys. In all my attendance I have never seen the requirement of referring to parliamentary rules. Hoping we will continue to look after the young graduates as we have in the past, teaching them when they leave the city to attend their local societies and become useful working members, I will now ask Brother Perry to resume the chair and close this meeting.

FORTHCOMING.


Are you going to Omaha in August to attend the meeting of the National Dental Association? The exposition will open June 1, and nothing has equalled it since the World's Fair at Chicago. Meeting the last Thursday in August.

Several members of the senior class of the Chicago College of Dental Surgery have gone to the war in various capacities in the infantry, cavalry and as marines.
Dr. George H. Cushing.

As will be seen elsewhere, a complimentary dinner was given to Dr. Cushing by members of the Chicago Dental Society, the Odontological Society and the Odontographic Society, Wednesday evening, April 27. Dr. Cushing after a long and honorable career of forty-one years in Chicago, retires to his future home in Los Angeles County, California.

Dr. Cushing began the study of dentistry in 1846 in Providence, R. I., with the late N. A. Fisher, M. D., and after completing his studies spent a brief season in Connecticut, and later removed to Bristol, R. I. In 1849 he went around Cape Horn in company with the late N. F. Cooke, M. D., reaching California in February, 1850. After spending a few years in practice and in mining, including a trip to the mouth of the Columbia River, he returned to Rhode Island, and shortly after was induced by the late Drs. J. D. and Charles H. Quinlan to locate in Chicago in March, 1857. He was soon in full practice in consequence of his fidelity to high ideals and lofty appreciation of the requirements of one who essayed to do humanitarian services. He was early interested in everything which had a tendency to uplift dental practice. He was one of the founders of the Illinois State and the Chicago Dental Societies. He became a member of the American Dental Association in 1865, and was elected vice president at that meeting; 1871 he was the elected president. He had been previously elected president of the Chicago, Illinois and the Mississippi Valley Dental Society, and was one of the charter members of the first dental college authorized by the legislature
of Illinois. He was the first secretary of the Illinois board of examiners and later was secretary and president of the National Association of Dental Examiners. For more than twenty years he has been the secretary and editor of the Transactions of the American Dental Association, and was elected the first secretary of the New National Dental Association. For the past fifteen years he has been a teacher in operative dentistry in the Chicago College of Dental Surgery and later has held the same position in the Northwestern University Dental School. We might go on and enumerate the various positions of honor and trust that Dr. Cushing has held in our midst, but every one will concede that his has been an unusually full and active life for the advancement of dentistry. He is now retiring to rural pursuits to regain his health surrounded by his family in one of the garden spots of the world. Long life to him, restored in health he will be seen we hope, by many of us in the future. California is not so far away now as it used to be and if any one is passing his way, he may be seen at Fairmont, Los Angeles County, California, for lo these many years. The population of Chicago loses in him one of its stanchest and most steadfast friends and none of us feel like saying good-by, but au revoir.

DOMESTIC CORRESPONDENCE.

LETTER FROM DR. RHEIN.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir:—I have no criticism to make against your custom of publishing a letter from New York permitting the writer to make use of a nom de plume, so long as facts are truthfully recorded. But when an editor accepts such anonymous correspondence for publication he of course assumes the responsibility for mis-statements, and therefore I have no recourse but to complain to you direct for printing such gross and seemingly vicious falsehoods against me as appear in the letter signed "Borough" in the April issue of The Dental Review. The matter of interest to myself is found in the following:

"Dr. Carr has been very successful where other people have failed; he extracted teeth, and so does Dr. Rhein, according to his verbal statement made at that meeting. There were a number of us there who were surprised that he should take us into his
confidence to such an extent as to admit that. He must have met his Waterloo since the meeting of the First District Society, some years ago, when his statements were broad enough on the pyorrhœal question to leave no doubt that he had saved everything."

This is a contemptible misstatement on the part of your correspondent, made with the too evident intent of belittling the work of a confrère. A highly ethical procedure to say the least.

The "broad statements" which I made at the meeting of the First District Dental Society which left "no doubt that I saved everything" fortunately are on record to confound this malinger. Fortunately I did not at that meeting speak extemporaneously, but had prepared my discussion in advance, reading my contribution to the evening's discussion from manuscript. Thus there could not be either more or less than what I actually said, in the report which can be found in the Dental Cosmos for 1888, pages 184 to 190, and it will be difficult, indeed, for any one with ordinary comprehension of English to point out the language used by me which "leaves no doubt that I save everything." Nor is it true that I have ever on any occasion claimed that I either can or do save all teeth afflicted with pyorrhœa. As with all other diseases there are of course incurable cases, and it requires as much experience to be able to recognize when a tooth is incurable, as it does to cure the hundreds of teeth which are daily and hourly extracted in this country, and which not only could but should be saved. And that is all that I ever have announced; that many teeth which men extract can be saved, which statement is quite another matter from the preposterous proposition that all teeth afflicted with pyorrhœa can be saved.

But this is really the less important of your correspondent's statements. For it is merely a misrepresentation due, perhaps, to faulty hearing or more probably to faulty comprehension. But when a man hears what never was said and reports the same with personal criticisms he is guilty of uttering a falsehood. In this category is the following:

Dr. Rhein said that it was often a hopeless and thankless task and little paid for. Dr. Harlan's reply to that should have shown the former gentleman wherein he lacked the true professional spirit. * * * "There are too many that regard monetary remuneration as paramount," which, in plainer English, means that I only undertake treatment of pyorrhœal cases when I can be
assured of handsome fees. I deem it hardly necessary for me to cite any of the numerous cases of charity that have passed through my hands, as of course all reputable and truly professional men must necessarily do a proportion of such work. I believe I do my fair share. But curiously enough it happens that the very case reported at this meeting by myself is one for which I have little expectation of receiving even a moderate fee. The statement that I said that these cases are thankless and little paid for, is a misstatement wilfully made. I well knew that I had made no such remark, but wondering what there might have been said by me which could have been so distorted, I have taken the trouble to examine the stenographic report of the evening's discussion, and as I suspected I find that there is not a word upon which any such expression can be attributed to me. It is manufactured by your correspondent to suit his own nefarious purposes.

Trusting that you will give this the same publicity as the letter which so grossly misrepresented my hearty endorsement of what you expressed in your paper on that occasion, I am,

Yours fraternally,

New York, May 2, 1898.

M. L. Rhein.

Dr. Rhein, of New York, writes in this issue about the injustice of our New York correspondent to him anent his discussion of a recent paper on pyorrhœa, written by the editor of the Dental Review. Dr. Rhein is an old-time fighter, and instead of using satire and irony, generally wields a club with usually as much effect upon himself as on the offender. We think that the reporter probably had no intention of misquoting him. For ourself we do not remember what he said. It is not our custom to maliciously or wilfully misquote any one, and if he is misquoted we presume the correspondent will make amends in due time, meanwhile the wound will heal and all will be serene, we hope, in Greater New York. We reserve the right to change our views on any subject of such varied character as the so-called pyorrhœa alveolaris, especially in its treatment, as so many new discoveries are being made all the time that it would be folly to practice as we did twenty years ago. We have learned from experience that it does not pay to correct every little misquotation, because the misquoter generally does not know enough about the subject to make any serious impression on thinkers and students,
and those are the persons whose good opinion we care for. The others—well what difference does it make what they think or do not think. [Editor.]

LETTER FROM NEW YORK.

ALBANY, N. Y., May 11, 1898.

To the Editor of Dental Review.

Dear Sir:—Our State society is in annual session to-day, and a right good meeting we are having, too. There are about one hundred and fifty in attendance, rather larger assemblage than usually comes out, but that is due to the fact that the society is to celebrate this thirtieth year of its existence in some way fitting to the occasion before the session adjoins. Another occasion which has brought quite a number of representative men here from other eastern States just at this time is the call that was issued by the seven men who at a dinner in New York thought it expedient to get representatives together from several of the States and form an eastern branch of the National Dental Association.

This act is branded as unconstitutional by many, and they have endeavored to call attention that this is not the occasion (at a State society meeting) to presume to organize an offshoot of the National Association. That the proper place to advance such a plan is at the meeting in Omaha next summer. This view of the situation is not sustained by all. It cannot be said to-day what their sentiment will be, but to-morrow a meeting of the called ones will take place and we will know their disposition.

I held my letter to you until to-day thinking that I might be able to give you more information, but the business was laid over.

The opening exercises to-day were presided over by Dr. H. J. Burkhart, and was begun with the usual business, and the despatch with which it was disposed of was phenomenal.

Possibly because some of the old time questioners and arguers were not present.

The president’s address was unusually pithy, calling attention particularly to the necessity of some means of educating the general public on oral hygiene, recommending that the schools take it up as part of their duties, and that the dentists should lend their aid by giving their services as lecturers gratuitously if the privilege can be gained.

Dr. Carr, the chairman of the committee on laws, reported
that there was about forty per cent less infractions of the law than the previous report showed. The society had gained many convictions, etc., and through the committee on legislation had gained an amendment to the laws which enhanced their value very much. It simply remained to procure a resolution from the society calling for the appointment of a committee whose duty it would be to look into the laws of other States and those which had dental law standings equal to New York and from which applicants came for admission to practice here should be admitted to practice, etc.

Dr. LeRoy, of the committee on dental practice, read a paper on "Promiscuous Dental Desecration," in which he made a plea for the retention of all teeth in the mouth that the full sum in human economy might be conserved. Especially should we refuse to extract teeth for children too soon and diseased teeth, which is so often done on the slightest pretext rather than spend time in treatment and healing same.

Dental desecration he likened to malpractice, as would the lay people or any others if a surgeon amputated a diseased phalanx that might have been saved, even by prolonged treatment. Oral hygiene also was part of his topic, but what seemed to impress those present most was the recommendations of that committee upon the subject of education of the masses.

The argument was that dentists should contribute to the household magazine literature, as the medical profession does, and under their own signatures if they saw fit to do so.

A case was cited where one magazine announced that among the contributors for the coming year would be a number of well-known specialists, and then appended a list of sixty with no one dental specialist represented.

This was claimed would be the solution for educating the people, for they can be reached through the press by good, wholesome literature better than any other way.

Prof. M. W. Foster, of Baltimore, Md., presented some data on the Toxic "Effect of Cocaine Induced Through Cataphoresis Applied to a Pulp Preparatory to its Removal," in which it was explained that the patient suddenly gave evidences of cocaine poisoning, the rigor of which lasted for almost five hours, and even now (two weeks after) the patient has not fully recovered the partial paralysis of the special senses; visage, hearing, etc., being dim.

The discussion brought out by questions put to the doctor
that he was very ill prepared to give any but conjectural answers as to power of current, whether the pulp was exposed or not, or whether there was leakage with the soft tissues of the drug which might have occasioned the trouble. It would seem that leakage was the cause, for the cavity was well under the gingival margin.

The case was treated at their college, and it is quite probable the greatest care was not exercised to confine the cocaine.

All the speakers seemed to agree that that drug was very treacherous in its action and that they were somewhat afraid of it, but nevertheless did not feel that its use should be discontinued on those grounds.

Dr. Ottolengui as correspondent of the society made his report. He had written quite a number of letters to prominent workers in "Prosthetic Dentistry," asking what methods they would use in reproducing artificial dentures. All the answers were to the effect that they would make sectional plaster reproductions of the parts, then select teeth similar, mold and grind to place, wax and proceed as with regular work. Dr. Ottolengui explained that he would place the parts in plaster, making a mold, then remove the teeth from the old rubber, replace in plaster mold, and proceed as usual, etc.

Strange to say those who spoke to the subject did not recognize the little "catch question" in the doctor's original letters. He had asked "how to duplicate a denture," but in his explanation it really was "how to reconstruct a denture." Quite a difference.

His other question was as to "the best character of clasp," which brought out all the good methods, but there was some diversity of opinion as to the value of a perfect fitting clasp or a three or four point bearing clasp. The weight of evidence was for the former.

Dr. Hofheinz opened discussion on the subject and proceeded very nicely until he digressed to the advisability of using bridge work, which he said was one of the greatest abuses that had been conferred upon dentistry, generally speaking. Then followed gross inconsistency when he produced "before and after" models of a case of irregularity which he has corrected by extracting the incisor teeth and inserted a four tooth bridge anchored to the cusps, which was no more like the teeth removed in appearance than my teeth are like yours, and never could be made so; and that was audaciously termed æsthetic practice. I do not see how he could
have done the patient a greater injustice, unless a poor fitting vul-
canite plate was made instead.

Dr. VanWoert spoke against crown and bridge work, very
ably stating that it was fast proving a curse rather than a blessing,
more particularly because of its too frequent use apparently as a
means of advertising.

He found that he was returning to the use of the gold filling
system more each year and his practice used to be made up of
bridge piece applicants.

After this spice occurred the election of officers of the State
society in the most approved First District Dental Society manner.

No nominations were made. The president announced that
we would now proceed to the election of officers. Members will
please step forward and cast their ballots. Nobody knew who
to vote for, but the tellers who handed out the slips handed a
written ballot.

It is not necessary to say that Dr. F. LeGrand Ames was
elected as President, Dr. John I. Hart as Vice President, Dr. C.
S. Butler as Secretary, C. W. Stainton as Treasurer and R. Otto-
lengui as Correspondent.

This evening two papers will be read, illustrated by the stere-
opticon. One by I. N. Broomell, D. D. S., of Philadelphia, on the
"Normal Histology of Cementum," the other "Studies of Max-
illary Bones No. 2," by M. H. Cryer, M. D., D. D. S., of Phi-
delphia.

Fraternally,

THE BOROUGH.

DENTAL COLLEGE COMMENCEMENTS.

Northwestern University Dental School, Tuesday, April 5, 1898.


Chicago College of Dental Surgery, Dental Department of Lake Forest University, the sixteenth annual commencement, Central Music Hall, Wednesday, April 6, 1898.


Graduating exercises Columbian Dental College, Tuesday, April 5, 1898, at Handel Hall, 40 Randolph Street, Chicago.

MEMORANDA.

Dr. Louis Ottofy will sail for Tokio, Japan, June 1.
Dr. G. V. I. Brown spent a day in Chicago recently.
Dr. John Webb, of McGregor, Iowa, was in Chicago recently.
Dr. W. S. Bagley, of Chicago, went out with the First Regiment to Springfield, Ill.
Dr. C. A. Van Duzee, of St. Paul, is the Colonel of one of the Minnesota regiments.

Are you doing any original work, work that will be useful to mankind? If so send us the results.

Dr. W. H. Baird, of Burlington, Iowa, spent a short time in Chicago in April looking up new things in crowns, etc.

Several excited persons have requested us to say that Commodore Dewey plugged that Cavite in great shape.—Exchange.

The British Dental Association will hold its annual meeting at Bath, May 28, 30 and 31. This promises to be a good meeting.

Dr. James Leslie, of Cincinnati, has been spending a few days in Chicago. Dr. Leslie is still hale and well looking in spite of his eighty or more years.

And just now we are being deluged with literature on formalin and formaldehyde as well as substances into which formalin enters. How soon will the craze die out?

The twelfth annual meeting of the Colorado State Dental Association will be held in Denver, June 7, 8, 9 and 10, in conjunction with the Stomatological section of the American Medical Association.

An excellent program is assured. Those attending may avail themselves of reduced railroad rates. A cordial invitation is extended to all members of the profession.

ARTHUR C. WATSON,
Chairman Executive Committee.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-eighth annual meeting of the Wisconsin State Dental Society will be held at Madison, July 19-21, 1898. An interesting program will be provided. A cordial invitation is extended to all dentists in the State of Wisconsin who are not members of the society, and also dentists of other States to attend our meeting. Hotels and railroads will make the usual reductions.

W. A MUELLER, Secretary, R. G. RICHTER, President.
21 West Main St., Madison, Wis.

At the annual meeting of the New Jersey State Dental Society to be held in the Auditorium, Asbury Park, N. J., July 21 and 23 inclusive, the exhibit committee are making efforts to eclipse all past records.

Dr. Harvey Iredell, of New Brunswick, N. J. has been chosen chairman of
the electrical portion of the exhibit. He will have placed at the disposal of the exhibitors both a 500 and 110 volt current. Those having water motors to present can be accommodated with high water pressure also.

The exhibitors selecting space prior to the program going to print will be mentioned therein.

ILLINOIS STATE DENTAL SOCIETY.

Officers and committees Illinois State Dental Society, 1898-99: President, Chas. P. Pruyn, Chicago; Vice President, A. S. Waltz, Decatur; Secretary, A. H. Peck, Chicago; Treasurer, E. D. Swain, Chicago; Executive Committee, C. R. Taylor, Streator; Dental Science and Literature, A. W. Harlan, Chicago; Dental Art and Invention, J. E. Keefe, Chicago; Supervisor of Clinics, L. W. Skidmore, Moline; Librarian, Geo. A. McMillen, Alton; Committee on Ethics, W. E. Holland, Jerseyville, W. A. Hoover, Gibson City, P. J. Kester, Chicago; Local Committee of Arrangements, Garrett Newkirk, Chicago, J. H. Prothero, Chicago, H. J. Goslee, Chicago. Next meeting will be held in Chicago the second Tuesday in May, 1899.

DR. GEO. F. EAMES ON THE RELATION OF DENTISTRY TO MEDICINE.

In order to be dentists a most thorough study of the theory and practice of medicine is absolutely required. I can see no other way to meet these pathologic conditions in the mouth, believing, as I do, that they are the expression of some diathesis or other general disturbance. As medical specialists we are facing the serious problem of saving thousands of teeth which at the present time are being lost in spite of the great advances which our profession has made, and it rests with us, as members of the representative medical body of the United States, to use every means in our power to secure the requirement of a broader general and medical education as one of the essential conditions of graduation. If this be accomplished, the holder is sure of recognition in any medical organization, and the dental profession will stand for one of the most profound and philanthropic agents of the healing art.

TREATMENT OF ANKYLOSIS OF THE LOWER JAW.

Karl Roser (Centralbl. f. Chir., Berlin, 1898, IV, 122) has had a patient, a man twenty-two years of age, suffering for the past four years from complete ankylosis, caused by a severe bruise to the face. A T-shaped incision was made and the condyle, after considerable trouble, incised. A mouth gag was then introduced and the jaws forcibly separated until a thumb could be placed between the front teeth. In order to keep the jaws from coming together again a cork was fastened between the molars of the upper and lower jaws. A gold plate kidney-shaped and about the thickness of a ten mark piece, was bent and curved so as to fit transversely in the joint. It was put in place and a deep row of sutures used to bring the tissues into close approximation. The skin was accurately sutured. After ten days the cork was removed and passive movements begun. One month after the operation the patient was able by himself to open the teeth 1½ ctm., and by using the mouth gag 2½ ctm. were reached.

The twenty-eighth annual session of the New Jersey State Dental Society will be held at Asbury Park, commencing July 20, and continuing the 21st and 22d.
The commodious and pleasant "Auditorium" has been secured for the sessions, with unlimited space for clinics and exhibits.

Papers and clinics from many eminent dentists have already been secured.

Preparations are being made for the largest display of electrical exhibits of appliances for the use of dentistry ever before given, 110 and 500 volt current attainable.

The Hotel Columbia adjoining has been secured for headquarters for members and visiting friends; rates will be $2.50 and $3 per day.

Charles A. Meeker, D. D. S., Secretary.
H. S. Sutphen, D. D. S., Assistant Secretary.

Mattoon, Ill., April 14, 1898.

Editor Dental Review,
Chicago, Ill.

Dear Sir:—About a week ago a man came to our office who represented himself to be a Frenchman from Paris, France. He spoke quite broken and laughed at nearly everything he said. He said he was out of money and asked us for $3 to take him to Kankakee, Ill., where he said he had a position in a dental office. We advanced him the money, which he was to return the next day; but as he failed to send it, we wrote to Kankakee only to find that he had come from there here after trying to get help from the dentists there.

We regard him as a dental thief, and think he should be advertised to save others from being robbed as we were.

He gave his name as Dr. Frank Sourle, Rue Martel 14, Paris, France.

Yours,
I. A. Lumpkin & Son.

THIS IS WHAT IS SAID OF IT.

**IODOFORM.**
- Very poisonous.
- Marked and persistent odor.
- Causes eczema.
- Contains germs and is infective.
- Very feeble action upon bacteria.
- Not sterilizable in its ordinary form.

**XEROFORM.**
- Absolutely nonpoisonous.
- Practically odorless.
- Never causes eczema.
- Free from germs.
- Very powerful action upon bacteria.
- Sterilizable by simple heating.

The poisonous action of iodoform is well known, and fatal cases from its external use alone have often been recorded in medical literature. Xeroform, on the other hand, is entirely nonpoisonous and can be given internally in doses of 7 grams (105 grains) and more daily without any disturbing effect, as has been shown by Hueppe and Reynders.

**THE NATIONAL DENTAL ASSOCIATION.**

The next annual meeting of the National Dental Association will be held in Omaha, commencing on Tuesday, the 30th day of August, 1898.

Attention is called to the fact that all who were members of the American Dental Association and the Southern Dental Association at the time of the formation of the National Dental Association are now members of the latter organization.

The Constitution, Article III, Section 5, provides as follows:

"It is hereby specially provided that all persons at present permanent mem-
bers of the American Dental Association and of the Southern Dental Association
are permanent members of this Association, and entitled to all the privileges
of the class to which they belonged without further action, and the treasurer is
hereby directed to transcribe their names upon the roll of membership of this
Association."

The officers of the National Dental Association will leave nothing undone to
make the meeting at Omaha a success, and they hope the attendance and interest
in the first active annual meeting of the Association will be commensurate with
its importance. By order of

Emma Eames Chase,
Corresponding Secretary.

A complimentary dinner was tendered Dr. Geo. H. Cushing Wednesday
evening, April 27, 1898, at the Leland Hotel, Chicago, Dr. J. G.-Reid presiding. The following gentlemen were present:


IOWA STATE DENTAL SOCIETY.

The Iowa State Dental Society elected the following officers: President, W. H. DeFord, Cedar Rapids; Vice President, C. R. Baker, Davenport; Treasurer, A. R. Begun, Des Moines; Secretary, William Gilmore Clark, Cedar Rapids.
MEMORANDA.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.—PROGRAM OF ESSAYS TO BE READ BEFORE THE ODONTOGRAPHIC SOCIETY OF CHICAGO FOR THE YEAR 1898.

Meets second Monday of each month, except July and August.

January.—Symposium upon Cataphoresis. Discussion opened by Dr. E. J. Perry.

February.—Tenth Annual Clinic.


April.—The presence of Arsenic in Cements, A. B. Howatt. Discussion opened by W. V-B. Ames.


June.—Pyorrhoea Alveolaris, R. Good. Discussion opened by E. L. Clifford.

Cocaine, J. B. Dicus. Discussion opened by A. F. James.

September.—Subject to be announced. C. T. Gramm.


October.—Lantern Lecture on Stigmata of Degeneracy, E. S. Talbot.

November.—How Irregularities of the Teeth are Produced, E. S. Talbot. Discussion opened by C. S. Case.

December.—State Examining Boards, J. H. Smyser.


THE AMERICAN MEDICAL ASSOCIATION.

Will meet in Denver June 7, 8, 9 and 10. The dental section promises to be the best for years. Reduced rates on all railroads.

SPECIALISM APPRECIATED.

At one of our large dispensaries having special departments an applicant recently took tickets for each class, and spent the day obtaining expert opinions on the condition of his eyes, nose, throat, internal organs and skin, and it is said even had a little surgery done and got a tooth pulled.

STERILIZATION WITH FORMALDEHYDE.

In the December number of the *Johns Hopkins Hospital Bulletin*, H. O. Reik gave an account of sterilization experiments with formaldehyde gas. More recently, he has described an apparatus 7x12x12 inches, giving an air space of little more than 1,000 cubic inches. A Schering lamp is used in vaporizing the pastilles. Not only can metallic surgical instruments of steel, aluminium or nickel be perfectly sterilized without any apparent detriment whatever, but ivory, hard and soft rubber utensils as well. It would seem to be more or less generally applicable and ought, therefore, to prove serviceable in the sterilization of minor articles whether surgical or not.
THE DENTAL REVIEW.

A DEFINITION OF MEDICAL PRACTICE.

John Hunter said that "definitions are the most damnable things," and certainly the definition is often by far the most troublesome part of a proposed legal enactment. A Kentucky judge has recently given a definition of medical practice which seems to be fairly satisfactory. In pronouncing sentence upon an "osteopath" who was convicted of having subjected a child suffering from tuberculous disease of the hip joint to cruel and unnecessary torture, he laid it down that "any person who for compensation professes to apply any science which relates to the prevention, cure, or alleviation of the diseases of the human body, is practicing medicine within the meaning of the statute." This concise definition is probably comprehensive enough to include every form of quackery.—British Medical Journal, March, 1898.

ON THE DISTRIBUTION OF THE ALKALOIDS IN THE CINCHONA PLANT.

After reviewing the history and literature of the subject, Ed. Schaer discusses an article by J. P. Lotsy, which appeared as an appendix to the report of the government cinchona plantation of Java, second quarter, 1897.

Unfortunately, only the results are given and no mention is made of the methods employed. A general résumé of results is given as follows:

Alkaloid is found in parenchyma and not in sieve-tissue. It occurs in green cells.

The alkaloid is a normal content of living parenchyma cells, also in living cells that differ little from the parenchyma form.

Cells containing oxalic acid contain no alkaloid.

In general (there are exceptions) in young organs such as leaf-parenchyma and the vegetative point, we find the alkaloid dissolved in the cell-sap. In older portions, as the secondary bark, on the contrary, it is solid and amorphous.

The alkaloid is most frequently found in the form of tannate. Whether it is also present in combination with other acids has as yet not been determined.

As a rule, very active cells, such as those of the cambium and the outer portion of the vegetative point, bear no alkaloid. Near these centers of activity, however, it is abundant.

Much more alkaloid is found in the vicinity of the vegetative point of the stem than in that of the root.—(Arch. d. Pharm., 235, p. 647.) A. Van Zwoltenburg.
ORIGINAL COMMUNICATIONS.

Failures in Cataphoresis.*

By G. E. Lob, M. E., Chicago, Ill.

When electric medicamental diffusion, or as it is better known, "cataphoresis" came into frequent use in the practice of dentistry about two years ago, a great deal of enthusiasm was expressed by those who tried first its application, and all the dental journals brought more or less praising articles about the new and easy process of obtaining local anaesthesia by means of the electric current. A great number of devices and instruments were put on the market, with all kinds of claims for perfection and superiority of working. Every practitioner who had a successful case spoke about it in dental societies or meetings, and in all the State and local dental meetings a part of the program was devoted to papers written on this subject. With all this excitement going on what was more natural than that our western dentists with the progressive spirit so characteristic of them were willing to try its application, although many a man did not have the necessary preliminary knowledge of electrical principles and handling of electrical currents and appliances necessary to make it a success. Cataphoresis was applied indiscriminately right and left, and very often without ever taking the most rudimentary precautions against failures. It is obvious that under such conditions operations could not and have not been always successful, and as much enthusiasm as was shown on the start, as much discouragement took place when the expected results did not always come, and often hours were spent without obtaining the desired anaesthetic effect. The

*Read before the Chicago Dental Society.
large majority without going deeper into the problem of electric medicamental diffusion concluded at once that the whole process was a fake. Others not so radical in their opinions thought that perhaps the instrument used was not properly made. A very few honest to themselves concluded that their lack of knowledge may have had something to do with the poor results obtained. But in all cases a good deal of cold water was thrown on the first enthusiasm, and only a comparatively small number of conscientious practitioners, undisturbed by the hasty opinions expressed by many, continued to use the process, and tried to lay down certain rules for its application, so that we are able to say without hesitation: There is no reason why cataphoresis should fail if properly applied, and every reason to believe that anaesthetic effects can be obtained in a very short time. In order to prove this it will be necessary to refer to the nature of the electric current used and the fundamental laws governing its regulation, and as not all of you may be familiar with these laws, for the benefit of those who are not, I will try to give a short and simple explanation of them to facilitate the understanding of the important points to be observed in cataphoric operations.

Electricity is a form of force. What it is further than this no one knows any more than one knows what gravitation is. Two general classes of electricity are named, static and dynamic, often called galvanic. Similarly we could speak about gravitation. The words explain the difference. Static electricity is a condition where a charge tends to flow, but cannot because the circuit is not complete. It is electricity at rest. If a weight rests upon the floor there is static gravitation. The weight tends to move, but cannot. Make a hole in the floor and it moves. The floor acts as a resistance. So with static electricity, it does not move because there is too great a resistance. There is no proper conductor upon which it can move. As soon as a conductor is provided the current flows. This current is called dynamic or galvanic.

We possess many means and ways of producing electricity, among which chemical action and mechanical power are the ones most commonly used. The best and simplest example of explaining the generation of electricity affords us the centrifugal blower, which consists simply of a number of fans rotating in an enclosed vessel and when in action will produce a compression of the air at one part and a rarefaction of the air at another. That is, it
will force the air out of one part and draw it in at another. If the two ends of a tube are attached to these two points a current of air will flow through it in a definite direction. The mechanical pressure of air which is generated in the blower being of a positive character (having a density greater than that of the atmosphere) at one part, and negative (or suction, or less than the atmosphere) at another part, corresponds precisely to the electrical pressure or potential in batteries and machines. In both cases if they are allowed to equalize themselves they will produce a current in a certain direction, from the positive to the negative in external circuit, and from negative to positive within the machine, or battery, itself. This pressure, which in mechanics is expressed as so many pounds per square inch, corresponds in electro-technics to what is termed electrical pressure, electro-motive force, potential or tension, and which is measured in volts. In the case of air the zero or normal pressure corresponds with that of the atmosphere, for when air in a confined vessel is at atmospheric pressure there will be no current produced if the vessel is made to communicate with the air. In the case of water, the zero level is taken as that of the ocean. Similarly there is a zero level of pressure of electricity with which other pressures can be compared. This is the natural pressure of electricity in the earth itself. The earth, as we well know, may be regarded as a reservoir of electricity of infinite quantity, and its pressure is taken as zero. If one pole of a battery or other generator is connected with the earth, and the current tends to flow from it to the earth, then that pole is assumed to be positive; and if the other pole be similarly connected the current will tend to flow from it to the generator, and is therefore assumed to be the negative pole. As in mechanics a pressure is necessary to produce a current of air, so in electrical phenomena an electric motive force is necessary to produce a current. A current in either case can never exist without a pressure to produce it. From this the important law is deduced that a difference of electrical pressure cannot exist at two points of a conductor without generating a current between those two points. This current of electricity expressed in amperes represents quantity per second just as it would do in an air current, and in many other respects is very similar to the current of air produced by the blower. It will be seen from this that the object of an electric machine, battery or other generator, is to maintain a continuous electrical pressure of electric motive force, the amount of which
shall be equal to that which is consumed. For in that case only can a continuous current be maintained. Properly speaking its object is not to generate electricity, for there is practically an infinite quantity of that in the earth itself, and were it only quantity of electricity which is wanted, there would be no need of machines. Electricity in quantity without pressure is useless, for it cannot be made available under such conditions for operating lamps, telegraphs, etc. It is a current which is required, and this can be maintained only by a constant renewal of pressure, which is what the battery, machine or other generator does. As electricity is neither consumed in lamps nor actually generated by machines, it follows that to each electrical machine or battery there must be two conductors or wires, one to lead to it the supply of electricity at low pressure, and the other to lead off the electricity at high pressure; while on the other hand in lamps or other apparatus where the pressure is consumed, the location of the wires is precisely the reverse.

The truth of the proposition that electricity is not actually generated in the machines, nor consumed in lamps, may be demonstrated by measuring the actual quantity of current flowing in through one wire and out through another, which will always be found the same. The action is precisely analogous to what takes place in the centrifugal air blower, which, as we well know, generates pressure but not air. It may also be compared to a hydraulic pump which generates the pressure of water, but not the water itself. As much water must flow into the pump as flows out at the other end. From these remarks the following important laws become self-evident. As the pressure and not the electricity is that which is produced and consumed, it follows that the current strength is always the same in every part of a given circuit. The purpose of a battery or electrical generator is to generate and maintain an electro-motive force or electrical pressure. Whenever this pressure is allowed to act or to equalize itself, a current of electricity will be produced.

The electrical resistance which opposes the current is also quite analogous to the mechanical resistance which must necessarily be encountered by every current of air. The only difference is that the electrical resistance depends only on the cross sectional area, length and nature of the material of the contact medium, while with a current of air the resistance is affected by
certain other facts. The laws governing electrical resistance are, that the resistance increases with the length of the circuit, and that it diminishes as the area of cross section increases.

The very simple relation which exists between the electric pressure or electro-motive force, the resistance, and the resulting electric current, forms the basis of almost all electrical computations, and is known as Ohm's law. This law is nothing more than a statement of the fact that the result of any action increases when the cause of action increases and diminishes when the force opposing this action increases. From this well-known law two others necessarily follow. One serves to determine what pressure or electro-motive force is required to produce a certain current through a certain resistance. It follows from the law above given that this electro-motive force will be the product of the given resistance and the given current. The other enables us to find what resistance is to be necessary in order that a given electro-motive force shall produce a certain current. This resistance will be readily seen to be equal to the electro-motive force divided by the current.

To sum up the foregoing we find that in all electric calculations we have, first, the electro-motive force expressed in volts; second, the quantity of current flowing per second expressed in amperes; and third, the resistance in the conductor expressed in ohms. From what has been said it will be seen that there is a close interdependence between these various units. If, for instance, we double the volts expended on a given resistance, we shall double the amperes. If we maintain the number of volts, but cut down the resistance to one-half of its former amount, the amperes will again be doubled. It will thus be seen that if we know the amount of any two of these terms we can find the third, and consequently have a means to regulate the amount of current flowing by interposing a variable resistance, which is ordinarily called a rheostat.

But before going any further another important point in the use of electricity must be mentioned. We have spoken before of the resistance opposing the flow of current, and checking the electro-motive force. Obviously this resistance must be a conductor of electricity, although its conductivity may be more or less great. It is of the greatest importance and convenience that there are bodies which conduct and others which do not conduct
electricity, for we are thus enabled to direct electricity exactly to the spot where we desire its action. Substances which do not conduct electricity, such as glass, silk, ivory, wax, rubber, etc., are called nonconductors, or insulators. Of the conductors there are several classes from the metals, carbon, etc., to the so-called "half conductors," such as acid, salt, and alkali solutions, as the conducting capacity of various bodies varies widely. Metals are the best conductors, but even they differ very much. For instance, one yard of copper wire allows ten times as much electricity to pass as one yard of German silver wire under otherwise equal conditions. It would be more correct to say that German silver wire has ten times the resistance of copper.

The resistance of a body depends on its length and diameter. The resistance increases with the length; ten yards of wire having twice as much resistance as five yards of the same wire. If, however, the diameter of the conductor increases the resistance decreases accordingly.

The resistance of the human body varies very widely. If two small metal electrodes of one-half inch square are placed on the dry, cold skin, the resistance will be rather more than one hundred thousand ohms. If you use, however, large electrodes, about two inches and a half diameter, cover them with a sponge or cotton, and place them on the skin, after having well soaked the sponge in warm salt water, the resistance will not be more than about three thousand ohms, and get less within a short time under the influence of the current itself. It is principally the skin which offers the great resistance, whereas the blood, nerve fibers, etc., conduct comparatively well. The resistance of the dentine varies according to the structure; a soft dentine will offer less resistance than a hard dentine.

Before closing these general remarks it will be well to mention the principal effects an electric current produces. A magnetic needle is deflected from its direction toward north if a current circulates in its neighborhood; a quality which is used to detect the presence of a current and to measure the strength of it. A piece of steel or iron, around which a current passes, becomes magnetic, and fluids are decomposed by the current. If we connect two metal or carbon plates with a battery and immerse them in water, the current will decompose the water, oxygen gas appears at the plate connected with the positive pole, called anode, and
hydrogen gas on the plate connected with the negative pole (kathode). If the plates are immersed in a solution of metal oxides, for instance, sulphate of copper, metallic copper will be deposited on the plate connected with the negative pole.

If we send a current through the human body, at the negative electrode, potassium, sodium, hydrogen, etc., are liberated, and at the positive electrode, oxygen, chlorine, acids, etc. Electrolysis has been chiefly investigated by Faraday, but its theory is quite complicated. It may be summarized according to Dr. Wm. J. Morton, as follows:

First, electrolytic conduction is invariably accompanied by chemical decomposition, and only occurs by means of it. Second, the electricity does not flow through, but with the atoms of matter, which travel along and convey their electrical charges. Third, the electrical charge belonging to each atom of matter is a simple multiple of a definite quantity of electricity, and this is an absolute constant quite independent of the particular substance to which the atoms belong.

Electricity is conveyed through an electrolyte in what has been called a double progression of atoms; when the electricity passes in this manner the molecules of the electrolyte are decomposed and one set of atoms is positively charged and moves from positive to negative electrode, while another set of atoms is negatively charged and moves from negative to positive electrode. Therefore, it is by a double progression of atoms that the current is transmitted. The process is of the nature of convection, as the atoms act as carriers. In electrolysis the charge each atom carries is the same, but the speed at which the different atoms move through the electrolyte varies according to the character of the atom. Hydrogen travels faster than any other kind of atom and the conductivity of a liquid depends upon the sum of the speeds of the two opposite atoms in the compound.

From the other effects of the electric current it may be well to mention here that if electrodes are placed on the human body, and the current is suddenly closed or suddenly broken the muscles will contract. The irritability of nerves diminishes near the anode and increases near the kathode; the circulation of the blood and the nutrition of the tissues gets stimulated. The current heats metallic conductors, carbons, etc., in passing through them. Bad conductors become more heated that good ones, and if a current of
twelve amperes passes through a platinum wire of about six-tenths of a millimeter diameter the wire will get red hot, so that it can be used for cautery purposes. And if a current of about an half an ampere passes through the thin carbon filament of an incandescent lamp, the lamp gives a brilliant white light which we use for illuminating.

Before closing these general remarks, it may be well to state here for the benefit of those not familiar with electrical terms that as the amount of current used in electro-therapeutics is very small, in all medical calculations the term milliampere expressing the thousandths part of an ampere is used instead of ampere and fractional parts.

After having explained thus far the general principles governing the handling and regulating of electrical currents, it has to be seen what the conditions are in applying them to the case of cataphoresis. We have an electro-motive force in our source of electricity (battery or generator) which forces a current through a conductor consisting partly of metal wire, a rheostat of variable resistance and parts of the human body, such as dentine, the soft tissues and the skin. According to Ohm's law, as explained before, we are bound to get a certain amount of current through this conductor, which will be in proportion to the electro-motive force and the amount of resistance offered by the conductor. In the moment our electro-motive force is constant and we can regulate this resistance in such a way as to allow a very gradual increase or decrease of current, we have all the electrical conditions to produce the desired result, and there is absolutely no reason why we should fail in this if the preliminary preparations to carry the current through the proper channels have been made. What I understand by preliminary preparations is the perfect insulation of the tooth to prevent any leaking out of the current, the use of such electrodes as the size and location of the area to be anaesthetized may require, an absolute good contact and the proper medicine.

The first thing to be considered is what current shall be used. If you have electric lights in your office it is but natural to think of this most convenient source of electricity, and in fact a great number of dentists have used and are still using the regular light current with more or less success. But the more we become familiar with the cataphoric treatment in dentistry, the more we come to the conclusion that there are very serious objections to the
use of the regular light current. In the first place, we have to deal with a sensory nerve, and the most sensitive in the whole human structure, whose function is to produce the sense of pain with the very slightest irritation. In the second place, the current from a dynamo is not so steady as to assure a continuous, even flow. Every direct current dynamo is inherently an alternating current generator, whose alternating current impulses are changed into a direct current by means of the so-called commutator. Every segment of this commutator is connected to one coil of the armature, in which a current is induced as soon as it cuts the magnetic lines of force of the field poles at right angles. This current increases the nearer the coil comes to the magnetic field or lines of force, and decreases when moving away from it. The direction of its flow is determined by the polarity of the magnetic field, so that when the coil has left the field of the north pole and before entering the field of the south pole, the flow of current will stop entirely for a moment before changing its direction, occurring at each half revolution. The brushes which press against the commutator segments insulated from each other take off the current. They are out of contact with the commutator during the break, that is when they pass against the insulators between the commutator segments, and brought into reversed contact with them at the instant of current reversal occurring, as stated above, at each half revolution. The position of the commutator segments with reference to the brushes is reversed as the currents are reversed, and hence the currents are all made to flow in the same direction through the external circuit. From this it will be seen that although a direct current is generated through the commutator a continuous going up and down is taking place, there being two waves or fluctuations for each coil or commutator segment, which will be less noticeable the larger the number of commutator segments is. In the case of many fluctuations each one of course will be very small, but it is still a fluctuation. For the purposes of incandescent lighting, such a circuit is called a continuous current, and the fluctuations are not noticeable in the lamps; but if a telephone ear piece is connected to such a circuit, the hum and buzz produced by the fluctuations can be heard distinctly. It is evident that they will be felt by such a sensitive organ as a tooth, especially when it is in a congested state. There are, however, other objections to the use of the dynamo current for cataphoresis'
such as lightning, accidental grounding of the patient or changes in the polarity, which occur oftener than is most commonly thought, and which in the opinion of any careful operator make it most desirable to use the battery. What batteries are best to use is a question which can be solved very easily. Any cell capable of yielding the desired strength of current for about fifteen minutes will answer the purpose. As the current required for cataphoric operations never exceeds two or three milliamperes ordinary cells used for so-called open circuit work, that is intermittent work with sufficient time to recuperate, will give satisfactory results in cataphoresis. All the sal ammoniac cells such as the LeClanche, Sampson, Diamond Carbon, or Laclede batteries work very satisfactorily and will last for many years, but they take up a good deal of space, and the solution in itself will require some attention. Lately the manufacture of dry cells has reached such a point of perfection and their price is so low that they are preferable to any other cell.

It may be well to mention here a point which is raised almost every day by dentists asking for advice as to the use of batteries. Why can't we use our cataphoric battery to operate a mouth lamp or use the storage cells which run the office motor? A few words will explain why this is not practicable. Every cell works at its best advantage when it is used for the purpose it is made for, or when the rate of discharge is in proportion with the work it is intended for. Any cell is limited to the amount of current it is able to deliver, and if this current is taken out at a rate much higher than what the cell is made for, the cell will be exhausted in a very much shorter time. This holds good for primary as well as for storage cells.

In cataphoric operations sufficient electro-motive force to overcome the high resistance and very little current is required, while it takes a low voltage and from 600 to 800 milliamperes of current or about the amount of 800 cataphoric operations to run a small mouth lamp. Storage cells are made for the delivery of strong currents and expensive at the first outlay, so that in order to get the necessary voltage for cataphoresis a number of cells must be added, which would cost far more than all the primary batteries that possibly could be used in ten years. As to the number of cells necessary, twenty to twenty-five volts give all the range of pressure desired, and I have reason to believe that even
in most of the cases a very much lower voltage will not only answer the purpose but do the work better and in shorter time. When I come to speak about the amount of current used in cataphoric operations, I will explain the reason why.

After the question of source of current has been settled the next is the current controller or rheostat. I do not intend to give here a description of all the forms and combinations of current controllers used to that purpose, but will only confine myself to stating what they ought to do in order to secure a perfect control of the current without pain or danger to the patient. The first requirement of a current controller for this class of work is, that it should be able to regulate the flow of current in such a way as to allow the most gradual increase or decrease in the smoothest possible manner. To obtain this three different ways of connecting the controller to the current are used. First, the series connection, where the rheostat is connected in the same line with the patient, one after the other. In this case the resistance must be very high in order to get perfect control, and even then in case of any accident the patient will be exposed to its effects. The second is the so-called shunt connection, or where the patient is on a derived circuit, while the regulation is done on the main line. In this case the resistance of the controller need not be so very high as in the series arrangement, and the patient will not be exposed in such a degree to shocks or any other accidents that may occur on the main line.

The third way of connection is a combination of the two before described methods. We might call it a series shunt connection. The whole current has to flow through a high resistance in series, and the patient will be in a derived or shunt circuit only, after the current passes through the resistance. This method combines the advantages of series and shunt connections, and allows, if the proper resistance in the rheostat is used, a much more economical use of the current than would be possible with the two other systems. This is quite an important point, as it will directly affect the battery and assure it a much longer life.

In regard to the resistance material to be used in controllers, the most natural to be considered first would be the German silver wire, which on account of its comparative constancy under normal temperature is used in the ordinary test instruments. Two objections must be made to its use in cataphoric instruments, of which
the foremost is the large volume necessary for high resistance. All current controllers for cataphoresis should have a high resistance, so that the resistance of the patient shall cut as little figure as possible in proportion to the total resistance of the circuit. Now in using No. 36 German silver wire, which is almost too fine to assure a perfect contact, it takes 100 feet to get a resistance of about 550 ohms, and winding this on a cylinder three inches in diameter would make an instrument at least six inches long. But as the resistance should not be less than 3,000 ohms, and rather more, the size of such a controller would be too large for most of our dentists to place in their offices. The second objection is that such a fine wire under the action of the current is bound to stretch after a certain length of time and thereby break the contact.

Of the other possible resistance materials, such as water, mercury and graphite, only the last one deserves any consideration in the present case. Its very high resistance under small volume and the ease with which it can be brought into any convenient form or shape make it preferable to all other resistance material. A good deal has been said about the variation in resistance of graphite. Of course nobody would think of using graphite as a resistance in test instruments, as it is not constant enough for that purpose; but in a cataphoric operation, where the resistance of both the instrument and the patient is very high, a change of even five per cent could easily be neglected. Very accurate experiments to that effect in our electrical laboratory have shown beyond any doubt that the variation in the resistance of graphite does not exceed one per cent. Time will not permit here to prove the correctness of the above statements by figures, but those who will be interested in the matter will find a more detailed explanation in Dr. Morton's book on cataphoresis under the chapter "Rheostats."

From what has been said so far it may be seen that it is not only very desirable but absolutely necessary to have some means of determining the electric conditions of the procedures. An instrument to do this is called a milliamperemeter and must be sensitive to at least one-tenth of a milliampere of current. The so-called pain limit in a patient's sensitiveness is very variable and can give no sure indication of the electric condition. Through lack of proper insulation the largest part of the current may flow through some easier channel, while still enough current is going
through the tooth to give a sensation. In such a case, of course, the effect will come very slowly, if ever, and I think that a large percentage of failures is due to that cause. The milliamperemeter affords the only means of knowing of this condition, and this will save time and trouble. It will also show any change of resistance through bad contacts or drying out of the liquid.

Outside of the current, the rheostat and the milliamperemeter, the style and size of electrodes deserves special attention. The larger the electrodes the smaller is the resistance of the human body. With electrodes of ten square inches, twice the current can be sent through the body than with electrodes of five square inches surface under otherwise equal conditions. This leads us to the density of current, or in other words, the proportion of the strength of current to the sectional area of the conductor. Sufficient attention has not been given by operators to this question, and its influence upon the rapidity of cataphoric absorption. If for instance with the ordinary point electrode with one square millimeter surface used in ninety-nine cases out of a hundred, one milliampere is passing, the current is three times as dense as if an electrode of three square millimeters of surface was used; or the patient is receiving the same total amount as before, but diffused over a larger area, so that it is reduced to one-third at any given sensitive point. The same principles can be applied to the negative electrodes. Statements that such and such results have been obtained with so and so many milliamperes are therefore incomplete unless the diameter of the electrodes used and the time of application are mentioned as well. The ingenuity of the operator will overcome any difficulties arising from the use of too dense a current, in keeping in mind the general principles as explained above. It may be well to state here that the metal part of the electrode should under no conditions come in actual contact with any part of the dentine affected.

In coming to the different solutions which are used in dental cataphoresis, the question about the theory as to the forces at work and their particular action on these forces should be mentioned. The fundamental principles have already been mentioned upon which the introduction of medicine into the human tissue by cataphoresis is based. There are two different theories which best try to explain the process. Dr. Weston A. Price, of Cleveland, in a paper read before the American Dental Association last
year, tried to explain it as a combination of the electrolytic action as a principal, and the osmotic pressure as an accessory, while Dr. W. J. Morton, in his book on cataphoresis expresses his views as follows: That the directive movement of fluids by electricity is a property of the current coincident with electrolysis, but that electrolysis is only useful in so far as it insures the existence of a current and allows the propulsion of disassociated and electrically charged molecules constituting the medicament along with it. In other words he lays more stress on the osmotic pressure aided to some extent only by electrolysis. I will not attempt to discuss which theory is right, but the experience of some of our best practitioners well posted in electro-therapeutics, has shown beyond any doubt that anaesthesia can be obtained in much shorter time when a very small current is used, than when it is attempted to crowd the current as much as possible with the idea in view to accelerate the cataphoric action. The best explanation given for this fact is made by Prof. W. J. Herdman, of Ann Arbor, Mich., who says that by using a very small current the electrolyte is only decomposed into its ions without destroying the physiological effect of the medicament while in increasing this current the ions are dissolved into their atoms, and thus impeding if not preventing anaesthesia. In all cases the fact should be borne in mind as very important that better results are had from a low current.

As to the use of solution, a saturated aqueous solution of cocaine with perhaps some sodium chloride or electrozone added to improve its conductivity will answer. A good many put cocaine crystals directly in the cavity of the tooth and a small cotton pellet soaked in water over them, and many others use guaia cocaine with great success. In all cases the cotton pellets should neither be too thick offering too much resistance to the passage of the current, nor too wet so as to let the liquid out of the cavity and cause a leak of current.

A last word to the very important question of insulation. Rubber dam should be applied to every tooth operated upon, because it insulates perfectly. But this insulation depends upon the manner of application. It is often ineffective, however skillfully applied. Unless the dam hugs the neck of the tooth closely, leaks will occur and sometimes it is impossible to effect this. Often a coat of chloro-percha around the neck of the tooth will prevent the flow of saliva. The tooth should be perfectly dry on the outside
and a covering of rubber or sandarac or shellac varnish can never do any harm. If the cavity is an approximal one and the filling in the next tooth is too close to allow of its satisfactory insulation the rubber may be applied only over the tooth to be worked on, thus insulating; or preferably, the rubber being already in place a second dam may be applied over the tooth to be worked on, which can be removed after anaesthetization. The large majority of failures are due to an imperfect insulation and care enough cannot be taken in that respect.

Summing up what has been said, to make cataphoric dental operations a success it will not be sufficient to have a cataphoric outfit. A little knowledge of fundamental electric principles, a good milliamperemeter, a judicious selection of the electrodes, a very careful and minute consideration of all the preliminary stages before turning on the current, and a little bit of good common sense are just as necessary to prevent failure as a good and reliable controller.

In closing my paper I thank you for the attention and courtesy extended, and hope that the foregoing remarks, although not in any way complete, will be a help to spread the knowledge in the use of the cataphoric process and its underlying principles, and thus aid in a more general application of a simple means to relieve suffering from a most dreaded pain.

The Presence of Arsenic in Cements.*

By A. B. Howatt, D. D. S., Chicago, Ill.

At a recent meeting of a local society during the discussion of a paper, by Dr. H. J. Goslee, on "The Advisability of Devitalization in Crowning Teeth," several theories were advanced as to the probable cause of frequent death of pulps under metal caps; the chief one of which was presented by Dr. J. H. Prothero, who called attention to the fact that arsenic in some form or other was present in most all of the zinc oxide powders prepared by the manufacturers of cements.

This assertion seemed to offer food for thought and opened up a channel through which it is not impossible to attribute the probable cause of the death of many pulps under crowns, in cap-

*Read before the Odontographic Society, April 11, 1898.
ping operations, and even from ordinary cement fillings, and has induced me to make a series of experiments along this line, the fruit of which will no doubt be as surprising to many of you as it was to me.

Procuring some twelve or fifteen samples of various makes and subjecting each very carefully to "Marsh's test," it was found that not one of them withstood the reaction for arsenic; that none showed the entire absence of it, while many showed it in large and varying proportions.

However, as only a limited time could be given to these experiments, it was not possible to make a thorough quantitative analysis; yet the deductions reached are based upon the results of a plan which was adopted and carefully carried out, and while perhaps to some slight extent inaccurate, yet sufficiently convincing in general, and will serve to give some conception of the quantities involved.

The test referred to, "Marsh's test," was used exclusively in the experiments which on account of the difficulties encountered, and for the reason that many perhaps may not be now familiar with it, will be briefly explained in detail.

Into a large mouthed bottle is inserted a double perforated rubber cork through which passes two glass tubes, one of which is a funnel tube, the other a shorter one, and the end of which is tapered to a fine point.

In the ordinary experiments hydrogen gas is generated in the bottle by the action of hydrochloric or sulphuric acid upon metallic zinc, but as it is almost impossible to obtain a specimen of zinc which does not contain traces of arsenic, after repeated trials, metallic magnesium was used in its stead.

When it was found that all of the air had been driven from the bottle, the hydrogen escaping from the fine pointed tube was ignited and the flame tested for arsenic. If the flame was found free the measured quantity of zinc oxid (one gramme) was suspended in dilute hydrochloric acid and poured into the bottle through the funnel tube, and the resultant flame in each case was allowed to play upon the porcelain for five minutes.

On the porcelain plates which are exhibited will be seen a comparison of the arsenic spot, the one made by the zinc oxid powder, and a spot made by what some of the wholesale chemical houses sell as chemically pure zinc.
It will be observed that the gray powders give a less reaction for arsenic than the yellow, owing probably to the higher heat to which they are exposed in fusing, arsenic being volatile at 400°F. It was also found that different specimens of the same make of cements gave varied results.

Acknowledging these deductions to be conclusive then, in the evidence of the presence of arsenic in cements, it is comparatively easy to ascertain the ultimate injurious effects which must be attributed to the placing of cement in contact with any surface of a tooth not protected by enamel; and to trace perhaps the cause, or at least one cause, of the death of pulps under crowns or cement fillings. If, then, cement in proximity to or in contact with the pulp is an irritant, which is conceded, is it due to the presence of arsenic?

In conclusion, I wish to acknowledge the kind assistance and encouragement given by Dr. Goslee, and to thank Dr. Ames for the specimens of cement submitted by him; and if this paper will be the cause of future investigations along this line the essayist will feel amply repaid.

THE PASSING OF THE FOOT POWER.*

BY LOUIS OTTOFY, D. D. S., CHICAGO, ILL.

One of the most interesting indications of progress during the last few years lies in the improvements made in dental machinery and dental appliances looking to the conservation of the energy of the operator; and to my mind none has been of so great importance as the application of the electric current to the dental engine, and the consequent passing of the foot power. The most important appliance of the operator is beyond question the dental engine, which, with its many improvements and adjuncts, is almost in constant use from the time of the application of the rubber dam until its removal upon the completion of some of the longest and most trying and tedious operations.

With the constantly increasing developments in business lines, necessitating the establishment of electric light and power plants in some of the smallest of villages throughout the country, the days of the foot power engine are being slowly but surely num-

*Read before the Odontological Society of Chicago, April 19, 1898.
bered. I will not make the claim made by some, that it is impos-
sible to accomplish the same results with a foot power engine as
with one sped by electricity, but I believe that it is impossible to
accomplish the same results, with any reasonably proportionate
expenditure of force and energy; while at the same time, I have
little doubt that one who has become accustomed to the use of the
current cannot return to the old style and execute his work with
as much satisfaction to himself.

When I became interested in the application of electricity, I
took advantage of every opportunity to notice the various appli-
cances made and put on the market, and it seemed to me for a time
doubtful that anything to which an operator could readily become
accustomed, which he would have under complete control, or
which would not at the slightest provocation get out of order,
could ever be evolved. Then my first experience, about eight years
ago, trying to run an engine with the ordinary cells, keeping the
cells clean and in order, and the entire outfit in condition for use
at all times, made me confident that the electric engine was not
yet here to stay. But during the last six years I have operated
entirely with the use of an electric engine, and the day has passed
when it is possible for me to go back to foot power.

I have briefly classed the requirements of a dental engine and
its advantages. It should be so made that it can be readily
adapted to any office, and it should be possible to conform it to any
arrangement of the office already existing; it should be possible to
start, stop, regulate the speed, and to reverse it under complete
control from either side of the chair, and entirely with the foot. It
should not exhibit to view a lot of machinery, wires, connections
and switches, nor should a motor hang in front of the patient,
buzzing while it runs. If possible it should be so constructed
that the machinery may be put in another room, if that be desir-
able, thus certainly obviating all noise. I have noticed nearly all
dental motors, and have seen most of them in operation; no motor
remains permanently noiseless; wear and tear, even of cone shaped
axles, etc., will eventually cause the motor to become noisy, hence
if it can be put out of the operating room, so much the better. It
should be impossible for the current to reach the patient by any
means, and if it can be so constructed as to use any kind of power,
so much the better. It should not necessitate the operator to
stand on one foot, or on part of the foot. I have seen some in
use where it was necessary to stand either on the toes or on the heel while switching on and off. My electric outfit has a clever arrangement of a disc which propels a little rubber wheel, and while the engine is instantaneously reversible, the motor is not reversible, a movement which soon makes a motor noisy and wears it out. This disc which I mentioned also gives the advantage that while the motor may be running at full speed, I need not use more speed than is desirable. I do not value the advantage of being able to stop my engine instantaneously as much as it might be valued by others. I have found by experience that the catching of the rubber dam by a revolving disc is quicker than the perceptive power of the eye, and considerably quicker than the movement of the foot (which I always leave free to stand squarely upon) toward a switch-board; and when the rubber dam has once been caught, I take my time very leisurely to unravel the situation. The engine cord is left very slack, and when it meets with the resistance given by the tangled dam and disc, the movement is so diminished that it nearly stops, and it is an easy matter to untangle them. Aside from that one thing, I cannot see much use for a sudden stop. The reverse movement is valuable for changing discs or mandrels, reversing discs of stone or sandpaper, when they are so fastened to the mandrel or to such a mandrel which makes that practice permissible.

Another great advantage of my electric engine is, that it is so constructed as to leave the motor free to be used for other work as well, so that the lathe can be used at the same time the dental engine is in use. Some objections have been made to engines using a cord, on account of the roughness of the splice and the possibility of its giving away so often. Whatever there was objectionable about this feature has been overcome. The cord now used is hollow and very strong, susceptible of being spliced and locked without the use of thread and needle, wholly preventing slipping or loosening of the joint and eliminating the knotty enlargement which causes thumping at the pulley under the old method of sewing the cord.

I obtained my outfit from Messrs. L. J. Mason & Co., and since obtaining it they have made many valuable improvements both in the device for controlling the engine and in the manner of suspending the engine for the convenience of the operator, showing
that progress is steadily made on lines best calculated to save to the operator his physical energies for the benefit of his mental.

I am anxious to learn of everything new and practical, if there is anything, and although perfectly satisfied, I recognize that there is always opportunity for improvement; if, therefore, this brief paper, hastily written, upon very short notice, will bring out a discussion, I shall be repaid for the effort.

President's Address.*

By J. A. W. Davis, Galesburg, Ill.

Members of the Illinois State Dental Society: Time in its never ceasing flight has brought us to another annual meeting of the Illinois State Dental Society. With the year just closed the Illinois State Dental Society has been fulfilling its mission for just one third of a century. Who can fully estimate the great work in all its varied departments in the elevation and scientific development of the profession in this third of a century? That its work in every way has been very creditable and commendable, I think all who are conversant with its history will readily admit. That it has accomplished all that can be realized for the benefit of the profession of the State at large, no one I think will claim.

In last year's annual address, Dr. Taylor expressed the opinion that the State society was showing signs of indifference or inactivity in the last few years in the line of professional progress. I hardly think the facts will bear out this conclusion. Our transactions have been published right along, and if any one will compare the work of the society in its earlier years with that of the latter, I think it will be found that its work in all departments has been equally as progressive and elevating as any work in its history. The Illinois State Dental Society in every department of its work, from its organization down to the present time will bear a very favorable comparison with any State society in this country. Some have gone so far as to assert that it is the peer of any society in existence.

At no time in the past history of the world has there been so much time, labor and energy devoted to the formation and development of societies for the mutual aid and development of every department of science as at the present.

*Read before the Illinois State Dental Society.
There are three leading elements that have been mainly instrumental in the unsurpassed progress and development of our profession. They are the dental journals, the dental colleges and the dental societies. But of the two former we do not now propose to speak. And as much as we are indebted to our colleges and journals for what they have done for the profession, all will, I think, agree that to the various societies scattered all over this land should the honor be given of exerting a very marked and direct influence in the enhancement and development of dental science.

In order that we may more clearly see what has been done in this direction let us go back to the time when there were no dental societies in existence.

Prior to 1840 there was but little fellowship, public or private, between dental practitioners and every acquisition was hoarded up for private use and the secrets of the laboratory and operating room were never exhibited to a fellow practitioner for any consideration whatever. Is it any wonder that under this supreme state of illiberal bigotry no material progress should have been made in all the years that preceded the organization of the first American dental society in 1840? This society exerted a great influence in dispelling that system of selfish exclusiveness which denied to others the benefits of individual experiment; and in time, though by slow degrees, this exclusiveness became a reproach. From the organization of this society dates the dawning of that spirit of liberality and social fellowship which now pervades the profession and which more than all else has made it what it is—useful, honorable, dignified, progressive, learned and humane.

From that time down to the present societies have multiplied until there is ample opportunity for membership in one or more for every worthy practitioner in the profession. What are the immediate and direct benefits to each member of the profession who is an habitual attendant of one or more dental societies? Whatever general effect is produced by these societies upon the profession at large they of course have the same effect upon each individual member who avails himself of the privileges and benefits to be derived therefrom.

The object of dental societies is to increase professional knowledge, both theoretical and practical, to bring together all worthy operators so that they may know each other better and thus be better prepared to forbear with one another and to act in
closer accord and harmony in the elevation of our profession. Every practitioner owes a two-fold duty, a duty to himself and a duty to the profession at large. It is every dentist's first duty to improve, to educate and elevate himself, helping forward his brother practitioners at the same time by all reasonable methods. Each one has within himself the capability and free action to a large extent; and the fact is proved by a large number of the eminent men in our profession who have successfully battled with and overcome the adverse circumstances of early life and have reached the positions they now occupy by dint of the energy and inherent resolution of purpose that has ever marked their career in the advancement of the profession. Is it not a fact that the achievements of these men in our profession are the results of great trials and difficulties that they have encountered and overcome?

Let every dentist in our State resolve that he will do his full duty to himself and to this society and the first step is already made. This resolution is half the battle. This is giving to others the most eloquent of all lessons, that of example, which teaches far more emphatically than words can teach. By thus doing our duty we incite others by imitation to perform their duty and if the majority of our practitioners will only in this way act how much wiser, how much more efficient and reliable as a whole would the entire profession of the State become.

Having briefly adverted to some of the work done by our societies for the profession at large and to all who have availed themselves of their benefits individually, it now remains for us to see at least some of the things yet to be accomplished by them. In order that our societies may become more fruitful, more elevating and progressive with the entire profession as well as the individual members, we must induce every worthy operator in the profession to become a member of one or more of our dental societies. Of the 1,800 or 2,000 dentists practicing in the State, we have only been able so far to secure for this society a membership of 269 at this time, including all classes of members, nonresident, corresponding and honorary members. We ought to have, and I believe we can raise our membership to 600 or 700 by making the proper efforts. From the replies Dr. Allen received last year to the questions sent out I am convinced that many do not have a correct knowledge of the scope and real objects of our dental societies. Many perhaps think they cannot afford to attend. To
such I would reply that did they know their true value they would readily come to the conclusion that they could not afford to stay away. Others stay away from a general indifference and the want of a proper knowledge of the societies. Still another very large class stay away because they are already so wise in their own estimation that no society can teach them anything more. What a happy consummation. How they must look down with ineffable disdain from their proud and lofty position to view us less favored mortals who are constantly toiling onward and upward but still see that much desired state, perfection, far in the distance. To this class of dentists we would suggest that if they have really reached perfection in our profession they are the very ones above all others who should attend our societies and impart to their less favored brethren some of their preëminent skill and knowledge. There are some who seem to think that they are not wanted in the State society because they never received an invitation to become a member. It is probable that we have been remiss in our duty to some in this respect. If so let us in the future permit no one to give this as a pretext for not becoming a member of this society.

We do not claim that dental societies can readily transform every poor and indifferent operator into a paragon of perfection, but we do claim that they will make of every honest seeker of truth and progress a better dentist in every sense of the word than he can be without them. Nor do I deny that there may be good operators that do not attend societies, but I think I may safely say without fear of contradiction that if they are good operators without the aid of a society they would be much better operators by placing themselves under a society’s influence. If the professors in our colleges, the editors of our journals and all of the most eminent members of our profession consider these societies so essential to them in this day of rapid progress, what shall we say of their crowning necessity to the wants of the great masses of the profession who have not as yet been brought to a position where they can see and fully appreciate the benefits to be derived from them?

Then let each member of this society individually endeavor to bring within our fold every worthy dentist in our State, and to this end let us organize a local society in every city and locality where there are practitioners enough to make it practical.

Great interest has always been manifested in the clinical
department of our State society, and the two recent meetings of two local societies—the Chicago Dental Society and the tenth anniversary meeting of the Odontographic Society of Chicago—very fully demonstrates the widespread interest felt in the clinical part of dental society work. Therefore I would suggest that next year's meeting be made an anniversary meeting and that it may be largely devoted to clinics, and that this meeting be held in Chicago where the college buildings will afford ample facilities for clinical purposes. Doubtless such a meeting would give great impetus to our society and add greatly to its membership.

The Dental Protective Association has done a grand work for the dental profession in freeing it from the clutches of patent sharks and certainly deserves the united and earnest support of every dental society in the country. This society should give it every aid and encouragement within its power and its members should individually strive in every possible way to augment its membership. It has not received the support from the profession at large that it justly deserves; many seeming to be willing to receive its protection but unwilling to render it any financial aid, allowing others to pay for what they have received in the way of protection. For the further advancement of the profession it needs men, true men of energy and unfailing industry and perseverance, men who will honor and if need be make personal sacrifices for its advancement and elevation, men who are willing to make researches in the interest of the profession; in short, men of noble nature and high aspirations, pure in morals, courteous in demeanor and of high intellectual culture.

Could our profession be composed of such men and such only how soon would it attain that exalted position among the learned professions that it should occupy. In the love then we bear our profession, by the hallowed memories of those earnest workers who have passed, by the interest of the living present and the great needs of an unborn future, let us ever keep working and the tiny seed will grow into the sapling and the sapling into the tree and under its shadowy foliage we may end our years with the consciousness that we have not wholly lived in vain.
Report of the Committee on Dental Science and Literature.*

By A. W. Harlan, M. D., D. D. S., Chairman, Chicago, Ill.

In pursuance of time honored custom, this report is made to epitomize some of the things that have been brought out during the year.

Among the new books of note we find a new edition of Tomes' Dental Surgery, edited by C. S. Tomes. From a somewhat careful reading we find it to be more complete than any previous edition, and can recommend it as a safe guide to students and practitioners.

A new edition of Richardson's Mechanical Dentistry by Warren (G. W.) is likewise a good laboratory guide, practical, and having no useless padding as many revised editions are likely to have.

Ambler (H. L.) has published a practical treatise on Tinfoil which is very complete, and we hope it will be read by many who are now filling too many teeth with cements and amalgams of indifferent composition. (Copper amalgam seems to have dropped out of sight lately.)

E. W. Roughton has brought out a work on Dental Surgery which has been running as a serial in the British Journal of Dental Science. This is a compact work, and we think it will prove of service in minor surgery.

H. S. Nash has published two volumes on Pyorrhœa Alveolaris, but from the criticisms so far published, we are not able to say just how valuable this work may be. It is understood that a revised edition will be out soon to be brought up to date. (Better wait until that is out before you buy.)

The three best books of the year are Marshall's Diseases of the Face, Jaws and Associate Parts, by John S. Marshall, M. D., of Chicago, and Black's Dental Anatomy, fourth edition, by G. V. Black, M. D., D. D. S., Chicago. The arrangement of these works makes it a pleasure to read them. While we may not agree with everything to be found inside the covers of these works, we take pleasure in recommending them to students and surgeons for faithful perusal.

The American Text-book of Operative Dentistry, edited by E.

*Read before the Illinois State Dental Society.
C. Kirk, D. D. S., is the third on the list which we consider ought to be in every library.

Personally we prefer a single author's book, but the next best is associate work of specialists. Many of the chapters of this book are exceedingly good essays and sometimes they overlap each other. The work is more useful for the practitioner than the student, but even here we may err in our estimate of it. The practice is mostly sound and orthodox, and you will not miss it if you buy it.

Morton's work on Cataphoresis will likely commend itself to practitioners who must get some knowledge on this subject, but it is a padded work of large type, on thick paper, and the price is out of all reason for the subject matter. If it had been made a $2.00 book it would have had a large circulation. Its merits are obvious, but most everything in it has already appeared in journals. A second edition will probably come out, or some other author will publish a new book which you can afford to wait for.

Farrar has volume II. out on Irregularities, but we have not seen it.

Vulcanite Work, by Henry Rose, is a good English monograph.

Books on various subjects in French and German have been published, but as most of the audience do not read French or German, these works are omitted from consideration.

JOURNALS.

Several new candidates have appeared, the most notable being *The American Dental Weekly*, edited by B. H. Catching, D. D. S., Atlanta, Georgia. (Catching's Compendium is no more.) This is a well gotten up, carefully edited paper and deserves to succeed. The price is $2 a year. There is a good list of collaborators, and we wish it success.

The *Indiana Dental Journal*, published at Indianapolis, is a monthly, price $2. Dr. Geo. E. Hunt is the editor, and he is making a very readable journal.

If the profession would only read books, not skim them, much better work would be done everywhere by editors and be more satisfactory to subscribers.

*The Dental Brief* is a new name for *Welch's Monthly*. It is what its name implies, with a fondness for peculiar spelling and peculiar missionary editorials. It certainly does no harm and may do some good by giving wider circulation to "funnigraphs" and some solid matter.
The Dental Century is a new journal published in Madison, Wisconsin.

A few journals have died, and one or two others have changed names; but all the others are thriving.

SCIENCE.

What is science? In making a report of this character, we are not quite sure whether progress means science or not. It seems that instrument nomenclature would be thought science, but we think not. It is more literature than science.

The composition of alloys and the making of amalgam fillings is partly science and partly mechanics. At any rate, progress is to be noted in this line. It seems more than likely that after five or ten years more we will be able to observe that real progress has been made in the matter of making alloys and amalgam fillings. At present we are on the fence looking at the work. We do not believe that perfection has been reached by any experiments. We are waiting for the returns. Much good work has been done, but not enough to settle the question.

The microscopists and bacteriologists have had it all their own way for the past few years, so we cannot report anything new in technique or in results.

Dr. M. H. Cryer has covered himself with glory in some new dissections of the cranium which he exhibited at home before the American Medical Association. These were published in the association journal recently. The writer has searched for some epoch making discovery in pure science, but the only ones which can be reported are the liquefaction of air and the condensation of formaldehyde into a solid.

A few of the subjects which have received most of the attention of the profession during the past year, are the following:

The revival of the study of using tin and gold in combination, and the tendency to return to a more extended use of gold foil in its soft state, will result in the making of many better fillings. The scientific investigation of the behavior of amalgam fillings will tend to yield good results, for it will not be long before those who give the matter the closest attention will freely admit that amalgam is at best a very poor filling material, and while in some cases it is indispensable, these cases are rare and far between; and if therefore the day when this truth is to be proclaimed is drawing
nearer, we cordially approve of the energy displayed in investigation. Cataphoric appliances have been considerably improved, and many of the obscure phenomena are coming to be understood, thus enabling the operator to use this process with more intelligence.

In closing, we would suggest that when you go home be sure and read two or three good novels and a few biographies and some books of travel and a little of Herbert Spencer with a few other miscellaneous works, and your summer will be well spent. That is what we are going to do for recreation from the hard work of daily practice.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Stewart Building, May 3, 1898, with the president, Dr. J. E. Hinkins, in the chair.

Mr. G. E. Lob read a paper entitled "Failure of Cataphoresis."

DISCUSSION.

Dr. J. E. Nyman opened the discussion. He said: Even were I inclined to adverse criticism, I would in simple justice feel obliged to compliment the essayist upon his paper. He has given us sound, scientific statements accompanied by clear, common sense explanations, a close study of which will be of profit to all of us.

One of the most essential features to the successful application of the cataphoric action of electricity is the contact of the positive electrode. It should be held constantly and firmly in contact with the parts upon which we wish the current of electricity to act. It is a tedious operation to try to hold the electrode by the hand. You must anticipate every movement of the patient, and an involuntary movement, in deep breathing, or coughing, is liable to break the contact, give him a shock and cause decided pain.

Various devices have been invented for maintaining the anode in place by mechanical means. As a rule they are unsatisfactory. They are bulky, and the difficulty of operating them is increased in direct proportion to the elaboration of the device. I have a
little scheme which is so simple that I can highly recommend it to you, and so far as I know it is entirely original with myself. If any one else has done this before I am willing to yield the honor to him. I take an ordinary rubber dam clamp, slip a piece of No. 15 rubber tubing upon it onto the arch of the clamp (illustrating). Then take fine insulated copper wire. The insulation should be waxed so that moisture will not soak through it and establish a shunt current through somewhere. To form the positive electrode you bind onto a piece of iridio-platinum wire, No. 28 gauge, and you have the positive electrode which will not be subject to electro chemical decomposition. In order to prevent this metallic surface from coming in contact with the dentine of the tooth at any point, wind this piece of iridio-platinum wire with cotton, the same as you would wind cotton on a broach. When you get to this point (illustrating) remember what Mr. Lob spoke of, namely, concentration of current. You must avoid that. You must have just as large a contact surface for the electrode as the cavity will permit. In order to do this I proceed as follows: I take the end of my iridio-platinum wire, wind it on in spiral fashion upon a little tapering rod of orange wood, clamp it down—clamp it down between thumb and forefinger—and I have a flat spiral. You can make a number of positive electrodes in this way of various lengths and diameters. After you have adjusted the clamp, pass it around this (insulated) arch of the clamp and it will bind itself in place. There is a certain spring to this iridio-platinum electrode that will hold it firmly against the dentine of the tooth. A layer of cotton should be placed in the bottom of the cavity, so that the current is always forced to pass the electrolyte, which should be a saturated solution of cocaine. I will pass these two things around for your inspection. The device is really valuable, and it is so cheap and simple that you can make them for yourselves. I use a simple solution of cocaine in distilled water. I do not want salt or anything else in it, because of possible electro-chemical complications. The solution of cocaine will be broken up, and the alkaloidal cocaine will seek the negative pole. I do not want any sodium to seek the pole along with the cocaine; neither do I want any chlorine, which might arise from a strong salt solution.

A much mooted question is as to whether cataphoresis is distinctly an electrical phenomenon, or whether it is simply electrolysis under another name. I am firmly of the belief that
cataphoresis is cataphoresis; that it is entirely different from electrolysis. It sometimes acts in conjunction with electrolysis, and sometimes it acts directly the opposite.

Dr. Herdman, of Ann Arbor, uses a term which means the opposite of cataphoresis, namely, anaphoresis. Briefly cataphoresis means a movement with the electric current from the anode to the cathode, while in anaphoresis we have the opposite condition. In cataphoresis the electrolytic action will assist the cataphoric action. In anaphoresis the electrolytic action must act in direct opposition to the cataphoric action, bearing in mind that cataphoresis is a distinct electrical phenomenon. This has been proven by experiments, which I will briefly mention. In the first place, I quote from Weston Price's experience. He obtained anaesthesia of the pulp by means of cataphoresis, and in the electrolyte used by him he employed a quantity of morphine. After removing the pulp he subjected the pulp to treatment by nitric acid; then placing the pulp tissue under the microscope he was able to detect the presence of morphine in the pulp. We have still better authority for this, namely, Mr. Silvanus P. Thompson, of England, who is one of the most noted and reliable authorities on electricity. He quotes Parret, who obtained this result by experimentation. (Here Dr. Nyman made diagrammatic sketches to illustrate his points.) This is almost proof positive that cataphoresis is a distinct electrical phenomenon. The fact that cataphoresis will force fluid in the direction I have shown, and the converse, that forcing it back again establishes a current, proves that it is a distinct phenomenon of electricity.

A cause of some of the failures on part of dentists in trying to obtain cataphoric anaesthesia, particularly in diseased conditions of the teeth, is the fact that as you increase the current you may irritate the pulp of the tooth as to further increase the congestion.

There is another possible cause of failure. Mr. Napier Shaw, in his treatise on electrolysis, says that if the product of decomposition is allowed to accumulate around one electrode until the fluid in that vicinity is different from the general electrolyte, the whole character of the decomposition changes. It may be, you go to work and with a strong current in a congested condition of the pulp you set up electrolytic action faster than cataphoric action can take place; and as Mr. Lob has said, these chemical compounds have a tendency to break up into molecules, as the acid
radical and the alkaloid radical of the hydrochlorate of cocaine. The alkaloidal radical is an organic chemical compound, and it in turn may be broken up into its various chemical atoms if the current is increased beyond a certain point.

As a matter of fact I do not pretend to know that these are the actual causes, but I offer these few thoughts as an explanation of some of the effects that we obtain in the application of cataphoresis.

Dr. E. J. Perry: Scientifically speaking, I know very little about cataphoresis. I simply know that under given conditions, with a saturated solution of cocaine on a pledget of cotton, introduced into the cavity of a tooth, the tooth properly insulated, I can produce anaesthesia of the pulp or obtund the sensibility of the dentine, so that I can excavate the cavity as much as I desire. That is all I know about it. I do not know whether it is electrolysis or electrical osmosis.

The discussion has been opened very successfully, consequently there is nothing left for me to say further.

I congratulate the society on having got so able a paper upon the theoretical aspect of this important question. We can study it with great profit.

Dr. J. E. Keefe: I have read carefully the paper presented by Mr. Lob this evening. His sketch of electrical principle and mechanical analogies, I must say, are the best we have had on this subject.

The paper cannot be discussed. I can only recommend it to you to read and study carefully. It is a short lesson in electricity, and should be of great assistance to all who use the current for cataphoric work.

I wish to remind you of an important point that Mr. Lob called our attention to in his paper, and it is a matter of surprise to most of us. He tells us that the less current we use the better and quicker will be our results. We learn from this that we have been attempting to use too much current. If one-twentieth of a milliampere of current will produce the desired effect, we certainly have been causing our patients unnecessary suffering by attempting to force more current than was necessary for the best results.

I understand from Mr. Lob that he and Dr. Ames made some
experiments and obtundent sensitive dentine in seven minutes and less with a current registering one-twentieth milliamperes.

I have been requested to say something about the instruments we use. Mr. Lob recommends the graphite instrument in preference to the German silver wire rheostat. The graphite instruments have certainly been greatly improved upon of late.

The question of resistance has caused a great deal of discussion, and varying opinions are still expressed on the subject.

German silver and carbon are principally used, and each has advantages and disadvantages. German silver, from its high specific resistance, low temperature coefficient and freedom from oxidation, has always been a favorite material to employ for resistance coils. The principal difficulty we have to deal with in the use of this substance is the securing of an efficient contact between the wire and the device for varying the resistance. By proper care this trouble can be entirely overcome.

The claim is made for graphite that its superiority arises from its poor conductivity or high resistance, and the decrease of this resistance with rise of temperature. Both statements are true, but in themselves offer no points of superiority. They may, on the other hand, give rise to defects which do not exist with a wire rheostat. The fact that a small amount of carbon provides a high resistance may produce a grave evil, because a slight motion of the contact arrangement may throw into or out of the circuit a comparatively large amount of resistance, producing a sudden change in the current strength which is very undesirable. This is especially apt to occur with the ordinary contact device, where there is no means of gradually moving the latter, and where its pressure upon the carbon surface is uncertain and exceedingly variable.

We are told that several thousand ohms are desirable, and that, therefore, German silver is at a disadvantage. I confess that I do not see the reason for so great an amount of resistance, particularly since we are advised that only a fraction of a millampere is required to accomplish our results. If so small a current is desirable, why not decrease the electro-motive force of our battery, and consequently the resistance inserted in circuit?

It seems to me that the smaller we make our battery the better it will be. The large batteries were employed with the idea of supplying sufficient current to produce anaesthesia on the supposition
that a great deal was necessary. I was of the opinion that if exceedingly minute currents such as those referred to are sufficient for our purposes, we can and should reduce everything in proportion, so that decidedly less resistance than that recommended will answer every requirement.

The paper throws out many suggestions for further research. There are many uncertain and undecided points, and it is only by careful study and experimentation that the truth can be known. Let us pay more attention to these matters in the future, and endeavor to place the applications of electricity to dentistry upon a firm and certain basis.

Dr. W. V.B. Ames: I have been exceedingly interested in Mr. Lob's paper. As Dr. Keefe has said, it is one of the best papers of its kind we have ever had, and we ought to make a close study of it when it is published. I had the opportunity of reading it, and there is a great deal in it which can be studied to advantage. The matter of the amount of current that should be used is rather startling to one who gets right down and makes close experiments, and who has a reliable milliampere meter to record the current. I have heard a great many dentists say that they were successful in using cataphoresis, and they thought that was sufficient. They did not see the necessity of using a milliampere meter. Before I had one I thought I was successful with cataphoresis, but I date my real success in electro-cocaine anaesthesia to the purchasing of a milliampere meter. About this time I received a suggestion indirectly from Dr. Batchelor, of Milwaukee, that electro-cocaine anaesthesia should be obtained in from six to fifteen minutes, and I started in to see whether I could accomplish these results or not, and I may say that I consider fifteen minutes a long time for obtaining satisfactory anaesthesia. I find that it can be obtained ordinarily in six or seven minutes. The consumption of more time undoubtedly depends on the amount of current we allow to go to waste. The milliampere meter tells us directly whether we are wasting the current or utilizing it all. In given cases we know that from a twentieth to a tenth of a milliampere will be sufficient depending on the cross section area of the cavity, so if the patient tolerates a half, a whole, or a milliampere and a half, it is immediately evident that the most of the current is going to waste. In this way it is a saving to you in time because you
immediately stop and correct the difficulty, and you know when you have it corrected. This brings me to the matter of insulation.

As Mr. Lob says, the rubber dam is a perfect insulator in itself. But if you perforate the rubber dam and stretch it over the tooth, there are large chances of leakage through the gum tissue where the resistance is less. If you have an operation performed in your own mouth, it is astonishing to find how readily you can get leakage from the cavity to the edge of the rubber dam and detect it by the tip of the tongue. The tying of ligatures is objectionable. If you can cut holes of small size in the rubber dam far enough apart, having the rubber as heavy as you can use conveniently, with plenty of elasticity in it, so that it will hug the neck of the tooth closely, I believe it is wrong to apply a ligature about there at all, because in that way you draw the edge of the rubber from where it naturally tends to hug the tooth and create a leak where you would not have one if you did not use a ligature. Unless the ligatures are steeped in melted wax, or thoroughly saturated with chloro-percha or something of that sort, the ligatures themselves are the means of conveying the current around the neck of the tooth to some point where there is gum contact, in that way causing a leakage. The best insulation material that I know of, better than wax, gutta-percha, chloro-percha or anything of that sort, is oxyphosphate mixed to a creamy consistency, flowed about the margins everywhere near the cavity that you are about to work upon, and sometimes you can make a regular box cavity out of a proximal cavity which is naturally a bad one to work upon. The cavities that are often spoken of as being thoroughly out of the range of possibility of this procedure are those deep proximal cavities where we cannot get rubber beneath the gum margin and effect insulation in that way. After you have packed gutta-percha and gotten the gum out of the way, or excised it, and there is no haemorrhage, you can apply the rubber dam, and if it is not possible to carry the little connecting portion of the rubber which passes between the teeth down beyond the margin of the cavity, simply slit or cut it out, then getting everything fairly dry, mix the oxyphosphate to a thin consistency, flow it upon the adjoining proximal surfaces, upon the lateral surfaces and upon the gum between the teeth. Let it harden and you have simply a box cavity like a crown cavity which is thoroughly insulated.

I have two models here which will illustrate that point. One is a
posterior cavity in a second bicuspid, such as I have described, the cavity reaching considerably below the gum margin, so that the gum must be pressed away. The other one did not go to such depth, but I have brought it as an illustration of the possibility of using oxyphosphate to hold the rubber dam in position and do away with the use of the clamp. I do not like to use a clamp anywhere near where I am going to use the current. These are two demonstrations showing that we cannot only hold the rubber dam without a clamp, but we can make a simple box cavity out of a bad one.

If Dr. Weston A. Price were here to-night I am sure he would have a few things to say in answer to Dr. Nyman. I have the article by Dr. Price in my pocket, and I think Dr. Nyman has a misconception of what Dr. Price had to say regarding the introduction of morphine into pulp tissues. Dr. Price used morphine in combination with cocaine and was able to detect morphine in the pulp after its extraction. The morphia got there exactly as the cocaine did. If the tests were as delicate as those for morphine he would readily have found the cocaine present in the pulp. I do not see for my part that what Dr. Nyman has said proved that there is a special cataphoric action independent of electrolysis. I will read some extracts from the article of Dr. Price regarding this point.

After giving the laws governing the phenomena of osmosis, he says: "These above observations hold good for practical application if the force we are dependent upon is osmosis. We can make our deduction as to this both from a clinical and theoretical standpoint. Will osmosis carry cocaine into dentine to any considerable extent? To answer this I have sealed a saturated solution of cocaine into cavities for two days without producing anaesthesia, except on the very surface of the cavity. I have also applied it for some time to an exposed pulp and could not cut very far into it. Sulphate of strychnia and bichloride of mercury applied on cotton to the chest of frogs produced no physiological effect, while with a current death was produced in a few minutes. This at one stroke seems to answer the question as to whether osmosis alone can produce this condition."

The experiment of Porret in which liquid was caused to pass through a porous partition, did illustrate that there was such a thing as what he termed "electric osmose," but electric osmose is
not looked upon by modern authors of repute as an electrical phenomenon per se, but as only a secondary effect of electrolysis.

The current discovered by Zuinke on forcing liquids through a diaphragm, I understand, has been found by later investigators to be nothing more than static electricity produced by the friction between the liquids and diaphragm. From what I have been able to learn of the subject there seems to be every reason to attribute the introduction of cocaine hydrochloride, and other vegetable alkaloids to electrolytic migrations of ions, rather than to some distinct electrical phenomenon about which we know nothing.

Dr. J. E. Nyman: I would like to say a word or two in justification of myself. I am one of those unfortunate individuals who think a little faster than they talk. I did not intend to say it was cataphoresis that was the predominant force at work, but I do say that cataphoresis is a distinct electrical phenomenon. At the same time I admit that electrolysis may be the predominant factor in obtaining electrical cocaine anaesthesia. A current of electricity will decompose the electrolyte, and the converse of that is true, if you decompose an electrolyte under certain conditions you set up a current, proving electrolysis a distinct phenomenon of electricity. A current of electricity raises the level of a fluid on one side of a diaphragm and lowers it on the other. And conversely, if you have fluid of different levels on either side of a diaphragm, forcing them to a common level will set up a current of electricity, proving that cataphoresis is a distinct electrical phenomenon.

In regard to Dr. Weston Price's experiments, I did not mean to say there was no cocaine found in the tooth at all. I know perfectly well that the tests for cocaine are not delicate enough. I said he found morphine there, and I do not think it was an electrolytic action alone that took it there.

Mr. Lob (closing the discussion): Time does not allow to discuss Dr. Nyman's explanation of the real cause of cataphoresis, which he calls a distinct electrical phenomenon, but he agrees with me in the point brought out in my paper, namely, that better results are obtained by a small current. This is a very important point. The natural tendency of every dentist who uses cataphoresis is to crowd his current as much as he can, thinking that he can get better and quicker results by so doing. If you gentlemen will experiment along this line you will find out by practical experience that you can get much better and quicker
results with a very small amount of current, and I believe the time 
will come when the current will simply be turned on to show 
a flow of from one-twentieth to perhaps three-tenths of a milliam- 
pere, and then let it act for from five to ten minutes. 

In regard to the remarks of Dr. Keefe with reference to rheo- 
stats, I agree with him that a wire rheostat would be easier con- 
structed if it could be made in such a way as to combine high 
resistance with easy gradation. Graphite offers high resistance to 
the current without taking much space, and as far as gradual regu- 
lation of the current is concerned, standard test instruments do 
not show any perceptible difference. Graphite has been used in 
Europe in rheostats where high resistance was required, for 
electro-therapeutic work, for over thirty years, and I never heard 
of any complaint. The present graphite rheostats on the market 
for dental cataphoresis have always given good satisfaction, when 
properly made.

The Odontographic Society of Chicago.

A regular meeting was held March 14, 1898, the president, Dr. 
G. W. Schwartz, in the chair.

Dr. W. H. Fox read a paper on “Crystal Gold.” See page 351. 
Dr. R. B. Tuller: I do not suppose it is always necessary 
to take an opposing position to the essayist in discussing a paper, 
and I certainly do not in this instance, for I am quite in accord 
with about all that he has given us in his paper, and I do not 
know that there is much for me to say. It robs one of the possi- 
bility of saying a great deal when a paper coincides so thoroughly 
with one’s own views, and particularly as regards what has been 
added in the circular he has just read. What we want to get at 
is the truth pro and con. This circular letter gives a most com- 
plete account of crystal gold and what it will do in the hands of 
an operator who has studied it thoroughly, understands its pecu- 
liarities and uses it constantly. It is the best testimony we could 
have in regard to it. I think in the use of crystal gold it requires 
the same good common sense and judgment that we would exer- 
cise in using foil, that is all.

When I commenced the practice of dentistry I undertook to 
use the crystal gold that was then on the market. Watts’ gold was 
in the form of a loaf. One was required to pick off particles of it
with pliers or a sharp instrument, or slice it with a sharp razor and cut it into squares or pellets to suit convenience. I had no fault to find with it at that time personally, but I was scared by what others had said regarding it, and had fears of work coming back to my hands, and was thus caused eventually to abandon it for a time. I took it up again about six or seven years ago. I took great care at all times in the use of it, and I do not remember that any of the cases in which I used such gold have come back to me as failures.

There are several forms of crystal gold, some of which have not been enumerated in the paper, and about 1876–77 I was using a good deal of what is called Pack’s crystal pellets. It was a different form altogether of crystal gold from the Watts’ or anything of that character. I do not know how it was manufactured or produced. However, it came to us in little square or oblong pellets with an outer covering of foil, and the inner portion of it, if you picked it apart, seemed to have flakes of foil matted together rather than having such a crystalline form as we find in Watts’ and others. I used a great deal of that form of gold in the first year or two of my practice, and some of the best fillings I ever put in I believe was with that gold. I have had an opportunity of seeing a number of them not long since, and they are in excellent condition to-day, and it is now about twenty or twenty-two years since they were put in. This is evidence to me that that particular form of crystal gold was excellent. But that did not appear to work much differently from foil pellets. I handled it very much as I would foil. The little pellets were more like pellets of foil we use now than Watts’ or other such forms of crystal gold. We could not, however, double them over as easily as foil. In other ways they seemed to work, if I remember correctly, with about the same facility that foil did. I think they are on the market still.

There has been put on the market since then a crystalloid gold which you all understand, I presume, which seems to be almost a powder or dust of gold, included between two layers of foil, and the foil being cohesive the edges are sealed together. When cutting to the desired size for use, the shearing seals the edges again so that the dust does not waste unless you puncture the envelope. That form of gold I have used to some extent. I did not manipulate it carefully I suppose and punctured these little envelopes and wasted a good deal of it, and abandoned it on
that account. According to the statement of those who have used it, it is a form of gold which produces excellent results, and it can be made to do anything we want to do with gold. You can work with it more rapidly. I have heard Dr. J. G. Reid make the statement that he used this form of crystal gold exclusively, and thought he saved about one-third on time.

The electrolytic process of producing crystal gold has improved it wonderfully over what it was in the early days. There is no question about that. It is as free as possible from foreign substances that might affect its qualities.

In regard to the fineness of the gold, as the essayist has said, some dental manufacturing companies claim 1,000 fine for crystal mat. I had a conversation with Dr. DeTrey when he was here, and he told me that his gold was a fraction less than 1,000 fine, and that to produce it finer than he produced it would make it cost too much. He conveyed the idea that if it was produced absolutely 1,000 fine, it would cost in the neighborhood of $400 an ounce, and that it really could not be produced 1,000 fine for much less than that. I think I am correct in the figures. You can take the statement for what it is worth. These matters are to be settled between the manufacturers and not ourselves. They must furnish us with a gold to satisfy us. I have used some of the DeTrey or solila gold recently, and I am pleased to say it gives me satisfactory results. I have used it in several cases. I had a case the other day where I wanted to work very rapidly. I promised to let a man out of my chair at a certain time, and I found I had undertaken a larger job than I had expected. I had to hustle to get through with him. I had some DeTrey gold, and I went to work with it and was pleased to find that I accomplished my work on time and had a little to spare, and felt satisfied my filling was a good one in all respects. Rapidity is one thing in favor of this gold, as with all of the crystal forms of gold. I have thought I could fill teeth with it more rapidly even than with Watts' crystal gold or White's mat gold, and I can usually make better time with them than with cohesive foil.

Several years ago I became familiar with White's crystal mat gold, and after having used Watts' crystal gold in its old form was pretty well satisfied with it. In its later form, in strips and cubes, Watts' is much more convenient than it used to be. I took up the use of crystal mat gold to see how I would like it, and I found it
crumbled; it was difficult to turn it over on itself and manipulate it without having pieces break away and causing considerable waste. I corresponded with Mr. Lewis, the head of the firm about it, and he asked me to make any suggestions I thought would be of use to them in improving the gold. It occurred to me that strips of foil on the outside might be useful in holding the mass together and prevent them from dropping apart. This suggestion was carried out, and I found in my own practice after that it helped a good deal in filling, particularly in upper teeth. Instead of a particle of gold breaking away or dropping down the foil held it and with an instrument it could be pushed back into place.

I tried two or three experiments about this time that may be of interest. I took a separating file and made an impression upon its cut surface with the different kinds of gold. I took crystal gold mat and Watts' crystal gold and pellets of foil, using about the same sized pieces as nearly as I could judge, and with a large, broad instrument pressed them down into the serrations of the file; then examined them under a magnifying glass, and the result was that the crystal gold made a finer impression, going clear to the depth of those cuts in the file, while the foil bridged from one high point to another, showing in this instance that the crystal gold would carry into the deep recesses easier than foil would by simply compressing the gold, or forcing the whole mass together just as you would take an impression of anything. This proved conclusively, to my mind, that the same thing would occur in filling teeth in pressing gold to the wall of the cavity where there was unevenness of the surface. There would not, of course, be such marked unevenness in a cavity unless, perhaps, in case of sharp undercuts, but the ordinary unevenness of the surface in a cavity would be more perfectly filled, under proper manipulation, with crystal gold than it would with foil; and yet I am satisfied that most of our operators who use foil can condense and adapt it as thoroughly as need be because the test of time has been given to it and we know they can do it, and have made comparatively perfect fillings.

I know I have done it, and am doing it. I have not abandoned foil and don't expect to; but I have faith in the crystal golds, believe they have many good and desirable qualities when understandingly manipulated, and that they have a place among our different forms of gold for filling and preserving teeth.
The circular has touched upon the faults that have been attributed to crystal gold, saying that one of them is due to the operator in trying to force masses into cavities, not properly condensing them, and taking it for granted that the gold could be properly condensed by large pluggers. Every piece of gold must be gone over again with a small plunger which will carry it where you want it; it must be gone over with a small plunger to be sure that it is condensed. I have put in many of my fillings with hand pressure, and they are satisfactory in every way. The DeTreys advocate hand pressure in the use of their gold. They claim that in malleting you are apt to condense too much and make the gold too hard, and you get better results by the use of hand pressure. I cannot say about that, getting it too hard, but know I have made numerous satisfactory fillings with hand pressure.

I have used gold and foil together wherever I felt there was any necessity for it. There are places I find once in a while in my experience, where I have felt I could take a little pellet of foil, tuck it in some recess up under the edge of a cavity better than I could do it with crystal gold. I have used foil with crystal gold back and forth as I have felt the necessity for so doing, putting both in one cavity; and I have finished sometimes with crystal gold, and in finishing up with sandpaper discs and strips I had as beautiful a surface as I ever got with foil, even the thick foils. I have made many complete fillings all crystal gold.

With reference to the shapes and forms of instruments, we should use those forms of instruments with which we can carry gold where we want it. If we are pressing against a wall we should have an instrument that will carry the gold to place and condense it against the walls properly, or in getting into a clearly defined recess, use a plunger proper for such a place as to carry the gold to the bottom. When filling with crystal gold, if it is a cavity I can keep in such a shape, I press toward the walls and keep my filling higher at the walls than in the center.

Dr. Royce has some instruments I like very much in working with crystal gold as well as foils, but I would like to have several forms of these instruments made for hand pressure. I want some that are turned at right angle. All of his forms that I have seen are for mallet. One caution right here in using hand pressure with crystal gold, one must be careful in forcing the gold around
the margins in certain places to not allow the instrument to slip. You have not the same control over it that you have with the mallet. If the mallet slips it rarely goes far beyond the cavity, consequently you do not do any damage to the soft tissues, unless it happens to be close to the gum margin. On the contrary, if you let the instrument slip in hand pressure you might injure the patient.

When you begin to put crystal gold into a cavity it is as nearly the consistence of putty as we can imagine, just as soft as a piece of spunk. After you begin to compress it the putty-like property disappears in proportion to the compression used, and one must remember that about the same rigid condition soon takes place as in cohesive foil, but I do not think it has the same tendency to curl up. The idea is to carry a large piece to place in a way so that it will lock or wedge in place, to a certain extent, and then gradually condense it to the walls just as you would a piece of foil or foil pellet. The putty-like condition is of no value except in first manipulation.

Perhaps one of the great advantages of crystal gold is that as a cohesive gold we can get along faster with it than with foil and yet do good, perfect and durable work. Thus, if we want a cohesive gold filling and wish to save time we can do it with crystal gold. We can also save time, for that matter in the combination of noncohesive and cohesive foil, building up two-thirds of the cavity or more in many cases with noncohesive and finishing with cohesive foil. That method is a great time saver, and may be more desirable, often, than using crystal gold. I do not know that I have anything more to say in regard to this subject, except that I believe there is a place for crystal gold in our practice, but that it requires the same understanding of the qualities of your material and the same common sense and good judgment to use it we should give anything else that we use as a filling material.

Dr. W. V-B. Ames: There is very little I can say on this subject except to reiterate in another form what Dr. Tuller has just said with reference to using crystal gold and foil together. The little I have used crystal foil, I have found it of decided advantage to use alternate layers of crystal gold and ordinary foil pellets. There seems to be a tendency in my hands for most crystal gold to tear apart and not to be carried before the plugger as I would want it, and by spreading over the crystal gold a pellet of foil, I use
Rowan’s pellets, the plunger seems to carry the entire mass before it better than without the foil. You can tuck it down around the edges, it can be placed better, and more time would be saved in that way than if you were to attempt to use crystal gold and extra large instruments. The possibilities are great of making faulty operations by trying to make haste. I know I have had failures in this regard by endeavoring to be too hasty. A couple of years since I played at making crystal gold, and was able to turn out what to me was a very satisfactory form, and I naturally became enthusiastic for the time being; but after my enthusiasm wore off I settled back to the belief that in my hands an extra pliable pellet of foil had a place which could not be taken by any form of crystal gold.

Dr. C. N. Johnson: I do not think I can add very much to what has been said regarding the use of crystal gold. There is no doubt but what it can be adapted to surfaces with less difficulty than foil, but in my hands, when you speak of making haste with crystal gold, I am not able to build up a filling as rapidly with it, and feel as secure about my margins as I am with foil. The matter of personal equation enters into the use of these materials. Some operators can do with crystal gold what they cannot do with foil and I can do with foil what I cannot do with crystal gold. Crystal gold will not stand the amount of abuse that may be given foil; you cannot manipulate it so rapidly without crumbling. It is this necessity for care that takes up as much time as is gained by the rapidity of condensation. This was strikingly exemplified to me, not only in my own hands, but in the hands of an expert in the use of crystal gold, who demonstrated his method a short time ago in my office. It struck me then that the necessity for care in the manipulation of the crystal gold in his hands seemed to occupy as much time as he gained in condensing it. The tendency to crumble in handling it calls for the closest attention to the manner of manipulating it in carrying it to the position in the cavity where you want to condense it. While it may be true that crystal gold can be adapted to a surface with less pressure than can foil, we must not lose sight of the fact that by proper manipulation of the foil we can adapt it to the cavity just as closely as we can any other material, even the plastics. Gold foil can be adapted to a surface in such a way that it will hermetically seal the cavity. This has been demonstrated experimentally, so that I do not see the necessity for using so much crystal gold as some operators do on the basis of adaptation.
As to the strength of a filling when built up with foil or with crystal gold, there is difference of opinion as to which of these two fillings would be strongest to stress. There is not much difference of opinion as to which filling would have the best edges. I think the margins of foil would be better than those of a crystal gold filling under the same care in manipulation. I am not able to state the difference in the strength of the fillings, but I hope to have that point demonstrated before long. In my practice, while I have taken up crystal golds occasionally and have experimented with them at different times, I find myself returning to the foils for the reason that I can manipulate the foils so much more effectively.

There is one question that ought to be emphasized, and that is in regard to the annealing of these crystal golds. This is a very important point. Great care should be exercised not to over-anneal it, but to have it uniformly annealed, and it will work well. It requires more care in annealing than ordinary foil. But in regard to this point of annealing, we are not particular enough with any of our forms of gold. I believe the majority of the profession do not emphasize the importance of annealing gold properly. While I have packed away a good many ounces of gold in teeth I do not believe I have ever perfectly annealed my gold until very recently. I of course imagined I was doing it right. I have annealed gold in a flame, over mica, and in many ways. But I have never had gold work so perfectly as I have since I began to use the Custer electric annealer. I do not want to say all I think about that appliance because you would consider me to be an enthusiast, but there is something about it that prepares our gold for us in a better manner than any other method of annealing that I have ever tried. It will anneal gold uniformly. A pellet laid upon the annealer will be annealed uniformly from one side to the other. It will not be made harsh by overannealing. It may be made intensely cohesive without being harsh. I have never been able to get the same working quality with my gold by any other method of annealing that I have since using the Custer annealer.

As to the different makes of crystal golds, I have tried nearly all of them. Dr. Ames a few years ago made a crystal gold that seemed to work as satisfactorily as any I had ever tried before that, much like the DeTrey gold recently placed on the market. It stands us in hand to try the different preparations, and for each
individual to use that material with which he can do the most skillful work. But for everyday work, for rapidity, for ease of manipulation, and for general effectiveness I prefer pellets every time. I can do better work with them. I am not afraid of adaptation to the margins and the walls. It is possible to get close adaptation with the foils, and for that reason I do not feel it necessary often to use crystal gold.

Dr. E. A. Royce: I have been experimenting with different golds for twenty years, and during that time I have always had one or more of the crystal golds is my case. In the consideration of materials and methods I think we are likely to take to something that is new, especially if it comes from across the water, very readily. The European dentists do not do the grade of work that is demanded in this country, and they have, as a rule, better teeth in which to place filling materials. They are not careful contourists. The interproximate spaces are not thought of as ours are, and the probabilities are that they work more rapidly than we do, because they get a stated fee from every patient that gets into the chair, whether it is a permanent or temporary filling. Since the DeTrey gold has been introduced here I have wondered if the profession across the water do not take up what they call rapid methods or rapid operating more readily than Americans do. The noncohesive golds are used there a great deal. I tried the DeTrey gold a few days ago to some extent, and I presume that it has a place in our work. But I am surprised to-night to find some who speak most favorably of crystal gold, telling us that they cannot work it into places of difficult access. If crystal gold is so readily adapted, why is it they take foil when they get a place that needs tucking, as we call it?

Dr. Ames: I did not say that, and I do not believe Dr. Tuller did.

Dr. Royce: I understood Dr. Tuller to say that he did. An objection to crystal gold, in my experience, is that it is likely to bridge, leaving spaces that are not filled, especially if you use large plugger points; and the difficulty of adapting gold to the walls of the cavity from the foundation to the finish is great. It is an objection to the use of crystal golds in my hands. I have found some of the crystal golds that could be worked readily with a rapid mallet. For the most rapid work I still stick to pellets and heavy foils, feeling that I am sure of what is being done. As
one of my teachers years ago expressed it, "If I put gold to place I know it is there." Hand pressure may be the ideal method of condensing gold, but not for me. Our profession is trying enough. If we do conscientious work, we must take advantage of mechanical appliances which will assist us and relieve us from strain. The most severe malleting that is done upon teeth can be accomplished without injury if the pulps are properly protected, and the teeth properly braced, either by a separator or by holding some weight, as Dr. Parmly Brown advises, against the teeth to reduce the vibration; and in my experience I find rapid blows give less trouble than slower ones, except in very nervous patients who object to the noise, but these are very few.

With reference to the surface of fillings of crystal gold, it has been demonstrated that they are exceedingly hard and wear very well, and unless foil is very thoroughly condensed it is more likely to pit than crystal gold.

In regard to the tensile strength and edge strength, I can only say after seeing some of Dr. Honsinger’s fillings made of Watts’ crystal gold, that the appearance was all right, and the fillings seemed to be doing well, but Dr. Honsinger works the gold with the utmost care, and in most cavities I should dislike to be obliged to take the extreme methods that he did in condensing and placing his gold.

Dr. W. T. Reeves: In speaking of condensing crystal gold I use Watts’ mat gold in the center of fillings and finish them up with foil. In putting in a small bridge where one bicuspid is loose, I use the first bicuspid anchoring by a bar onto the molar. I cut an ideal cavity in the molar and fill as though it were to be a permanent filling. Afterward, when I cut my gold filling with the rest of the bar, I find the center of the filling is as hard and dense as the surface, so I judge from that it is very thoroughly and completely condensed.

Dr. J. E. Nyman: I use a great deal of Watts’ crystal gold in my own practice. I do not use it because it is easier, but because I can put in a better filling with it than with the foils. A great deal of haphazard reference has been made to crystal golds this evening. To my mind there is only one crystal gold on the market (and I will not include DeTrey’s in this) that is worthy of attention, and that is Watts’ gold. I use Watts’ No. 2 strips. I have been using different kinds of gold for eight years. I have used one form
exclusively for three years—for two years I have used foil and Watts' gold in combination, and for the last three years I have used Watts' gold exclusively. Gold is gold, it makes no difference what shape you have it in to start with, whether it be foil or mat. If you give the manipulation it needs, and do with that particular form of gold all you can do with it, it will be the same in both cases. Dr. Johnson has told us that he can put in foil fillings with less wear and tear on himself than with the mat gold, while I am satisfied that I can put in fillings with mat gold with less wear and tear on my brain—and I am not a lightning dentist—neither am I a slow operator. I can insert a filling as quickly as the average dentist does.

Dr. Fox spoke of using small plugger points in starting the filling. I do not believe in that at all. I do not use small points until I have got the gold partially condensed. In the first place, I do not make deep retaining pits. I have shallower ones by which I get better retention, and it gives better strength to the filling.

In regard to the new crystal mat gold that has been placed before us recently, some of you undoubtedly have noticed that it looks like a telescopic figure of the moon. It is full of pits. You can look through the mat of gold in about forty places. I do not like to have my plugger run onto thin places; I want the gold that I am condensing even. I like Watts' special No. 2 gold on account of its uniform density, and it seems to me that I can get better cohesion between different particles of the gold and a more compact filling. I have not the least fear that a filling is going to break off with Watts' gold.

There is one gentleman here to-night who has seen some of my fillings. I showed him a very large compound distal molar cavity in which the patient has made a distinct impression with the cusp of his upper molar, and he has been using it for a year and a half. I would like to ask Dr. Schwartz if he does not think that surface is equal to any foil surface he has ever seen. I think it is myself. I do not use this gold because it is easier, but because I have the necessary instruments for working it properly, and I use it because I believe I can put in a better and denser filling with it.

Dr. Schwartz: The filling Dr. Nyman refers to I saw and what he says of it is true.

Dr. J. N. Crouse: I have made fillings with various forms of gold, and like Dr. Johnson, I feel safer when using foil.
There is one element in connection with the operation which is frequently overlooked, and that is the saving of time. I use soft foil cylinders for the first half or two-thirds of my filling, and where it is a large proximal cavity I take the foil, and having made sure that the surface is noncohesive, make the cylinders a little wider than the cavity is deep, so that they will reach from the bottom of cavity to a little beyond the cervical margin. I can in this way fill two-thirds of a very large proximal cavity in less than ten minutes after I have my cylinders made. I then finish with cohesive foil for the contour and grinding surface. By this method I save half the time that would otherwise be required to make as good an operation, either with crystal gold or foil. I practiced with heavy foil for nearly three years, never using gold lighter than No. 60, and that form was very popular with some of us. I never expect to see better fillings than some put in with No. 60 foil over twenty years ago, but they take too much time. The amount of condensation necessary is exhausting to both the patient and operator.

Dr. D. M. Cattell: I learned to fill cavities much more rapidly than I had known how to do before, after I had been under the tutelage of Dr. Crouse for a year or so, and he certainly can fill more rapidly with the noncohesive cylinders than any of us can in any other way, so far as he uses them. Since he taught me how I have been using the same method.

In regard to the topic under consideration, crystal gold, I have tried some of the forms mentioned a little, and have not met with very good success, simply because I have not been patient enough in working with them, hence I do not feel competent to speak with intelligence on the subject. However, the essayist made a remark in his paper that I feel like calling attention to and criticising. He may turn back and criticise me because he was under my teaching at one time, and I was one that helped to instruct him with reference to burnishing the margins of fillings. This was taught for many years. It was taught that after you had packed gold carefully, over the beveled enamel margin, you should then take a burnisher and rub over the gold along the margin. Now in doing that you do the same thing that you do with the burnisher by rubbing it over the surface of gold plate in the laboratory; you warp it and turn up the edges. After we have manipulated the gold with pluggers and packed it carefully against the beveled margin,
I do not think we ought to disturb it, but let it lie close to the margin against which it is packed. If we take a burnisher and rub over it and apply pressure against the surface so as to condense it we push it away from the point where we had placed it first and thereby do damage.

Dr. Fox (closing the discussion): There seems to be little to be said, except to reply to the criticisms of Dr. Cattell. If we should burnish a certain way we could make the edge curl up. If we burnish toward the margin I can see no reason for the gold to turn up, especially where it has been thoroughly condensed in advance.

With reference to the criticism of Dr. Royce as to using other gold in a difficultly accessible place, I think he was misled in some way. In my paper I distinctly stated that this was the gold for difficultly accessible cavities.

There is one thing in regard to the manipulation of crystal gold, and that is this, the whole thing seem to hinge upon proper annealing. Quite a few of the speakers referred to the gold as breaking and crumbling away under instruments; that cannot take place if the gold is properly annealed. When properly annealed you can double it and roll it without its breaking away.

Dr. Tuller: You have reference to Watts' gold.

Dr. Fox: Yes. It will bend like leather and there will be no waste at all. There is one thing to be remembered, and that is in annealing the gold it should be placed upon the slab with mica, holding it over the flame a few minutes and you get it thoroughly soft and spongy ready for use. If you allow it to remain over the flame too long it becomes harsh.

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THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

Regular meeting held April 11, 1898, the president, Dr. George W. Schwartz, in the chair.

Dr. A. B. Howatt read a paper entitled "The Presence of Arsenic in the Cements."

The discussion was opened by Dr. W. V-B. Ames, who said: Mr. President and Gentlemen:—As Dr. Howatt has said in his paper, it is a rather surprising revelation to most of us who have had a great deal to do with cements to find that they so universally contain traces of arsenic, and that some of them contain
it in such evident quantities. So it is a timely effort on the part of Dr. Howatt, reading this paper. I believe it is the outgrowth of some work done in the college laboratories with which Dr. Howatt is connected. Dr. Cushing spoke to me about this matter a year or so ago, and at the time Dr. Prothero brought it up before a meeting of the Chicago Dental Society I was rather skeptical as to it amounting to much. My clinical experience with cements, being a rather extravagant user of these plastics, made me skeptical as to this being a matter of very much importance. I entertained that opinion probably because I had happened to use cements which were very much safer than the majority on the market in this respect. I had used cements freely in temporary fillings and in the setting of inlays, so that if there had been any injurious effect from the amount of arsenic contained I would have had no end of trouble in my practice in the treatment of pulpless teeth; but in running over my experience I can think of no cases where I produced the death of a pulp because of close proximity to a cement filling. When Dr. Prothero brought the matter up I had a conversation with him on the side, and he mentioned the cement with which he had found the most trouble in his practice, and in which he had found evidences of the most arsenic in making his tests; from which it occurred to me that there was probably a considerable difference in the different materials. From what I know of the manufacture of cements, the difference depends largely upon a difference in the processes of manufacture. There is such a thing as producing cement powder by the dry process, so-called vitrified cements, and by the wet process, in which there is a chance of eliminating foreign matter, such as dirt, and the possibility of precipitating arsenic and filtering it out.

Dr. Howatt spoke of cement being recognized as an irritant. I do not know upon what grounds he bases that opinion. I have not looked upon cement as an irritant except in its fresh state. Cement properly crystallized is no longer an irritant, in my way of looking at it. I would like to hear from Dr. Howatt further on that point. After making a few experiments, I am led to believe that the danger of pulp devitalization from the presence of arsenic in cements is dependent upon two conditions, namely, first, the quantity present, and second, the porosity of the cement mass after crystallization. Any of you who have taken much notice of the different cements have observed that the hardened mass with
some is very much more porous than with others. I can conceive that if a cement with a given proportion of arsenic should crystallize in a way that gives very little porosity, the only arsenic that could act upon the dentine or near by pulp tissue would be that upon the free surface of the cement mass nearest the dentine or pulp tissue; and if it was not a porous mass the amount of arsenic would be so infinitesimal that I believe it would be inert, whereas, if a mass of cement contains a considerable proportion of arsenic, and at the same time is very porous, there would be nothing to prevent the most of that arsenic from getting in its work on the vitality of the tooth. If you have never noticed this difference, you can readily get it by simply making a cross or figure or letter with a pen and ink upon a piece of cement. In some cases it will run and blur like ink on the blotting paper; in others, you will get a definite mark without any of this blurring.

I put in my pocket a few pieces which would illustrate that difference. I will pass two of these pieces around, which will show what difference there can be. It seems evident from these experiments that no manufacturer has taken any special pains to eliminate the arsenic from his finished product, and I am very glad that this matter has been introduced for discussion by Dr. Howatt and others, because it will no doubt be productive of better materials. When it becomes noised about that cements are liable to contain an injurious amount of arsenic, it is going to set dentists to looking for better materials; and it will certainly stir up the manufacturers to endeavor to eliminate this agent from their product as much as possible.

I made one experiment which seemed to me of importance, and which will stand looking into more fully, that is, following out to ascertain what quantity of arsenic is usually required to effect the devitalization of a pulp, and how that quantity is to be compared with that found in the ordinary quantity of oxide of zinc powder used in a filling. I took of the devitalization fiber sold by the S. S. White company, as minute a quantity as I ever used for pulp devitalization, placed it in a solution of hydrochloric acid, having a definite amount of hydrochloric acid, the same as I had used in making my experiments upon the cement powders. I had used with this definite amount of acid solution, thirty grains of cement powder, which is twice as large as Dr. Howatt used. The small wisp of devitalizing powder in this same quantity of
hydrochloric acid solution gave me a much more definite arsenic spot than I could get from thirty grains of the powder, which is more than you would use in the average case, which would indicate to me that the amount of arsenic in the fiber was very much greater than the amount that could be present upon the surface nearest the dentine of a cement filling, which in a good cement would be the only part which could effect any damage.

Dr. H. J. Goslee: I do not know that I have very much to say on the subject aside from the fact that I am decidedly interested in it, and have been since Dr. Howatt began his experiments. It has seemed to me for a long time that there was some irritating influence that has been injurious to the life and vitality of the pulps under crowns that were mounted with the ordinary cements used, and also have I known the death and destruction of pulps underneath ordinary cement fillings without any apparent cause whatever, save that the fillings had been worn for some time. I remember one case distinctly where a cement filling had been in the mouth five or six years, apparently doing good work, but the tooth was so sensitive at the time that it could not be prepared for the reception of gold, and so cement was placed in the cavity. At the end of this time the death of the pulp occurred. This is an illustration of the fact that some irritating influence played upon the vitality of the pulp, whether from the phosphoric acid in the cement or the presence of arsenic in the oxide of zinc. There is no question in my mind but what this is an interesting topic and one that I should like to hear discussed, because I feel that there is something in it.

E. M. S. Fernandez: I have used a great deal of cement as a filling in my practice, and can say that I feel confident of never having caused the death of a pulp by arsenical poisoning by the use of either Justi’s or Harvard oxyphosphate cements. Bichloride of mercury is used very successfully in the treatment of skin diseases, its absorption is prevented by the use of collodion in the mixture. The diseased part is painted with it and as the collodion dries it holds the bichloride in place and prevents it from absorbing. This is I think a good comparison to cement filling. Once crystallization has taken place the infinitesimal amount of arsenious acid present in the oxide of zinc is rendered inert, as well as the phosphoric acid. We must also remember that arsenic must absorb into the pulp tissue before it can destroy it.
using cement as a filling, my habit is to saturate the cavity with a solution of ninety-five per cent carbolic acid, dry it again and put in the cement filling. The carbolic acid coagulates the surface of the cavity sufficiently to prevent any trouble from the irritating effect of the phosphoric acid, and I dare say will also prevent whatever little damage can be done by the arsenious acid which may be present in the oxide of zinc. I am of the same opinion as Dr. Ames, that the amount of arsenic present in the oxide is so infinitesimal that taking everything said in consideration it cannot do any possible damage.

I can recall more than one case in my practice where the life of the pulp of a tooth was retained by the use of cement as a filling, but six months or so after having used gold as a filling in the same tooth the pulp died and caused a great deal of trouble. The feeling in the preparation of the cavity showed the pulp was living and in good condition. Those were cases where cement fillings did not cause the death of the pulp, but gold fillings did so.

It has been my practice to use cement in the cavities of children's teeth, and I have not seen any injurious effect, but on the contrary think I have done much good by its use.

In many cases where cavities filled with gold showed to be in very bad condition of decay, under and around the gold, I have removed the gold, filled the cavity with cement once a year for two or more years, and then filled with gold with very excellent results.

In regard to the porosity or solidity of cement, I find that by mixing it thick and using pressure makes it solid, but mixing it thin and smearing it in the cavity as some do, leaves it porous and useless.

The pain which is sometimes caused when a crown is cemented is not caused by the arsenic present. It is caused by the phosphoric acid coming in contact with the uncovered and irritated gum and surrounding tissue. The proof is that the application of bicarbonate of soda with a few drops of water to the parts will greatly relieve the pain, counteracting the acid by its alkaline power.

Dr. T. W. Brophy: I did not expect to say anything on this subject, although I am glad to have the opportunity of hearing the paper. It presents a new phase, and, in fact, throws a new light upon the entire subject as we have considered it now for
many years. Formerly we used oxide of zinc in the form of oxychloride of zinc, and more recently, oxide of zinc in combination with phosphoric acid, forming the oxyphosphate of zinc; but the theory previously held as to the destruction of pulps by the action of oxychloride of zinc was that it was due to the chloride of zinc, a powerful irritant. As to whether there is a sufficient quantity of arsenic in oxide of zinc to destroy a pulp after the process of crystallization is completed, it is a question. It is a question that Dr. Howatt or some other chemist will have to settle. I do not remember hearing the doctor say what per cent of arsenic is found in the oxide of zinc of special manufactured cements. There are many kinds of cement, and possibly the arsenic contained in the zinc is greater in certain manufactured cements than in others. The question must be settled as to what per cent of free arsenic may be found in an ordinary sized cement filling, such as a large molar, where the pulp is pretty nearly exposed. We do not wish to put metal in contact with it, so we prefer oxyphosphate of zinc or gutta-percha. The question to settle is whether sufficient arsenic is liberated from a filling to destroy a pulp.

I remember a great many years ago, long before some of you thought of being dentists, that the late Dr. J. H. McQuillen, of Philadelphia, at that time editor of the Dental Cosmos, conducted a series of experiments on arsenic to determine as to how small a quantity would suffice for devitalization of the pulp. He claimed that the smallest possible quantity that could be used and placed in contact with the pulp would devitalize it, and these experiments, he claimed, were repeated a sufficient number of times to settle the question. Just how much arsenic, or how little, is necessary to destroy a pulp I am unable to say. Maybe some one here can tell. But I do not think it requires much. If there is much arsenic in oxide of zinc as is used in oxyphosphate, I do not wonder that we have devitalized pulps under it, as the tubuli of the dentine is capable of carrying to the pulp the organic matter contained in the destructive agent and destroying it. The first step the manufacturers will have to take is to rid the oxide of zinc of the arsenic it contains, so that there will be no chance for destruction of the pulps from absorption of arsenic. Another point that impresses me is, that if the oxide of zinc does contain enough arsenic to devitalize a pulp, cement should be used as Dr. Fernandez has stated, so as to have it sufficiently soft to be manipu-
lated, carried to the walls of the cavity, molded in there so as to make a tight filling, and not have it flow in, or so soft that it can be poured in, as I have sometimes seen it used. Some one stated that if it were thin, like thin cream, it would adhere to the walls of the cavity. I have a great deal of respect for Dr. Fernandez' judgment in regard to this matter, because he has made examinations of different fillings put in under different degrees of hardness; and where the cement is quite soft and able to flow, such fillings are porous. They have not that density and the smooth, hard finish such as the pieces that have been passed around. Besides, it is reasonable to presume that the cement when put in soft will naturally shrink more or less, as it must crystallize, and consolidating, it contracts. I congratulate the society on having original papers presented to it like this—papers dealing with careful experimentations upon a subject, and presenting new matter. This is certainly work of which you may all feel proud.

Dr. E. J. Perry: Some years ago Dr. Buckingham, of Philadelphia, conducted a series of experiments to prove that the mercury in a rubber plate caused rubber sore mouth, and he miserably failed because I believe it was discovered that metallic mercury did not create a mercurial impression. It was found that the nonconducting quality of the vegetable base was the sole cause of rubber sore mouth. Then, a lot of gentlemen performed some experiments with amalgam to prove that injurious effects were produced by the metallic mercury contained therein, and miserably failed.

I do not know whether Dr. Howatt has thought of it or not, but the idea is, that we do not use arsenic to devitalize pulps. We use arsenious acid. It is a combination of oxygen and arsenic. Now, if arsenic is contained in the oxide of zinc, is it not possible that in this form it will be harmless? I used to think there was no safer way to devitalize a pulp than to fill a cavity with oxychloride or oxyphosphate of zinc, provided a large area of the dentine was exposed and the cavity was very deep. I have not attributed this to the arsenic, for I have never suspected the presence of arsenic in the filling; I attributed it to the fact that the conditions were septic, and that the pulp was bound to die. I do not know that this idea is new, but I wish to advance it to see if some one can give us a little light on the subject of whether metallic arsenic will
devitalize a pulp or not, whether it is metallic arsenic that is in the oxide of zinc, or whether it is arsenious acid.

Dr. Howatt (closing the discussion): I wish to thank the gentlemen for discussing my paper so freely, and I can only say that I agree with most of them, but there are some things I think I can explain in a measure. Dr. Ames spoke about the irritating quality of cement. It has always been my understanding that cements were very irritating, and that when one sets a crown, as a usual thing, the patient complains of pain, and there is certainly irritation of the gums from it. I have had two or three cases, one in particular, for a friend of mine, in which I put in a cement filling in a deep cavity, and ever since the insertion of the filling it has been more or less sensitive. Just as soon as I took the filling out and put in a gutta-percha filling the sensitiveness disappeared. There is something in the cement that causes irritation, and the question is, is it the arsenic that does it?

Dr. Fernandez speaks of Justi's insoluble cement, saying that it will not destroy a pulp. I have examined several specimens of that cement, and in every case I have found quite a large arsenic spot, and on the plates passed around you may compare it with the other makes of cements. I find that Justi's insoluble cement will come about the third on the list as having the most arsenic in it. There are only two others that show greater tests. We cannot, however, place too much reliance on the representations of these plates, as it must be remembered that the experiments were not made with any degree of accuracy. The only thing aimed at was to see whether there was arsenic or not in the cements. In each specimen that was examined a certain definite quantity of cement was used, one gram, and the flame resulting was tested about five minutes. If you make the experiment, when you hold the porcelain so long in contact with the flame it will become so hot as to volatilize the arsenic you have already on the porcelain and it will disappear.

Dr. Brophy spoke in regard to the irritating qualities of oxychloride cement. The liquid of oxychloride cement is chloride of zinc, and I believe that it is made by the action of the hydrochloric acid upon metallic zinc. Both the zinc and commercial hydrochloric acid sometimes contain arsenic. Some specimens do not. You will find some arsenic powders that do not give an arsenic spot. Different samples will give different results. To
show you how that is, I went around to several of the wholesale drug firms to get some chemically pure metallic zinc, and I did not get a specimen that did not contain arsenic, and I almost gave up the trial until it was suggested to me to use metallic magnesium, which never contains arsenic. In calling upon Dr. Ames I found he was using a specimen of metallic zinc that was free from arsenic.

It would take more time than I could give at present to make a quantitative test. I believe I will, during the summer, try to make a quantitative analysis and get the exact quantity in several different specimens.

Dr. Perry did not believe that the metallic arsenic in cement powders would do any harm. I do not believe that the arsenic is in the powders as metallic arsenic. I believe it is there as an oxide, just the same as the zinc powder is. It is subjected to exactly the same process, and it seems to me if the zinc is converted into oxide, if there is any arsenic present, it will also be an oxide, and Marsh's test throws it on the porcelain in its elementary state. It makes no difference what the preparation of arsenic is, so long as it is not a sulphide Marsh's test will throw it on the plate as elementary arsenic. So, to tell whether it is in there as an oxide would be rather difficult, but I think a test would show that it is as an oxide; and arsenious acid is an oxide.

Dr. Fernandez: In setting a crown where there is pain, do you do anything special to relieve it?

Dr. Howatt: The only thing I have done is to try to remove all the surplus cement, and then turn the deflected edges of the gum over, which tends to restore the circulation; then I have simply painted over the gum with a little aconite, iodine and chloroform. That is my usual practice.
The Tri-State Meeting at Put in Bay.

The American Dental Association held a meeting at the above place in 1873 which was largely attended.

It is a delightful spot on Lake Erie, about forty miles from Toledo, a little farther from Cleveland and Detroit. The three great States of Michigan, Indiana and Ohio will join hands and every one is invited to be present.

The first session will begin Tuesday morning, June 21, and the meeting will hold over four days. Headquarters at the Hotel Victory. Reduced rates from Chicago, Detroit, Buffalo, Cincinnati, Indianapolis and interior points.

Cataphoresis.

In this number of the Dental Review it gives us pleasure to publish the essay of Mr. Lob, which, we think, is far and away the best on the subject which has yet appeared in print. The subject is growing, and it appears that we are only in our infancy on the subject.

Our own experience has been with a Custer machine from the street current, and so far we have had no misfortunes in using it. Practically we find that it is only occasionally we are called upon to use it. We believe that it is far better (in our present state of knowledge) to not anæsthetize pulps for their extraction. This is only our opinion, which we may change without notice.

There are many reasons for this which any busy practitioner will readily recognize, and we need not dwell upon it. The careful
dentist will use it for obtunding dentine and rarely for bleaching (we get better results in bleaching without its aid) teeth.

The time may come when pulps may be removed certainly and painlessly (but at present this is on trial) and not leave any portion remaining in the root ends. At present this is not certain.

**State Board of Examiners.**

At the present time a little local excitement exists in Chicago in consequence of the efforts of the State board to have all persons (dentists) legally registered or licensed to practice dentistry. A mass meeting of some disaffected dentists was held the other day in the Tremont House to resist the efforts of the board to require compliance with the dental act of 1881. The purpose of the act was first to cause all persons to register with the board within six months from July 1, 1881. Afterward the act required all persons holding a satisfactory diploma to present the same to the board and a license was issued. The license so issued was required to be registered in the office of the county clerk within six months. In some cases this was not done, and the license was forfeited unless a fine or fee of $25 was paid to the board for a new license. (A few of the discontented were derelict in this, and they are in consequence railing at the board.) The other provision was that those persons not holding a diploma should be examined and after passing the examination a license was issued with the same requirements as in the first class. (A few of these failed to register in the office of the county clerk in the required period and the same penalty was incurred by them.) A third provision overlooked by some, was that a dentist removing from one county to another failed to reregister, and such persons were guilty of technical violation of the law. (A few such cases have been found in this class, and the persons affected are sore.) Many persons have removed into this State from other States, and having been in practice ten years, claimed that they should be registered without examination; but the law says that they may be examined just the same as an M. D. or any other person who has the right to be examined. (A few have claimed to be exempt because they held a license or a registration from another board in another State, but a law in another State is not always the law in Illinois, so these are disgruntled.) There may be a few others who are
antagonistic to the board, mostly "dental parlors," or "dental companies," or so-called dental colleges, but they have no right to be, for as law-abiding citizens they should comply with the law the same as the editor or his associate. The interest of every legal dentist should be to support the law as it is framed, not oppose it for personal or private reasons.

**Arsenic in Cement Powders.**

In this issue we publish a paper by Dr. A. B. Howatt on this question, with the discussion. After reading the discussion in type-written form we sent the following letter to Dr. Clifford Mitchell, the author of Mitchell's Dental Chemistry:

**Chicago, April 26, 1898.**

**Dr. Clifford Mitchell:**

*Dear Sir:* I hand you two or four bottles of powder selected from the regular stock of H. D. Justi & Son, called insoluble cement. Please test these for arsenic; if you find any please make a quantitative test and send the bill to me and oblige,

Yours sincerely,

A. W. Harlan.

This is the reply:

**Chicago, May 9, 1898.**

A. W. Harlan, M. D.

*Dear Doctor:* I have tested the samples you sent me of Justi's cement—two bottles labeled one and two—and find no arsenic whatever in either of them. You asked me to test all four bottles, but there were only two in the package.

Yours truly,

Clifford Mitchell, M. D.

In this connection we may state that the Chicago manager wrote the Philadelphia house on the same subject, and received the following:

**Philadelphia, Pa., May 27, 1898.**


*Gentlemen:* Referring to your letter of April 27, would say that we have made thorough investigation, and assure you now that our insoluble cement does not contain a trace of arsenic, as stated in one of your dental societies.

You may positively deny any such statements.

Yours truly, H. D. Justi & Son.
So far as we know personally none of the powders in cements contain arsenic. Metallic arsenic would have no effect on a pulp of a tooth, but $\text{As}_2\text{O}_3$ or $\text{H}_3\text{AsO}_4$ would certainly destroy a pulp. This subject needs more consideration than has been given to it so far, and we await further developments.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

NEW YORK, June 8, 1898.

To the Editor of the Dental Review.

Dear Sir: If the maligner from New York would not attempt to retrieve the shattered reputation of the maligned, who took exception to the malignity of the Dental Review correspondent, as per letter in that journal for May, the maligner would in all probability, in another month, be traduced as a depredator, or something horribly worse. If I but just knew how to mitigate the doctor's sufferings by a fitting act of contrition, I might indulge in same; but as you, Mr. Editor, were so kind as to offer an apology for your correspondent in that same issue (May), page 404, seventh to ninth line of your comment, I trust the doctor will regard your "right to change our views on any subject," etc., and feel better.

Your correspondent trusts that his reputation for truthfulness is as well established as some of the doctor's traits.

What information is given you is believed to be correct from personal knowledge and the general expressed opinions of others to whom, to some extent, your correspondent has been dependent upon.

It is possible that the journals have not been read thoroughly by me, else the error would not have been made of stating that Dr. Rhein saved everything. He may have stated so before, publicly, but it was such news in April that your correspondent deemed it pithy enough to be recorded. Now the doctor becomes exasperated and confirms that report.

Of course, the profession knows that Dr. Rhein nor anyone else cannot save everything, even when laboring for charity.

It becomes necessary for me to contradict Dr. Rhein, and also state that if the sentence, "Dr. Rhein said it was often a hopeless
and thankless task, and little paid for," is not incorporated in the stenographic notes of that meeting of the Odontological Society, of New York, then the notes are incomplete.

Those were the first words (verbatim) uttered by Dr. Rhein, as he entered upon discussion of Dr. Harlan's subject that evening, and I know whereof I speak.

The personal pronoun is used here so that there will be no misunderstanding. My notes in that sentence, or any other were not "manufactured to suit a nefarious purpose."

I appreciate the importance of adhering to the truth, even under a nom de plume or under an anonymous signature, or no signature at all, did I resort to such alternatives.

My identity, as correspondent for The Dental Review, is known to several in this vicinity—gentlemen who would not champion a dishonest deed—and I feel constrained to say that I command their respect.

The president of the Odontological Society, Dr. S. G. Perry, as an exemplary, indefatigable worker for any cause he takes an interest in, was present during the Dwinelle clinic during last month, at which he acted as operator, with Dr. Hodson as patient.

Dr. Jackson was present also as a clinician, demonstrating his method of making regulating appliances for the teeth. His system of wire yokes over the teeth, and in all ways except through the teeth, he portrayed beautifully, making an appliance from diagnosis to application in the mouth. The doctor's methods are known so universally that an attempt to describe his manipulations here would be arduous. Quite a number of models were shown, and they used appliances which showed one almost at a glance the progress made in the various stages of an operation. These object lessons have tempted many to institute regulating for their patients, who had been skeptical as to their own ability to cope with these conditions as they presented.

Partial success has most invariably been the lot of every one who has attempted to render his patient this character of service, and even that partial success has been a great accomplishment. Where full success has not been attained, it has generally been due to a lack of definite conception as to what the results should be when completed, or the establishment of an insecure anchorage, a malposed or misdirected stress, or too much or too little of it, or
any of the thousand and one misjudgments that are more frequently due to lack of profound thought or hasty deductions than to lack of ability.

There is no character of work we have to perform that becomes so interesting as the regulating of the teeth in the dental arches.

Dr. Meyer’s demonstration of how to bake continuous gum work successfully was interesting to all. The doctor seems each time that he clinics to show some novel method of surmounting the various difficulties which are met with in continuous gum work.

His demonstration of how to simulate defects of the dental organs, such as pits, grooves, discolored spots, smokers’ teeth, etc., was interesting. In some instances the tooth was ground to represent a defect and then filled up again with a different color of body for the purpose and baked in the furnace. Artificial crowns were also caused to take on abnormal appearances.

All who were present at this clinic were interested in the process that Dr. Meyer calls the “scientific swedgment of metal plates on plaster casts by the use of shot.”

This really is the final swedgment of a metallic plate. The coarse shaping or that which would be disfiguring to models is first proceeded with as usual between dies of zinc and lead until the plate fits those as thoroughly as in the general rule. When the plate is tried on the plaster model it most invariably shows some slight discrepancy, which is corrected by placing the plaster model in what may be termed the female portion of the swedging box, which is an “open at the top” metal box.

The smallest bird shot, No. 12, is placed in the bottom of the box. The plaster model with plate on same is then wrapped with a layer or so of tissue paper and placed on the shot and then surrounded with more material until it is entirely covered, when the male plunger is worked onto all until the shot fills every interstice of the ring about plunger. The latter is provided with a wood malleting face which is struck several heavy blows with a heavy mallet which drives the shot about all parts of the plate and forces the same to conform to every inequality of the plaster model. The shot causes no injury to the plaster except to very slightly indent some where the plate does not cover it. The result is an absolutely perfect fitting plate on the plaster model. The device for this character of swedging is for sale at some dental depots.
Dr. Jackson's clinic in the afternoon on regulating was a very
fitting prelude to the paper of the evening meeting of the society.

It was read by S. H. Guilford, of Philadelphia, entitled,
"Physiology and Dynamics of Tooth Movement." The doctor
had a series of drawings very similar to those shown at Old Point
Comfort before the American Dental Association by Dr. Case, of
Chicago, Ill. It will be remembered by those who were present at
Old Point that Dr. Guilford was the strongest opponent of Dr.
Case in his theory of the movement of the roots of teeth by the
use of a bar of metal extending from the cap or collar which sur-
rrounded the teeth operated on up, over gum, to about what would
be one-half the length of the root or it may be longer or shorter
than that. The occluding end of the tooth or teeth being held
stationary by a bar attached rigidly from the tooth to be moved to
some suitable anchorage, and then pressure applied at the end of
the long arm. Dr. Guilford has arrived at the conclusion that the
end of the root is moved with very much more facility with the
long arm appliance of Case as compared with the old method
attachment to the collar about crown of tooth. Dr. Ottolengui
still opposes Dr. Case's principle, contending that there is no
advantage and attempted to show by diagrams of the blackboard
the principles which operate against this plan.

Quite a warm and lengthy discussion took place, which to the
writer seemed superfluous, and hinged on the question as to
where the definite location of the fulcrum was in any given case.
That point determined, the occluding portion of tooth stationary,
there could be no question as to the direction of movement of the
root with force applied.

The New Jersey Society (Central Dental Association) had as
eessayist, on May 16, one of New York's bright young medical men,
who is Dean of the New York Dental School, and knows a great
deal about the nose and throat and their parieties. Dwight L.
Hubbard, M. D., read a paper before that body on "Some Con-
tributory Causes of Disease of the Antrum and Preventive Treat-
ment." The night was so inclement that very few were in attend-
ance. The First District Society discontinued its meetings, with
the May meeting, until the fall, October, as does the Odontolog-
ical Society. The Institute of Stomatology meets this month, the
last time this season.

One of our good friends, Dr. James G. Palmer, who has an
office with Dr. Bogue, is quite ill with inflammatory rheumatism, which explains to the many who remarked his absence from dental society meetings.

One of the younger men of the profession, an earnest worker for the Alumni Association of the New York College of Dentistry, departed with the mighty host last Friday. Dr. Geo. Babb was hardly thirty years old. His many friends deplore the loss of a good friend.

Fraternally,

The Borough.

Books Received.


MEMORANDA.

How about tin and gold in combination?

Are you filling roots of teeth with cotton?

The California State Dental Association will meet at San Jose, June 21, 22, 23 and 24.

Dr. J. G. Reid, of Chicago, has been appointed a member of the State Board of Dental Examiners.

It must not be forgotten that delegates from State societies only, are admitted to the National Dental Association.

Do you use trichloracetic acid as an astringent and stimulant around the roots of teeth in pyorrhoea? It is a good solvent of deposits, also.

Dr. Geo. S. Nason, of Omaha, was recently in Chicago on account of the forthcoming meeting of the National Dental Association.

STRYCHNINE POISONING.

Recent experiments on animals seem to show that camphor is an efficient antidote for strychnine poisoning.

A bill has been introduced in the House of Representatives to provide for a brigade dentist with the rank of major, and a regimental dentist with the rank of captain. Similar appointments should be provided for the navy with relative rank. We hope the above will pass at once.

The National Dental Association.

This promises to be one of the largely attended meetings of the year. Omaha
has a fine exposition open, and by the time August 20 comes around, everything will be at its best. Be sure and go.

TRI-STATE MEETING.

Be sure and take a receipt from the railroad agent at the starting point in order to obtain the rebate from the Secretary, Geo. E. Hunt, at Put In Bay. Fare, one and one-third. Tickets good going three days before and three days after the meeting.

TO REMOVE RUST FROM IRON OR STEEL.

Make a mixture of one part of lactic acid and two of oil of lavender, and rub it upon the rust spots with a woolen cloth or tissue paper. On the following day the rust may be removed entirely, it is said, with the aid of a little of the oil. The iron is not affected in the least by this treatment, which cannot be said of mixtures containing hydrochloric acid. Iron and steel surfaces are best polished with very fine emery paper and oxide of tin.

G. V. BLACK DENTAL CLUB.

At the second annual meeting of the G. V. Black Dental Club, held May 5, 1898, the following officers were elected for 1898-99: President, Dr. Glen F. Andrews; Vice President, Dr. James E. Herrick; Secretary and Treasurer, Dr. J. Milton Walls; Corresponding Secretary, Dr. Russell H. Berthel.

Very truly yours,
May 6, 1898.

J. M. WALLS, Secretary.

NORTHERN IOWA DENTAL SOCIETY.

The fourth annual meeting of the Northern Iowa Dental Society will be held at Waterloo, July 5, 6 and 7, 1898. A very fine program is being prepared, and we expect to have an interesting and profitable meeting. The Waterloo Chautauqua Assembly will be in session, and all who attend the meeting will have an opportunity to take in some of the best numbers on the program. Reduced rates on all railroads.

WM. H. STEELE, Secretary,
Forest City, Iowa.

ALUMNOL—B-NAPHTOL-DI-SULFONATE OF ALUMINUM.

Introduced by Heinz and Liebrecht. A colorless, nonhygroscopic powder, soluble in water and glycerin, slightly so in alcohol. Solutions exhibit blue fluorescence. It darkens on exposure to air. It precipitates albuminoid and gelatinous bodies, the precipitate redissolving in an excess. Owing to this behavior, it penetrates into the tissues more than other heavy metal salts. Antiseptic astringent. Employed in one to two per cent solutions, principally in gonorrhoea, but also as a gargle.

CHLORALAMIDE.

Colorless crystals, soluble in nine parts of water, and possessing a bitterish taste, decomposed by alkalies or alkaline solutions, with the consequent modification of the peculiar properties which render it of such value. The dose is from twenty to forty grains, producing within one-half hour a slumber continuing from seven to nine hours. A valuable hypnotic. It may be given in all cases of sleeplessness dependent upon nervous excitement, in neurasthenia, phthisis, heart disease, spine disease, etc.
A NOVEL METHOD OF TREATING EROSION OF THE TEETH.

Dr. A. C. Hewitt, of Chicago, brought a patient to our office recently where every tooth (28) had an eroded surface, labially and lingually. These were all covered with gold crowns about four years ago. All of the anterior teeth were so covered that their faces were exposed by cutting out the gold so that the patient (a lady) would not be disfigured when she opened her mouth. The case is a complete success. A slight erosion is beginning again on two of the faces, so that it appears that the same agencies are at work again. The case was the most striking we have ever seen.

TOOTHACHE WAX.

W. F. P., Pennsylvania.—A number of formulas for so-called toothache waxes are extant; several are here given from previous issues of the Circular:

Hard paraffin................................. 1 dr.
Burgundy pitch................................. 1 dr.
Oil of cloves.................................. 20 mins.
Creosote......................................... 20 mins.

Melt together the first two ingredients, and when they are nearly cool add the other two, and make the mass which is thus formed into pills or small cones.

The following revives the use of an ancient toothache remedy:

Pellitory.
Mastic, equal parts.
Chloroform, a sufficient quantity.
Beat into paste and at once put into a stoppered bottle.

CHINOSOL.

(Potassium oxyquinolin-sulphate.)—Bright yellow crystalline powder, a cresol derivative, readily soluble in water, nontoxic, not caustic. Odor aromatic, taste resembling phenol. Precipitated by alkalies. Does not coagulate albumen. Powerful antiseptic; alleged to be forty times more effective than carbolic acid, 25 parts in 1,000,000 preventing development of staphylococcus pyogenes aureus. Kossmann prefers it to sublimate and carbolic acid in gynaecological practice and for disinfecting the hands. According to Prof. E. Klebs it has had good results in the treatment of nasal catarrh, laryngitis, catarrh of the bladder, ulcers, etc. A solution of 1:10,000 according to experiments of the London Pharmaceutical Institute killed the bacillus of typhus, diphtheria, cancer, pus and cholera within ten minutes. A solution of 1:500 will deodorize putrified meat. Chinosol is of great value to dentistry as an antiseptic mouth wash (1:1000) not affecting injuriously the gums or teeth. More recently it has been found of great service in connection with Turck’s gyromel for cleaning the stomach, no astringent or toxic effects being produced by it. For the purpose indicated the solutions are made of a strength from 1:500 to 1:2,000. The solution tarnishes metallic instruments.

PROPRIETARY PREPARATIONS.

Dr. Chas. Rice, Chemist of the Department of Public Charities, of New York City, has given very careful, thoughtful and conscientious study to this problem for many years. He made a report to the Department of Public
Charities on the use of so-called proprietary medicines as therapeutic agents, which was adopted by the Medical Board of Bellevue Hospital, April 1, 1897. In this report Dr. Rice gives an elaborate consideration of the various classes of remedies used by the profession, reaching the following conclusions:

"A. Unobjectionable Proprietary Preparations.—This group comprises those preparations, the origin and composition of which is not kept secret, and which are known to serve a useful and legitimate purpose.

"B. Proprietary Preparations of Doubtful Value.—This group comprises all preparations which cannot be clearly classed under A or C. None of them deserves to be transferred to Class A, unless its claims are clearly established.

"C. Objectionable Proprietary Preparations.—This group—by far the largest of the whole class—comprises all preparations which are aimed at by the medical code of ethics under the term 'secret nostrums,' which term may be more clearly defined thus: A secret nostrum is a preparation, the origin or composition of which is kept a secret, the therapeutic claims for which are unreasonable or unscientific, or which are not intended for a legitimate purpose. Examples: The various 'soothing syrups,' 'female regulators,' 'blood purifiers,' and thousands of others.'"

It is thus very evident that Dr. Rice and the Medical Board of Bellevue Hospital have settled the problem also.

**THE SHIKWAIGAKU SODAN**

A BIMONTHLY RECORD OF DENTAL SCIENCE.

Edited by Dr. M. Chiwaki.

**CONTENTS.**

**ORIGINAL ARTICLES.**

Dentistry in Russia, Translated by Editor.

Compilations on the Caries of Lower Molars and Their Treatments, Editor.

My Experience with Cataphoresis, Dr. S. Enomoto.

My Experience with Cataphoresis, Dr. S. Tomiyasu.

Mercuric Necrosis of the Alveolar Process, Dr. T. Fujishima.

Preparation of Gold Fillings and Their Methods, T. Hayakawa.

Taking Bite of Whole Sets, T. Hayakawa.

**ABSTRACTS.**

OPERATIVE, THERAPEUTIC AND MECHANICAL NOTES, ETC.

MISCELLANEOUS AND ADVERTISEMENTS.

Published by TAKAYAMA DENTAL COLLEGE, TOKYO, JAPAN.
MEMORANDA.

PRICES FOR OILS.

FIXED OILS.

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ESSENTIAL OILS.

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<th>Oil Type</th>
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<td>Caraway, lb.</td>
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<td>Cassia, lb.</td>
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<td>Chaulmoogra, lb.</td>
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<td>Copaiba, lb.</td>
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<td>Cubeb, lb.</td>
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<td>Cumin, lb.</td>
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<td>Erigeron, lb.</td>
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Oil, Eucalyptus, lb. $0 90 $1 00
Fennel, lb. 1 50 1 75
Geranium, Turkish, lb. 10 50 12 50
Natural, lb. 4 50 5 00
French, lb. 18 50 15 00
Juniper Berries, lb. 1 75 2 00
Wood, lb. 45 55
Lavender, Chiris. Fleur, lb. 1 75 2 00
Garden, lb. 1 10 1 25
Lemon, lb. 1 25 1 40
Lemongrass, lb. 2 25 2 50
Mustard, oz. 55 65
Neroli, Bigarade, oz. 3 00 3 25
Petale, oz. 3 75 4 00
Orange, bitter, lb. 4 25 4 50
Sweet, lb. 2 25 2 50
Origranum, lb. 65 1 10
Patchouly, oz. 1 25 1 50
Pennyroyal, lb. 1 10 1 25
Peppermint, lb. 1 20 1 50
Redistilled, lb. 1 50 1 65
Pimento, oz. 20 25
Rhodium, oz. 50 55
Rose Kissanlik, oz. 8 25 8 75
Rosemary, Eperle, lb. 1 25 1 50
Trieste, lb. 60 70
Rue, oz. 10 35
Sandalwood, lb. 3 50 6 00
D. & O., lb. 6 00 6 50
Sassafras, lb. 45 50
Savin, lb. 1 20 1 30
Spearmint, lb. 1 75 2 00
Spruce, lb. 40 50
Tansy, lb. 1 75 2 00
Thyme, white, lb. 1 10 1 25
Turbentine, gal. 43 50
Valerian, oz. 50 60
Verbena, oz. 45 60
Wintergreen, true, lb. 1 40 1 50
Wormseed, lb. 2 75 3 00
Wormwood, true, lb. 3 25 3 50
Ylang Ylang, oz. 6 50 7 00

NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

CHARLOTTE, N. C. May 28, 1898.

To the Editor of the Dental Review.

Dear Sir: Kindly insert the following in your columns, for judging from the
letters received, it is evident that there should be a wider diffusion of information in the South regarding the National Dental Association and its branches. In many of the States the law does not require a diploma as a prerequisite for license. Those State societies which admit to membership all licensed practitioners, regardless of diploma, should therefore bear in mind that only their graduate members are entitled to election as delegates to the National Association and its branches. It should be made very clear that according to the constitution these bodies accept as new members only delegates elected by ballot at a regular meeting of the State societies, and also that delegates must be graduates in dentistry or have acquired the degree of M. D. or have entered the profession prior to September, 1875. The American and the Southern Dental Associations did also, it is true, require graduation as a prerequisite for membership, but as they did not restrict their eligible applicants for membership to elected delegates from State societies, this feature should therefore be emphasized. The requirements for membership in a branch of the National must necessarily be same as in the National itself, as membership in the former confers membership in the latter. The above applies both to qualifications and to dues, which are $5 in either case; but it should be borne in mind that if the dues are paid directly to the national treasurer this does not pay dues in the branch, but the payment of $5 to the treasurer of the branch cancels all financial obligations to the national treasury for the ensuing meeting, because the branch forwards to the national treasurer three-fifths of the dues received. Payment of dues to the branch, therefore, insures for a single fee double membership with all the rights, privileges and benefits of both bodies, including the joint volume of transactions.

By request of the president of the southern branch.

C. L. Alexander,
Cor. Sec'y, Southern Branch National Dental Association.

Chicago Dental Society, 1898-99.—Program.


June—The State Dental Board and its Work. Dr. J. H. Smyser.
Results of Experiments with Various Medicinal Agents. Dr. A. H. Peck.
Incidents of Office Practice. Dr. C. E. Bentley.

October—Comparative Dental Anatomy. Dr. C. E. Bentley. Discussion will be opened by Drs. G. V. Black, A. B. Freeman and H. P. Wadsworth.

November—Bacteriology. Dr. G. W. Cook. Discussion will be opened by Drs. E. L. York, J. E. Hinkins and H. A. Gunther.

Care of the Gum Tissue and Pericementum. Dr. A. E. Morey. Discussion will be opened by Drs. C. N. Thompson, J. Austin Dunn and W. H. Fox.

December—Inlays and Cements. Dr. W. V-B. Ames. Discussion will be opened by Drs. G. W. Schwartz, W. T. Reeves and I. A. Freeman.

Deposits of Calcific Matter in the Pulp Cavity. Dr. D. A. Hare. Discussion will be opened by Drs. A. B. Allen, A. E. Baldwin and F. N. Brown.

January—Poisons. Dr. A. W. Harlan. Discussion will be opened by Drs. Elgin MaWhinney, A. H. Peck, E. L. Clifford and J. G. Reid.

Dentistry in Japan. Dr. Louis Ottofy.

February—Immediate Regulation. Dr. A. F. James. Discussion will be


April—Annual Meeting. Address by the President, Dr. J. E. Hinkins, Election of Officers.

May—Operative Dentistry. Dr. L. O. Green. Discussion will be opened by Drs. E. Noyes, J. W. Wassall and Don. M. Gallie.


June—Porcelain Dental Art. Dr. W. H. Taggart. Discussion will be opened by Drs. A. W. McCandless, G. A. Thomas and J. H. Prothero.

October—Dental Education of the Laity. Dr. Florence E. Thompson. Discussion will be opened by Drs. E. M. S. Fernandez, A. C. Hewett, R. H. Kimball and Theo. Menges.

NOTES FROM THE LATE MEETING OF THE STATE SOCIETY.

Illinois State Dental Society—Officers for 1898-99: Dr. C. P. Pruyn, Chicago, President; Dr. A. S. Waltz, Decatur, Vice President; Dr. A. H. Peck, Chicago, Secretary; Dr. E. D. Swain, Chicago, Treasurer. Next meeting will be held at Chicago, second Tuesday in May, 1899.

Among the visitors we noticed Drs. L. E. Custer, of Dayton, Ohio; A. H. Fuller, J. H. Kennerly, F. F. Fletcher, M. R. Windhorst and others, of St. Louis, and Dr. W. W. Shryock, of Fort Wayne, Ind.

A congratulatory message was ordered sent, and an engrossed testimonial was voted to Uncle George H. Cushing, now residing in California. A touching farewell letter was also read from Uncle George, by Dr. Swain.

A resolution was passed remitting the dues of such members who enter the army or navy of the United States, to be in force so long as they are in the service of Uncle Sam.

The meeting was one of the best in the history of the society. About 200 members and visitors were present. About thirty new members were admitted. All the principal dental supply houses made creditable exhibits. A general all around good feeling and fellowship prevailed.

One hundred dollars was voted to aid the State Dental Board to assist in carrying into effect the provisions of the State law. Two hundred dollars were voted to Dr. Black to assist him in pursuing scientific investigations.

The clinics were of more than ordinary interest. Much attention was given to porcelain crown and bridge work, made simple by the use of the electric furnace. Bleaching with pyrozone, and the simplification of making cusps for crown and bridge work received a good share of attention.
Dr. Brophy performed an extensive operation, removing the inferior dental nerve, practically from the Gasserian ganglion to the mental foramen.

Dr. Prince, one of the leading surgeons of Springfield, interested many members of the society by using the X-rays on their person and property, revealing the unseen and hidden objects.

The presence of the military in Springfield gave the city a martial appearance. Among the number of soldiers are a few dentists, who are aching to fill graves in place of teeth. They are all eager to go to the front, and the members of our profession will not be wanting when real fighting is to be done.

The "St. Louis contingent" of bygone days is no longer in evidence at the State meetings. Dr. Fuller was the only representative of the old guard present at the late meeting. These men have for nearly thirty years attended our meetings with almost unfailing regularity, and added largely to the interest and value of the meetings. Some of these war horses have passed away, others feel the infirmities of age approaching and are husbanding their strength, while others are by reason of failing health compelled to stay away. The society owes these men a debt of gratitude, for they have helped to make its history what it is. A new set of men are coming upon the field, and it may be hoped that they, in their generation, will prove as worthy as those who have gone before.

THE MISSOURI STATE DENTAL ASSOCIATION.—SPECIAL NOTICE.

The place of meeting of this association has been changed from Meramec Highlands to the city of St. Louis, July 5 to 8 inclusive.

The Planter’s Hotel will be the association headquarters, where ample accommodations will be provided for the holding of the most successful meeting ever held in the State.

ESSAYS AND DISCUSSIONS.

1. Dr. Frank Slater, Rich Hill, President’s Address. Discussion opened by Dr. H. J. McKellops, St. Louis, and Dr. J. T. Fry, Moberly.

2. Dr. J. C. Goodrich, Wentzville, Farewell Address. Discussion opened by Dr. James A. Price, Savannah, and Dr. B. O. Stevins, Hannibal.

3. Dr. Edward H. Angle, St. Louis, Orthodontia. Discussion opened by Dr. W. J. Brady, Kansas City, and Dr. C. D. Lukens, St. Louis.

4. Dr. J. D. Patterson, Kansas City, The Ideal Lower Denture in Difficult Cases. Discussion opened by Dr. E. B. Crane, California, and Dr. DeCourcy Lindsley, St. Louis.

5. Dr. O. L. Kerr, Independence, Preparation of Cavities. Discussion opened by Dr. A. H. Fuller, St. Louis, and Dr. F. F. Fletcher, St. Louis.


7. Dr. R. L. Ready, Liberty, Treatment of Pyorrhea Alveolaris. Discussion opened by Dr. Wm. Conrad, St. Louis, and Dr. C. L. Hungerford, Kansas City.

8. Dr. F. F. Fletcher, St. Louis, The Practical Bridge of To-day. Second paper. Discussion opened by Dr. Edward H. Angle, St. Louis, and Dr. J. G. Hollingsworth, Kansas City.
9. Dr. B. J. Cigrand, Chicago. The Full Porcelain Crown Without a Peer. Discussion opened by Dr. G. A. Bowman, St. Louis, and Dr. H. S. Lowry, Kansas City.

10. Dr. O. W. Bedell, St. Louis. The Young Man in Dentistry. Discussion opened by Dr. F. M. Fulkerson, Sedalia, and Dr. Burton L. Thorpe, Billings.

11. Dr. E. S. Chisholm, St. Louis. Philosophical Laws as Applied to Dentistry, with Illustrations. Discussion opened by Dr. J. D. Patterson, Kansas City, and Dr. J. M. Austin, St. Joseph.

12. Dr. H. Prinz, St. Louis. Haemorrhage Following Extraction of Teeth; Its Etiology and Treatment. Discussion opened by Dr. D. J. McMillen, Kansas City, and Dr. F. H. Achelpohl, St. Charles.

13. Dr. DeCourcy Lindsley, St. Louis. Antidotes. Discussion opened by Dr. O. W. Bedell, St. Louis, and Dr. H. H. Sullivan, Kansas City.

14. A. H. Thompson, Topeka, Kan. Subject to be announced. Discussion opened by Dr. J. B. Newby, St. Louis, and Dr. C. H. Darby, St. Joseph.

FIRST DAY.—CLINICS.—DR. WM. CONRAD, ST. LOUIS, SUPERVISOR. ASSISTANTS: DR. J. S. COYLE, DR. M. R. WINDHORST, DR. G. H. GIBSON, ST. LOUIS.


2. Dr. J. D. Patterson, Kansas City. The ideal lower denture in difficult cases.

3. Dr. H. J. Goslee, Chicago. An exhibit of the carved cusp system in crown and bridge work.

4. Dr. H. S. Lowry, Kansas City. Will demonstrate the Lowry system of crown and bridge work.

5. Dr. F. H. Achelpohl, St. Charles. Exhibit cranium with two impacted teeth; also models.


7. Dr. M. R. Windhorst, St. Louis. Gold filling, using solila gold.

8. Dr. C. D. Lukens, St. Louis. Taking impressions and making models for the correction of irregularities.


10. Dr. J. H. Kennerly, St. Louis, will demonstrate Dr. B. J. Cigrand's intradental band.


12. Dr. Harry M. Hill, St. Louis. Refining gold.

13. Dr. J. C. Chisholm, St. Louis. Combination filling, noncohesive and cohesive gold.


15. Dr. A. J. Prosser, St. Louis, will demonstrate his method of using soft and cohesive gold in approximate fillings.

16. Dr. F. F. Fletcher; St. Louis. Bleaching badly discolored teeth.


18. Dr. P. H. Morrison, St. Louis. Cleansing a set of teeth.

19. Dr. A. D. Fuller, St. Louis. Soldering a Richmond crown.
SECOND DAY.

1. Dr. W. L. Reed, Mexico. Contour gold filling.
2. Dr. M. C. Marshall, St. Louis. Approximate filling tin and gold.
3. Dr. H. J. Goslee, Chicago. An exhibit of the carved cusp system in crown and bridge work.
4. Dr. H. S. Lowry, Kansas City, will demonstrate the Lowry system.
7. Dr. C. D. Lukens, St. Louis. Taking impressions and making models for the correction of irregularities.
11. Dr. J. H. Kennerly, St. Louis. Table clinic.
12. Dr. P. H. Eisloeffel, St. Louis. Immediate extirpation of pulp.
13. Dr. A. J. Prosser, St. Louis. Preparation of broken down roots for crown and bridge work.
14. Dr. F. F. Fletcher, St. Louis. Bleaching badly discolored teeth.
16. Dr. P. H. Morrison, St. Louis. Cleansing a set of teeth.

J. H. Kennerly,
De Courcy Lindsley, { Executive Committee.
F. F. Fletcher,

EXTRAGENITAL SYPHILIS.

Dr. Charles F. Bevan, Medical Record, in a review of seventeen cases of extragenital syphilis, gives the following summary of the location of the primary infection: Anus, 1; cheek, 1; fingers, 2; lip, upper, 5; lip, lower, 2; hard palate, 1; nipple, 2; tongue, 2; thigh, 1; total, 17. The consideration of these and similar cases occurring in the practice of almost every physician raises at once a most important question, viz.: Can anything be done, continues Dr. Bevan which may prevent, or failing that, minimize the spread of this and similar affections? The first duty of the physician should be to disseminate knowledge—to his patients as regards any special lesion he may have; to the public at large as regards the nature, manner and mode of infection of this as well as of all other infectious disorders. There is a rather widely spread belief among the laity that only the initial lesion of syphilis is capable of producing that disease; that when once this sore has disappeared, not only are the victims not liable to distribute their disease, but that they are absolutely well. Many medical men have rejected their first carefully made diagnosis, only on account of the fact that the secondary phenomena had not developed within the time limit expected by them. Such patients, lulled to fancied security, become dangerous in the extreme to the innocent as well as to themselves. It is upon this class that the essential facts pertaining to the contagious lesions of syphilis should be firmly impressed. No half way views should be tolerated. The truth, even with its horrors as we physicians see them, should be made a subject of general information: The community at large has always shown, as is but natural, the greatest desire to escape
disease, and by wise legislation to avoid or reduce to a minimum the chances for its contraction whenever the dangers and facts pertaining to it have been carefully brought to its notice. The spreading of knowledge concerning syphilis and venereal disorders has been opposed by most of the rigid moralists and clerical classes, rather from ignorance of the essential facts than from any hope of ever freeing humanity by any system of morals. They do not believe in giving such protection and countenance to immorality as belongs to a well regulated licensing system, because they labor under the belief that these disorders are invariably contracted in a venereal manner. While we cannot but admit the greater frequency of their venereal dissemination, we must not fail to impress upon all that there are other modes; that the innocent are often accidentally infected and become agents for the scattering of this social pest. These cases just reported, are indeed valueless, if they fail to impress one with this deduction.

No matter how rigid our moral ideas may be upon the subject of licensing prostitution, we must not allow prejudice to obscure facts. We must recognize the sexual passion as one of the strongest impulses of our nature; that wherever men and women cohabit promiscuously there will be found the whole class of venereal maladies, and that some of the innocent must fall victims to the prevailing disorders. To protect and save the few is an imperative duty. The regulation of prostitution by law is neither new nor yet an untried experiment. In 1863 the experiment was made at Nashville, Tenn. Medical Director Gihon, of the United States navy, reports that the amount of venereal disease was markedly lessened; that the women, who at first were rebellious, not only became quite reconciled to the system, but often voluntarily came to the hospital for examination for suspected disease. In 1873 the legislature of Missouri passed a law requiring registration of prostitutes and medical examinations at regular intervals. When found to be indifferent what the number of the obstructive foci is, and whether an aorta or a temporalis is concerned. If such foci are recognized at an early stage, proper prophylaxis can accomplish a great deal in preventing secondary disturbances. The prognostic significance of an exact knowledge of the condition of the arteries is also evident. The Roentgen rays give us a most reliable method of ascertaining the condition of the vessels, and this in nearly every part of the body.
IN MEMORIAM.

Whereas, Our aged and beloved brother and wise counselor, Dr. Luman C. Ingersoll, of Keokuk, has been removed from us by death since we last met, we wish to express our sorrow in the loss of one who has been an active and earnest member of this society from its infancy, and has almost yearly contributed valuable papers and by his unquestioned ability and unselfishness promoted the interest of this society, which were very dear to him. He loved his profession and was always in the lead in any effort to elevate the standard of dentistry. Among others, he was instrumental in establishing the dental department of the State University, being its first dean, in which position he labored almost without remuneration and with untiring zeal for six years.

By his clean moral character and christian life, unflinching courage and integrity, his devotion to his profession and his ability, he stood before men as an example worthy of emulation. The younger men of the profession looked to him as a father, the older men as a brother.

Resolved, That while in the death of Dr. Luman C. Ingersoll we have lost a beloved friend and fellow worker, we bow in submission to our heavenly father's will. Our hearts are filled with gratitude that his life was spared for so many years, exerting an influence that time will not efface.

Resolved, That a copy of these resolutions be sent to the widow, a copy to the dental journals for publication and that they be spread upon the minutes of this society.

J. B. Monfort,  
W. H. DeFord,  
C. R. Baker,  
Committee.

Whereas: Dr. Henry S. Chase, of St. Louis, but formerly of our own State, was upon the 11th of January called to his long home, be it

Resolved, That we as members of the Iowa State Dental Society, acknowledge with gratitude the early efforts of Dr. Chase in bringing about a more fraternal feeling among dentists, and his zeal in elevating the standard of dentistry in our State. Having come to Iowa in 1861, locating at Independence, he, with Dr. W. O. Kulp and others, were instrumental in organizing, thirty-six years ago, the Iowa State Dental Society. He moved to Iowa City in 1865 and to St. Louis 1868. During the years spent in this State he was ever striving to establish a more friendly and brotherly feeling among dentists. Dr. Chase's character was above reproach and well deserved the title by which he was familiarly known— "Pa Chase."

Resolved, That the resolutions be sent to the surviving members of the family, to the dental journals for publication, and that they be spread upon the minutes of this society.

J. B. Monfort,  
W. H. DeFord,  
C. R. Baker,  
Committee.
Amalgam.*


This old subject of amalgam is ever new, for where an ounce of gold is used for filling teeth a pound of amalgam is used; and when we think of the anathemas that have been hurled at amalgam per se, it makes us feel that these curses had better have been heaped upon the heads of the careless operators rather than upon the material itself. It is my experience and observation that the thorough preparation of a cavity and thorough packing of a poor amalgam will yield better results than we usually see from the average packing of a good amalgam. And this one point of thoroughness and carefulness in the proper preparation of a cavity for this material and its thorough insertion is of such vast importance that it cannot be too thoroughly emphasized. It is very unfortunate that so many of our practitioners have the idea that the public think amalgam to be a cheap material, and that they cannot make a sufficient charge for the amount of time consumed in putting in a good filling. This is one of the main causes of such poor amalgam work being done. I think the proper method is to disabuse the mind of our patient of the erroneous fact that amalgam is a cheap material. If my patients ask what my prices are for amalgam fillings, I tell them I put no prices on the amalgam; that I make no charge for the amalgam I put in the tooth, neither for the gold I put in the tooth, but that as a professional man I charge for my knowledge and skill and ability in rendering my patient a service, and I charge them for

*Read before the Illinois State Dental Society.
the time consumed. If I consume two dollars' worth of time, I charge them two dollars. If I consume ten or twelve dollars' worth of time in putting in an amalgam filling, I charge accordingly. I think that is the only honest way to practice; for I am thoroughly convinced that there are many cases of badly decayed teeth that could be much better preserved by the use of amalgam than with gold, and the use of a combination of the two materials in one tooth has proven in my hands to be very satisfactory.

I fill the distal surfaces of badly decayed molars and bicuspids with amalgam, often extending to the occlusal surfaces, and filling the mesial and part of the occlusal with gold, having the two metals in complete apposition in the same tooth. Indeed, these two metals should never be used in a tooth without coming in complete contact. By being in complete contact the affinities of each are satisfied and short circuiting results with an oxidation of the baser metal, and a clean bright surface left to the gold, and as a result a peculiar condition results with the amalgam filling. It may be that the oxidation fills in the crevices about the edges of the amalgam filling, making closer joints, or it may be that a peculiar electrical condition prevails which prevents the growth of bacteria and consequent decay. I frequently see some of my patients in whose mouths I have placed this combination twenty years ago and the work still holding to-day very satisfactorily, and I am satisfied that it is doing better work than either gold or amalgam would have done if they had been placed separately.

Proper contouring can be done with amalgam just as well as with gold, and many times better; and the point made by the adherents of the new school of practice, that ptyalism, or mercurial poisoning is often the result of the use of amalgam in teeth, is something I have never seen in all my practice.

I should like very much if this disputed point could be scientifically ascertained.

In the preparation of cavities for amalgam there should be no beveled edges left, as we know that amalgam will not retain an attenuated edge, as it will crush under the force of mastication. So there should be broad, straight borders.

The present craze for gold crowns is often carried to the extent of crowning teeth that could be much better saved for years of usefulness with well inserted amalgam fillings. I am satisfied, in my
own mind, that many cases of extensive decay in molars and bicuspids could be much more perfectly filled with the use of a continuous band matrix, which should be retained in position for several hours after the completion of the filling or until the amalgam has thoroughly set, as otherwise good fillings with this material are frequently injured before the patient leaves the office, perhaps by the careless removal of the rubber dam or hand matrix, or by the opposing cusps of teeth before the amalgam hardens. We know from experience that amalgam does its best work at the cervical borders; we know also that gold does its best work on the occlusal surfaces. Now, by using these two materials, each in its own place, where it can exert its greatest field of usefulness, we can combine the two materials and thus preserve frail teeth much better than by using either one alone.

A very good object lesson for any one is to use glass tubes for packing amalgam. Take a glass tube about the size of a small lead pencil, one-quarter to one-half an inch long, shellac it upon a piece of board, then wind about the glass tube some paper, and proceed to insert the filling as you ordinarily do in practice. Remove the paper, and carefully observe the air spaces that you will see between the filling and the glass tube; then take another tube without the paper wound about it, and proceed as before, carefully examining each step of the operation as you go on, and carefully note the extreme care that will be necessary to thoroughly adapt the amalgam to all the sides of the glass, so that no air spaces can be seen.

While this is a very simple experiment and can be made very easily, it is an object lesson that I think every operator should witness.

While a dozen different men might fill a dozen different holes in a steel plate with the same make of amalgam, and very little difference would result in the measurements afterward, I am convinced that when it comes to the practical work in the mouth, the personal equation forms a much larger factor than we are often-times led to believe.
WHY COAGULANTS DIFFUSE THROUGH DENTINE.*


About a year ago I had the honor to present to this society a paper on "The Diffusibility of Coagulants in Dentine." The deductions I drew and the experiments I exhibited at the time showed you conclusively that carbolic acid would diffuse through dentine. Hearing that I was continuing this line of investigation, the chairman of your executive committee did me the honor to request me to read another paper along the same lines, and from the generous and kindly manner in which you received my former effort, I consented. The following is the result of my experiments extending over the past year.

If you remember, I stated at that time that I found that there was greater rapidity in the diffusion of carbolic acid through the dentine of a tooth that had contained a putrescent pulp (four to eight hours). This occurred not once only but in every case, and it set me thinking. Why was there greater rapidity of diffusion in such a tooth and less in one that had contained up to the time of treatment a normal pulp; in the latter we had to deal with a tooth that had so far not undergone any pathological changes, either in the contents of the pulp chamber or the dentinal tubuli, all the albumin that is normally in a tooth being there intact, whereas in the tooth the pulp of which had died, and as a consequence undergone the process of putrefaction and the consequent formation of an innumerable number of end products, we had a totally different condition to deal with. In the first condition we might have an infinitesimal quantity of albumin to deal with, as I will show you later, whereas in the latter we have none, as I will now endeavor to demonstrate.

Many mouth bacteria, as well as the majority of the pyogenic and putrefactive bacteria, have the faculty of dissolving coagulated albumin or albuminous substances, of peptonizing or converting them into soluble substances, just as albumin is converted into soluble peptones by the pepsin of the gastric juice. Micro-organisms nourish themselves only by substances in a state of solution, and if we present them solid substances they must first

*Read before the Illinois State Dental Society.
liquefy these substances before they can make any use of them for their own nourishment.

After the death of a pulp it is invaded by various bacteria, strictly saprogenic as well as pathogenic, the result of which is that the pulp becomes a foul, semifluid mass. This putrefactive decomposition of albuminous matter is effected by a great variety of microorganisms and give rise to a great variety of products, some of which are volatile and are characterized by their offensive odors. This putrescence was the result of first the splitting up of the albumins into peptones, which according to Flugge may be effected by a number of microorganisms, then the splitting up of the peptones into a large number of gases, acids, bases and salts. Among the products of putrefactive fermentation known to chemists, are the following: Carbon dioxide, hydrogen, nitrogen, hydro-sulphuric acid, phosphureted hydrogen, methane, formic acid, acetic acid, butyric acid, valerianic acid, palmitic acid, crotonic acid, etc., etc. A few words on ptomaines may not be out of place. It is a name suggested by the Italian toxicologist, Selmi, and derived from the Greek word πτωμα, meaning a cadaver.

A ptomaine may be defined as an organic chemical compound, basic in character, and formed by the action of bacteria on nitrogenous matter. They have also been called animal alkaloids, but this is a misnomer, because, in the first place some of them have been found in the putrefaction of vegetable matter, and in the second place, the term animal alkaloid is more properly restricted to the leucomaines, those basic substances which result from tissue metabolism. While some of the ptomaines are highly poisonous, this is not an essential property, and others are entirely inert. Hence the severe and complicated conditions following in some cases a blind abscess, or the opening of a putrescent pulp canal, where we have exercised the greatest care. Since all putrefaction is due to the action of bacteria, it follows that all ptomaines result from the growth of these organisms. The kind of ptomaine formed will depend upon the individual bacterium engaged in its production, the nature of the material being acted upon, and the conditions under which the putrefaction goes on, such as the temperature, the amount of oxygen present, and the duration of the process. Ptomaines are the transition products in the process of putrefaction. They are temporary forms through which matter
passes while it is being transformed by the activity of bacterial life from the organic to the inorganic state. Complex organic substances such as muscle and brain are broken up into less complex molecules, and so the process of chemic division goes on until the simple and well known final products, carbonic acid, ammonia and water result.

It is an established fact and will be borne out by the experiments which I will give you later, that the end products of albumin decomposition, or putrefaction, are no longer coagulable. I previously stated in this paper that the first step in the process of putrefaction is the transformation of the albumins into peptones. Now these peptones are not coagulable; for example, if you take pepsin and add it to serum albumin and allow it to digest at body temperature, you will find it is converted into peptones, etc., which are not coagulable. This is precisely the same condition that we find produced by the action of peptonizing bacteria upon proteid matter. (Here exhibit tubes of decomposed serum albumin, and tubes of serum albumin to which has been added pepsin). On the addition of carbolic acid, they do not coagulate.

Now, how does carbolic acid act upon these substances? Does it coagulate the orificial ends of the dentinal tubuli, and seal in all this poisonous matter? Most emphatically, no. The carbolic acid will penetrate as well as anything else you may use.

Let us now take another view of this much mooted question and see how the carbolic acid will act in the dentine of a tooth in which you have removed a normal pulp, one in which the albumin has not undergone decomposition. I stated earlier in my paper that carbolic acid diffused through the dentine of a tooth from which I had removed a normal pulp a trifle slower than one which contained a putrescent pulp. The reason for that was this: That carbolic acid did coagulate the trace of albumin that was there, but the former (carbolic acid) being in excess the coagulum was redissolved again. I will now show you capillary tubes filled with serum albumin (human), native albumin, and artificial serum albumin, and you will notice the coagulation proceeds slowly and following behind a trifle slower you will see that the coagulum is being redissolved again. This is precisely the thing that occurs in the dentinal tubuli, only we have such a minute quantity of albumin in the tooth structure that it is hardly a factor.

To demonstrate the latter statement to your satisfaction I will
give in detail some experiments made to determine the quantity of albumin in a tooth.

**Determination of albumin in teeth.** The teeth are first thoroughly scraped, removing as much of the adhering particles as possible. They are then carefully brushed with alcohol, which coagulates the albumin on exterior of the teeth. After the teeth are dry, they are finely pulverized.

To this pulverized substance (about ten grams) is added a decinormal sodium chloride solution (about twenty-five c. c.) alkalinized with sodium carbonate. This is thoroughly agitated and allowed to stand for thirty-six hours. During this time the mixture is frequently shaken. It is then filtered until a clear filtrate is obtained, and washed. The filtrate is acidified with dil. acetic acid and brought to the boiling point. This coagulates the albumin. It is allowed to stand for some hours until the coagulum settles and the particles become agglutinated. It is then filtered upon a counterpoise filter. The precipitate is then washed until no reaction occurs upon the addition of sol. of silver nitrate.

The contents of the filter are then dried at a temperature of 110°C for about thirty minutes, then placed in a desiccator and afterward weighed. The albumin is repeatedly dried until a constant weight is obtained.

The tooth substance after being treated as above, was again subjected to the same process, but yielded only a faint trace of albumin, showing that practically all the albumin had been removed.

7.5 gms. (115.74 grs.) yield .0028 gms. $\left(\frac{7}{100}\right)$ of one per cent.

9.5 gms. (146.60, grs.) yield .0067 gms. $\left(\frac{8}{6} \times \frac{4}{100}\right)$ of one per cent.

11.5 gms. (177.46 grs.) yield .0060 gms. $\left(\frac{3}{32}\right)$ gr. $\left(\frac{5}{100}\right)$ of one per cent.

(1) These analyses of the teeth will clearly show you that the amount of albumin in a tooth is of too minute a quantity to be a factor. This applies to a tooth, the pulp of which was in a normal condition when analyzed. (2) A tooth the pulp of which has undergone the process of putrefaction or albumin decomposition. The end products are no longer coagulable. (3) Had we as large an amount of albumin in a normal tooth as we have always been led to believe, the quantity of carbolic acid which
would be accommodated in the pulp chamber and canals would be quite sufficient to redissolve any coagulum that would be formed.

Recapitulation. I have shown you capillary tubes containing egg or native albumin, serum albumin (human), and artificial albumin, all of which coagulate in the presence of carbolic acid, and you will also observe again redissolves in an excess of carbolic acid. None of these have undergone decomposition. I have also shown you capillary tubes filled with decomposed serum albumin (human), and gelatin and serum albumin (human), acted upon by various pathogenic and mouth bacteria, none of which show any sign of coagulating in the presence of carbolic acid.

After getting these uniform results by repeated experiments hundred of times and drawing my own deductions from them, I was naturally anxious to communicate with others who might have been over similar ground in search of other subjects. So accordingly opened up a correspondence with Prof. Vaughn, of Ann Arbor, on the decomposition of albuminous substances and will give you his reply: "There can be no doubt that the end products of albumin decomposition are no longer coagulable."

Prof. Klebs, of world-wide reputation, also states that they are no longer coagulable, as also does Prof. Hektoen, of the bacteriological and pathological laboratories of the Rush Medical College.

Before closing, I have to thank those gentlemen for their courtesy in answering my questions, and also to express my indebtedness to Mr. O. T. Roberg, of the chemical laboratory of the Rush Medical College for his valuable assistance in making the quantitative analyses of tooth substances.

The books I have consulted and freely quoted from are "Ptomaines, Toxins and Antitoxins," by Vaughn and Novy. "Microorganisms of the Human Mouth," Miller. McFarland's "Bacteriology." Sternberg's "Bacteriology."

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**Where Shall I Locate, or the Beauties of a Country Practice.***

**By Dr. James W. Cormany, Mt. Carroll, Ill.**

In presenting this subject for your consideration I am actuated by a desire to direct the thought of the profession for the time at least to something different from dental caries, new appliances,

*Read before the Illinois State Dental Society.
etc., and will leave others better qualified than I to tell you of teeth, their troubles and repair.

Where shall I locate comes up in the mind of every one who chooses the dental profession for an avocation, and as he runs it over in his mind from time to time the place that bobs up serenely from below is the city, the city. Of course, all that are here are located, or dislocated, and I wish to show up a few points in favor of the country, so when you are consulted as to the place to locate you will think on these things I am about to tell you. In the first place I wish to disabuse your minds of the oft repeated assertion "that there are no advantages in the small town for the professional man." Let me call your attention to the fact that nearly every town of 1,000 inhabitants or over has a system of water works, electric lights, well paved business streets, a railroad either on the main line or a branch, and the people that live in these towns are educated nowadays, and the majority of them own their own houses, and don't you think for a minute that they are not posted on the ways of the world and the news of the day.

These towns, as a rule, are located in a rich farming district, and the farmers, if you please, demand the same skilled operator and as perfect work as the city people, and do not foolish yourselves into the idea that they do not know the difference.

They are well posted on the teeth without plates, gold crowns, porcelain faced and all porcelain crowns, suspension bridges and everything pertaining to dentistry.

You have the same office hours as you have in the city, and you are the city dentist practicing in the country. Let me also take that little thought out of your mind, that "country people only want false teeth." They have been taught different in my locality, and it's save every tooth you possibly can.

Did you ever stop to consider what the farmer supplies? Listen! The merchant, the professional man, the man of leisure, the railroads, the colleges, not only with food, but men and women. Let us strip the idea of all selfishness and look at the subject from the right standpoint. Health, the first desideratum devoutly to be wished, and where does the seeker for this boon go but to the country. It is here the boys and girls are born and brought up to supply the demand of the large cities. It is said it takes 300,000 boys every year to supply the city of London alone, for the city boy is not to be preferred to the short, sturdy country lad full of
life and vigor, and it is these you get the first chance at and get these teeth while they are good and strong and before the ravages of decay, produced by poor food and impure milk, has had its deadly effect upon them, and the cry goes up, God give us men with good teeth.

**THE DAY'S DEMAND.**

God give us men! A time like this demands
Strong minds, great hearts, true faith and ready hands;
Men whom the lust of office does not kill;
Men whom the spoils of office cannot buy;
Men who possess opinions and a will;
Men who have honor; men who will not lie;
Men who can stand before a demagogue
And damn his treacherous flatteries without winking;
Tall men, sun-crowned, who live above the fog
In public duty and in private thinking.
For while the rabble, with their thumb-worn creeds,
Their large professions and their little deeds,
Mingle in selfish strife, lo! Freedom weeps,
Wrong rules the land, and waiting Justice sleeps.

—J. G. Holland.

Twenty-one years ago a pale, thin, cadaverous individual, weight about 120 pounds, went to the city of Chicago with the idea perhaps of locating there, and before coming to a decision thought to consult an old time friend then in practice in the city, and this was his advice: "Go back to the country, the city is a poor place, and if I had my life to live over again, there would I be and my word for it you will never regret the step." He acted upon that suggestion and he now stands before you, weight 190 pounds, a physical organization and a digestive system equal to any and not kept up with the use of drugs, and he has enjoyed a practice and a life which would make many a city dentist turn green with envy, an office equipped with all the modern conveniences, improvements and appliances, motors run by water for dental engine, mallet and fan, the electric current for porcelain work, a window in the operating room 4 feet by 8, and not 300 feet in the air in order to get sufficient light not obstructed by buildings on the other side of the street. What matter is $20,000 a year, and I never believed it, and it takes $19,500 to live, when a practice in the country nets the same clear income? The question of profits are relative.

I do not wish to be understood as discouraging education, but
so many boys are educated far beyond the limits of their usefulness. The sons of the wealthy are brought up in idleness and then sent to college, some seven, some eight years, and after this what? The profession of dentistry. Spending from three to five years at a dental school, and when the time comes for waiting patiently for practice he will not do it. Why? Self-denial he has never practiced, and the consequences are a good merchant or mechanic has been ruined. A boy should be taught “to labor and to wait,” and the proper use of money, whether he has plenty or not; and made to earn at least a little before he reaches to the age of twenty-one years, and after that is plenty of time to prepare for the practice of dentistry or any other profession, and when he has finished he is a man full grown and with sound judgment. Such an one you will find in the country practice, and he is the one that makes the best all around dentist; and in the country town is where he is wanted, and it is there he does the most good to the greatest number, and of very much good to the community in which he lives.

There are so many things a dentist can enjoy in the country town. Let me enumerate a few. He can serve his people as mayor or alderman, a member of the school board or board of health, he can deliver the fourth of July oration, and his oration will be of the practical, patriotic sort that goes right home to the hearts of his people, and they will believe him for he is known among them for truth, veracity; his oration will be published in his home paper, and for the time being he is a bigger man than the president of these United States.

I have always maintained that ministers should preach what they were commanded to do, namely, “the gospel” pure and simple and nothing else. And I, too, want to hold to my text and show you all the beauties of a county practice; and a country citizen where he is a man among men, and matters not be he rich or poor, he is rated for his sterling character, and honored among his associates. I live in a country town, so-called, and have lived there for twenty-five years in the practice of dentistry, and I know what I am talking about. Young man, do not be deceived, “it is not all gold that glitters;” that it is only the country dentist that makes false teeth, uses amalgam and fills teeth with cements only, and root canals with cotton and iodoform. I have lived long enough to know to the contrary, and when the city dentist stands up at society meetings and tells only of the fine gold contour fill-
ings (and nothing else) they make, and always use the rubber dam, take it in with a great deal of allowance.

Do not believe that the State societies are composed of only dentists from the city. Quite a goodly number are from the country towns, and more in proportion to the number from the city.

We may not show up with the latest cut in clothing, but we dress comfortably and will average up with the best of them. We have the health, the bounding pulse, the fresh blood, the firm muscle and quick nerve. "Is not the life more than meat and the body than raiment?"

We stand for something there and can be somebody. We get reasonable prices for our work and throw our whole soul into our business, not for mere dollars and cents; keep a complete set of records and do business on just as strict business principles as any place.

We have but one life to live and one country to love, and I prefer to practice and live among God's green hills or rolling prairies, where we can see the sun shine by day and the moon by night, than simply exist in the city surrounded by brick and mortar.

A NEW PROCESS OF FUSING PLATINUM.*

L. E. Custer, B. S., D. D. S., Dayton, O.

The utilization of the dentist's scrap platinum is an important item in the laboratory. In 1893 I described a new process for fusing platinum whereby the dentist with the Edison current could melt his own platinum scraps. This consisted of a carbon block upon which the platinum is placed, forming one terminal of an electric current, and an arc light carbon forming the other. Upon touching the platinum with the carbon pencil the circuit is closed and the current is established. Upon raising the pencil a short distance the current appears in the form of an electric arc between the carbon pencil and the platinum.

When an electric current meets with resistance to its flow it produces heat proportionate to the resistance of the conductor. It is the resistance offered by the carbon filament that causes the heat and light of the incandescent lamp. The atmosphere is practically a nonconductor of electricity, and yet under certain

*Read before the Illinois State Dental Society.
circumstances it allows the passage of an electric current through it. When two live terminals are brought together a current immediately flows across the junction. If now the terminals be slightly separated the electric current is not broken thereby, but continues to flow across the break in its path in the form of the electric arc. At the air space the resistance is so great that the current appears in the form of heat and light. The heat of the electric arc is estimated at 6,000 degrees F., which when properly manipulated, will fuse platinum.

The platinum which was fused upon a carbon block by means of the carbon pencil as previously described, is given a property of stiffness not possessed by new platinum. The platinum evidently takes up some of the carbon by which it is effected in a manner similar to the addition of carbon to soft iron, it does not effect the melting point of the platinum, but produces an ingot which possesses all the characteristics of platino iridium. The percent of carbon which the platinum takes up is proportionate to the length of time it is manipulated in a molden state in the presence of carbon. If the scrap can be melted together at a single striking of the arc it takes up so little carbon as not to be noticeable in the working of the ingot, and it will be soft as new platinum, but where a large quantity is fused it requires more or less time to gather the scraps into one piece, and it then takes up carbon and becomes hard, somewhat proportionate to the length of time it is manipulated in the presence of carbon.

The platinum which is melted by the carbon terminals is use-
ful for many purposes, and this stiffness is a very great advantage. It answers for backings and makes the very best of pins for anchoring fillings with, for crown posts and for regulating appliances, and is of especial value for the frame work for porcelain bridges and continuous gum.

When it is desired to melt the platinum and at the same time retain its ductility, another method must be employed. It is this that is new. The electric arc is still employed in a manner precisely the same as for hard platinum, but instead of using carbon terminals I now employ a block of lime for resting the platinum upon which forms one terminal and a platinum pointed metal pencil for the other terminal.

The block of lime is merely a receptacle for placing the platinum scrap upon. It will withstand the heat of the arc when used in this manner and does not affect the platinum. The electrical connections are different from those where carbon is employed. Lime is not a conductor of electricity, so instead of attaching one wire to the lime as to the carbon, electrical connection is made by having one of the electrodes terminate in a short piece of heavy platinum wire, which rests upon the block of lime, and upon which the platinum scraps are heaped.

The other terminal and the one which is used in the hand is a rod of brass half an inch or so in diameter and four inches long mounted in a wooden handle. The rod is tipped with a solid nugget of platinum the size of a thimble.

The object in having such a large piece of metal is that it conducts heat off from the platinum tip to that extent that the tip does not melt and unite with the scrap.

It will be noticed that by the above arrangement and as shown in the cut that the platinum scrap comes only in contact with the platinum tip and the block of lime while fusing. It cannot become contaminated by the tip, as that also is platinum, and since the lime is not decomposed by the heat the metal is not affected by its presence. Platinum fused in this manner is as soft and ductile as new platinum and may be rolled or drawn into a wire as easily as new.

Every dentist who has the Edison, or 110 volt current can fuse his own scrap in this way. All that is necessary in addition to the block of lime and platinum tipped pencil is a resistance equal to about 10 or 15 ohms. Five pounds of No. 19 copper wire wound
on slate (school slates) and properly mounted so as to ventilate will give this. Or, an electric oven will answer just as well if disconnected from the rheostat.

In order to get the best results it is important to make the connections proper as to the poles. It is found that the positive pole of an arc is much better than the negative, consequently the scrap platinum should be the positive and the pencil the negative pole. If the pencil should be positive, unless it is a very large piece of metal, it would melt before the scrap, whereas, if the scrap be made the positive pole it melts before the pencil has even become warm.

While not more than half an ounce can be melted at once with the above described resistance, there is no limit to amount of platinum that can be gotten together in one mass with a larger arc by a process of fusing too. It is not necessary to have the whole mass in a fluid state at once, a part may be melted and new metal added.

Formaldehyde—Its Use in Dentistry.*

By H. Prinz, D. D. S., St. Louis, Mo.

Formaldehyde, formic aldehyde, oxymethylene, etc., are the various names given to a substance which of late has claimed the interest of the medical and dental professions.

Chemically, formaldehyde is a gaseous compound representing the formula CH₂O, an aqueous stable solution of the gas of about forty per cent, neither alkaline nor acid, is the usual form in which it is found in commerce, figuring under various titles, such as formalin, formol, etc.

By polymerization of the gas, a white crystalline powder is obtained, melting at about 71°C., which is known as paraformaldehyde or triformol. This is soluble in water and shows the ordinary characteristics of the liquid form.

Formaldehyde was first discovered by von Hofman, in 1867, by passing vapors of methyl or wood alcohol, mixed with air over heated platinum, and this is practically the same process as now employed by the manufacturers. In 1888, Low discovered its powerful antiseptic properties and Berlioz, Trillat and others inves-

*Read before the St. Louis Dental Society.
tigated it further and recognized its high disinfectant value. Stahl, Aronson, Liebreich, etc., of Germany, Kinyoun, of the U. S. Marine Hospital service and De Schweinitz of the biochemical department (Washington) showed by practical tests its high power of destroying bacterial life and pronounce it the ideal disinfectant for sanitary purposes. For such work, either the solution in various dilutions is used or the gas is directly prepared. At present two (2) different modes are employed. In the Moffatt formaldehyde generator wood alcohol is burnt and its vapors are oxidized to the gas by passing over a heated platinum coil and in the Schering’s formalin lamp, the dry formaldehyde in tablet form is volatilized by heat.

Bacilli of anthrax, cholera, typhoid, diphtheria, etc., are checked in their development by a solution of 1:10,000, and pathological cultures are killed by a one per cent solution in an hour. It is therefore equal to corrosive sublimate in germicidal power, and under certain conditions—when albuminoids are concerned—even superior, while being absolutely nontoxic. This property of uniting with albumen and forming insoluble compounds is the foundation of the value of formaldehyde in destroying bacteria, since bacteria and microorganisms generally are not only albuminoid in character, but their food is albuminoid also. When undiluted formaldehyde is brought in contact with living animal tissue, a tanning effect takes place, rendering the skin impermeable. Gelatin, when exposed to its vapors, becomes insoluble, a process now extensively used in photography for fixing plates. This effect of formaldehyde on gelatin was discovered by Dr. Schleich, and he found in the new compound, which he called glutol, an excellent medium to be used in the treatment of wounds. He says in his paper on glutol (Therap. Monathshefte, February, 1896): “Contact of this preparation with the tissues causes a slow, continuous liberation of formalin in the nascent state. As the gelatin is absorbed the antiseptic is liberated, molecule by molecule, thus forming a method of wound sterilization at once very practical and extremely rational.”

Anatomical specimens will be beautifully preserved, without changing their appearance and color, in formaldehyde solution.

As a hardening medium for histological mounts it is excellent and quick, and its value as a food preserver is unsurpassed by any other drug. Many of the newer so-called powerful and ideal
antiseptic and germicidal liquids contain formaldehyde in various strengths, viz. : euformol, borolyptol, Pasteurine, formaseptol, etc.

About three years ago, Lepkowski called the attention of the dental profession to this new remedy, and the results obtained with it were rather gratifying, more so in the conservative treatment of exposed pulps. In the American Text-book of Operative Dentistry, Drs. Louis Jack and Henry H. Burchard recommend it highly; the former one speaking about the relief of congestion in the pulp says, "The most efficient agent for this purpose, generally, is formalin." But there is one great objection against its use in the treatment of exposed pulps; it causes much pain, even in diluted solutions, and the vapors are irritating to the mucous lining of the air passages. Abraham finally succeeded in bringing the drug in a convenient mode of application, which is in the form of a cement, thus overcoming the objectionable qualities. The new preparation is called formagen, and he claims it to be a positive remedy for painless treatment in painful pulpitic teeth in any stage. No arsenic and no extraction necessary. A priori, this statement should be taken *cum grano salis*, as it requires many trials and a longer time for making such a categorical assertion. One report states that formagen was used in 4,679 cases, covering all stages of pulpitis, and only forty-three, or about one per cent, were failures. If these results are correct, they were surely very satisfactory. Since formagen became known, the number of new preparations, such as pulpanalgen, jodo-formagen, formingenol, etc., appeared on the market, all having formaldehyde as a base, and the various reports in the dental journals about these cement speak generally favorably of them. Through Schleich's publication, on his new wound treatment with glutol, I was led to use the same medium in various modifications as a pulp capping material. But as glutol is a coarse powder, and forming only a crumbling mass with the liquids usually employed for these purposes, such as carbolic acid, eugenol, balsamic solutions, it is difficult to apply. Further experiments, based on the reports of Bauchwitz. Abraham, Wickel, etc., led to the preparation of a cement, and it seems to me that it nearly answers the requirements asked of a pulp capping material. Miller (Conservative Dentistry) demands of such a material:

1. It should not irritate.
2. It should be applicable without pressure.
3. It should perfectly protect the exposed part of the pulp.
4. It should not be putrefactive.
5. It should not discolor the tooth.
6. It should be antiseptic and keep this property for some time.

The cement contains about one per cent available formaldehyde which will be slowly liberated when placed over the exposed pulp, penetrating the whole organ and causing but little pain, sometimes spoken of by the patient as a drawing sensation. No discoloration of the tooth will occur. The modus operandi is simple. The rubber dam being previously adjusted, the cavity is cleansed with excavators, all debris removed by syringing the cavity with a tepid one per cent solution of formaldehyde and drying with the hot air syringe. The exposed part of the pulp is then superficially anaesthetized with a mixture of equal parts of eugenol and carabolic acid and directly over this the creamy mixed cement is gently spread. In about five minutes the cement has sufficiently hardened to allow an oxyphosphate cement filling to be placed over it. The instruments used should be previously dipped in the eugenol mixture to prevent the adhesion of the cement. The little drawing pain which may occur will soon subside. As a prophylactic, the gums should be painted with tincture of iodine. Strictly aseptic precautions should govern the whole operation.

What the therapeutical effect of the formaldehyde upon the pulp is, can to-day be answered only hypothetically. Abraham states that the pulp at first becomes hard and indifferent but slowly regains its normal vitality, while Kunert thinks the superficial cauterization of the pulp may result in an aseptic scab, which forms a protecting stratum.

To test the germicidal and penetrating power of formaldehyde cement, I repeated the experiments of Dr. Bauchwitz (*Deutsche Monatsschrift für Zahnheilkunde, July '97*). Freshly extracted pulps of calf teeth filled in glass tubes, one end of which was drawn to a fine point, corresponding to the foramen of a human tooth. Through this point the pulps were infected with material taken from fresh extracted human teeth, being afflicted with diseased pulps, and upon the other end of the tube, the formaldehyde cement was applied, so as to come in close contact with the corresponding crown part of the pulp and over the cement a little wax was flowed. The pointed parts of the tubes were then inserted in test tubes, partly filled with agar-medium and placed in
an incubator at blood temperature. In a few days the pulps became jelly like, beginning at first at the crown part and the agar-medium showed a distinct zone, marking the effect of the formaldehyde action. Bacteria brought in this zone did not thrive to cultures while control tests made under the same conditions, but without the formaldehyde cement, gave rapid growth.

Koehne, Susicky and others have tried the drug in numerous modifications under similar conditions on teeth in and out of the mouth and all agree that formaldehyde is a potent factor in complete sterilization of an infected pulp without injuring its vitality.

Since Miller and Soederberg published their monographs on pulp mummifications, various compositions of the paste have been suggested, but retaining alum or corrosive sublimate as a base thereof. The latter drug is objectionable. It produces a bluish discoloration about the neck of the tooth. Since it was proven that formaldehyde has superior qualities over alum for hardening tissues and a high penetrating power, I tried to use the same capping cement for such purposes, but added to the powder an equal amount of thymol, which is also a part of the preparations suggested by the above named authors. The thymol produces a more durable sterilization of the minute pulp remnants. Although the experiments are still limited, they are certainly encouraging. A number of cases have been treated by this method, covering a period of about six months, and so far they have given good results.

Lately a dentists' formaldehyde sterilizer has been brought on the market by E. Lilly & Co., of Indianapolis. If not already known to you, you will conceive the idea by examining the cuts of the apparatus which I have here. By attaching a continuous spray drier to the dental sterilizer, the gas may be conducted into the tooth cavity. Probably a similar effect may be produced by placing a broken up half tablet of the dry formaldehyde, loosely wrapped in cotton, in the air chamber of the hot air syringe. A formaldehyde hot air syringe has been patented lately in Germany; the working of it is unknown to me, but it seems to be built on the principle of the Moffatt sterilizer, as a wood alcohol flame for heating is used. When the pure gas is employed, care should be taken as the vapors are very irritating to the mucous linings and eyes.

The different preparations of the drug which I keep on hand for daily use are made according to the following formulas:
For a general antiseptic wash:

Formaldehyde solution (forty per cent) ........ drs. iii.
Seiler's antiseptic tablets . .......... No. iv.
Glycerin pure ......................... oz. j.
Water enough to make ......... ozs. xvi.

Use undiluted.

This gives about a one per cent solution of formaldehyde. Its detergent quality is materially increased by the addition of the alkaline Seiler's tablets. For a mouth wash after extractions or as a general dentifrice a further dilution, say one to ten parts of water, is recommended. For sterilization of root canals a five or ten per cent solution of formaldehyde is preferable.

The capping cement consists of a powder, composed of an intimate mixture of:

Dry formaldehyde (paraform) .................. grs. x.
Calcined sulphate of zinc ...................... drs. x.
Calcined oxide of zinc ....................... drs. xv.

and a liquid prepared by dissolving:

Borax ........................................ grs. x.
Gum arabic ................................... drs. ij. in
Water ........................................ drs. xxv.
Formaldehyde solution (forty per cent) . gtt. xx. Filter.

For pulp mummifications:

Capping cement powder.
Thymol ...................................... of each drs. ij.
Dry formaldehyde (paraform) ............... grs. x.
Mix.

The liquid is the same as used in the capping cement.

The above named preparations are put up and kept in stock by Mr. E. A. Lehman, Ph. G., 1323 S. Broadway, St. Louis, Mo.

To sum up, formaldehyde and its various preparations are of marked effect and therefore indicated:

1. As a general sterilizer and antiseptic, more so when a deep penetration of the agent is wanted.
2. As a pulp capping material:
   a. In cases where the organ is still covered with a thin layer of dentine.
   b. In accidental exposures of the pulp.
   c. In acute partial pulpitis, and
   d. In acute total pulpitis.
As pointed out by earlier authors, periostitis prohibits the use of formaldehyde.

In conclusion, I do not claim formaldehyde to be a panacea in the hands of the dentist, but the results so far obtained have shown it to be a valuable addition to our materia medica, and I can recommend it very earnestly for further investigations to my professional brethren.

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**PROCEEDINGS OF SOCIETIES.**

**CHICAGO DENTAL SOCIETY—MAY MEETING.**

**INCIDENTS OF OFFICE PRACTICE.**

Dr. Elgin Mawhinney opened the discussion under this head by reporting the following case:

The case I wish to report is that of a girl, ten years of age, apparently in perfect health. Her nutrition is excellent. She has no hair or permanent teeth. She had the full complement of temporary teeth. The anterior teeth are all conically shaped. I probed into the jaw where the sixth year molar should come and found an abundance of room for it, but there was not the least sign of it anywhere, nor was there any sign of incisors. So far as the preservation of the teeth is concerned, all of the anterior teeth, as I have said, are conically shaped and as sharp as the anterior teeth of a cat.

In looking up the literature I have been unable to find a single similar case where there was any sign of permanent teeth at ten years of age and the retention of the temporary teeth. I expect to have casts of the case and will be able to watch the patient. The remarkable thing about the case is this, that she is in perfect health; has never been sick a day and has never had any of the fevers common to childhood.

Dr. Roach: I would like to report a case that came under my care recently. It is one that has given me occasion for considerable thought, and as yet I have not been able to make a satisfactory diagnosis. The patient was a lady for whom I made crowns and bridges for the entire upper denture. I removed the nerves from all the teeth except the right upper second molar. This tooth I used for an abutment in a bridge and as it was perfectly
healthy and its form such that but little grinding was necessary to prepare it for a gold cap I did not remove the pulp. Caries had only penetrated through the enamel and was of the black class of decay. The tooth was never sensitive at any time, nor did it give the slightest trouble during the process of preparing and setting the cap. But after about two weeks of perfect comfort the patient was attacked with severe pains on the right side of the face. The pains came in paroxysms and would be inflected to all parts of the right side of the head. This condition existed for about ten days, when during one of the attacks she fainted and upon regaining consciousness found the pain had ceased completely and over two weeks have elapsed now without a recurrence of pain. I saw the patient twice during the ten days of pain but could not locate the source of the pain. My first thought was that the nerve in the molar was dying, but careful diagnosis disproved this theory. She had been subject to such pains before, but not in recent years.

I can understand why the pain should cease when she fainted but why should it not occur later? Would like to have some member of the society explain the case for me.

Dr. Truman W. Brophy: As bearing upon the case related by the Secretary, Dr. MaWhinney, I would state that these cases are not uncommon. I have had an opportunity of seeing two children that were deficient in hair, in teeth and nails. The last case I saw was a boy nine years of age. He had three upper molar teeth; he had never had any lower teeth. He had never had any teeth anterior to the three molars, and had had no teeth in the lower jaw. He was not only deficient in teeth but in hair, in nails and in sweat glands. This little fellow came from the State of Missouri and lived in Chicago until last winter, when he was taken ill with pneumonia and died. He had a partial upper and full lower artificial denture adjusted. He was in the habit of going into the cellar in the summer time when he was very hot in order to be comfortable, as it was impossible for him to perspire he found it very trying to endure the hot summer weather, while in the winter he was very active and able to exercise the same as other boys. He lived three years after I first saw him. He was unusually bright mentally. The case excited a good deal of interest among a few of us. I exhibited him in one or two places, and called attention to the absence of these important parts of the body, and to the fact that he was able to get on quite well. His
Speaking The cases.

The other case I saw about fifteen years ago, a patient of Dr. Swain, who had never had any teeth. His hair was very thin; his nails were imperfectly developed, although he had them. Dr. Harlan saw the child and knows a good deal about it. There was an absence of both the sweat and sebaceous glands. The flow of saliva in these two cases was profuse, so that it was difficult to control it. The skin in one of the cases was more like parchment than true skin. The exfoliation of scales was unusual, as the surface of the skin was always dry.

I report these cases to show that they are not uncommon. This is the third case within my knowledge that has occurred in Chicago within the period of fifteen years. I presume that if we were to look about a little we would find a great many more such cases.

Dr. Louis Ottofy: I will say that those who are interested in this subject will find an interesting paper by Dr. Guilford, published in the Transactions for 1893 of the World's Columbian Dental Congress.

Dr. Elgin MaWhinney: The interesting point in my case is that the patient should have the full number of temporary teeth and the development of no permanent teeth. I read the cases reported by Dr. Guilford, but did not find any where they had temporary teeth that were not succeeded with permanent teeth of any kind. Her nails, toes and fingers are perfectly developed.

Dr. J. E. Hinkins: I have a patient fifty-six years of age for whom I am making a full denture. Dr. Dean, some years ago, made a full denture for him and told me that the man had never had a tooth. There is no abnormality about the hair or nails. He is a newspaper man in this city. He never had but one set of teeth made by Dr. Dean, and he had worn them down to the pins.

Dr. A. W. Harlan: Speaking of incidents of office practice, about three months ago a gentleman came to me to have a tooth bleached, and the pulp had been dead for thirty-one years. It was a central incisor. It had a soft gold filling in it; it was pretty close to the pulp chamber, and the tooth was almost black. In addition to the blackness from the inside, he had been an habitual chewer of tobacco and smoker of pipes, so that not only the end of
the tooth but all other teeth touched by the pipe or tobacco were equally black. I drilled into the tooth and after washing out the cavity and filling the root, I concluded I would try the experiment of Dr. Keefe, namely to bleach it with a twenty-five per cent pyrozone and sealing it in the cavity, as nearly as I could. So every day I put in a twenty-five per cent solution of pyrozone, having adjusted the rubber dam in each case, so that nothing could get in from the outside. At the end of twelve days I had the tooth completely bleached, so that it was whiter than its next-door neighbor. I then dried the interior of the cavity completely, filled about two-thirds of it with oxychloride of zinc, covered it with oxyphosphate of zinc, allowed it to harden, and varnished that with gum dammar and sent the patient away for a week. On his return I put in a gold filling, covered the exposed dentine everywhere, saw the gentleman yesterday, and the color of the tooth was just as good as it was when I completed the operation.

St. Louis Dental Society.

Discussion on Dr. Prinz’s Paper.

Dr. Whipple, in opening the discussion, said: I wish to compliment Dr. Prinz most unreservedly upon the preparation of this paper. The society is to be congratulated for having so careful a student and investigator in its membership, and one who apparently possesses a more intimate knowledge of chemistry than most dentists.

The fundamental characteristic of formaldehyde as a germicide is found in its property of uniting with albumen and forming insoluble compounds.

In this respect it is perhaps superior to any other.

When undiluted, formaldehyde may tan the living tissues; but I have found that when used as in one per cent solution it causes severe irritation accompanied with considerable pain owing to its caustic property. I have been compelled to abandon it in three particular cases for that reason. I am absolutely sure of this fact.

I have not used it as a capping for pulps and am disposed to take the essayist’s advice, and take all such statements with “a grain of salt.” Without claiming to know I am disposed to think that in such cases it only acts as a mummifying agent; time alone can determine this point.
If Abraham's statement that the pulps at first become hard and indifferent, but slowly regain their normal vitality, should prove to be permanently true, then surely a great advance in conservative dentistry has been attained. I do not question its value in pulp mummification.

I am a strong advocate of this practice in teeth with small and tortuous canals, having used a preparation composed of equal parts of alum, thymol, glycerol and oxide of zinc for the past two years without a single failure that I know of.

Some gentlemen have called this "slovenly practice," but success is what we are striving for and any method of practice that brings it should be welcomed by the profession.

I should not like to use formaldehyde as a mouth wash after extraction for reasons I have alluded to. The further fact that periostitis prohibits the use of formaldehyde should warn us to be very careful in its use.

It should only be accepted after patient and careful experimentation, and then with such caution as wisdom may indicate to be proper.

Specifics come and specifics go, but the old standbys ever remain with us.

Dr. P. H. Morrison: It is a hard matter to take exception to such a scientific paper, and I will not question the knowledge of chemistry displayed. The paper is another evidence of what I consider the craze of this age.

It seems the iron age has been superseded by what I call the "age of bacteria, germ killers, antiseptics and disinfectants." It is hard for a busy man to keep track of new germs, not to mention their numerous destroyers.

(A bacillus reminds me of a modern battleship.)

Formaldehyde was discovered before I was born, its disinfectant qualities ten years ago, and it now comes before us like a mushroom.

If one per cent sol. kills anthrax bacilli in one hour think what we have missed! Its mode of manufacture seems too difficult to me to be a uniform, commercial product, producing always the same physiological action, and its irritating effects on vascular tissue condemns it in my mind, for the treatment of inflamed pulps or in the oral cavity, unless used very much diluted.

Its combination with cement may be good, but I will stick to my old combination, which has stood the test for years.
Speaking of the action of formagen on pulps, I believe it rather has the effect of coagulating and tanning.

As a practicing dentist I consider the experiment on calf pulps in glass tubes worthless, as I never use an irritant immediately on an inflammation, but adjacent to it, thereby establishing counter-irritation. One good use to which I think this strong disinfectant could be used to advantage was not mentioned in the paper. If it does not destroy tisse it does not corrode instruments. I should like to try it in operations for implantation, viz.: to sterilize teeth etc., outside the mouth.

I condemn the drug in its gaseous state, about the oral cavity, and recommend it to the city health department for use in cavities and rooms of houses. You see I infer from the paper that formaldehyde is a disinfectant.

The author did not allude to treatment of putrescent root canals, etc., but I suppose it irritates and coagulates albumen. I would (like the author) recommend it for further investigation and add be slow in taking up new unknown drugs, methods and instruments, such as cataphoresis, hypnotism, formaldehyde, the elixir of life, etc. The majority will die a natural death.

Dr. Cowdery, the third man to discuss Dr. Prinz’s paper, said: I have enjoyed the paper very much. I am pleased to get information of anything new that will benefit our profession.

The drug written of in this paper is one that I have had no experience with, and therefore I do not feel like taking issue with the essayist on the virtues claimed for it.

I strongly hope the cement will prove all that is claimed for it, but I must say I have my doubts. I would like to know how this record of some 4,300 cases with less than one per cent of failures was made, length of time, class of patients, etc.

I am much interested in this cement and am willing to give it a conservative trial in my practice. I should prefer to first give it a fair trial in cases of pulpitis in teeth of dentists.

Illinois State Dental Society.

Discussion of the President’s Address. See Page 436.

Dr. C. N. Johnson, of Chicago: I don’t want this to start out as a Quaker meeting and I hope every moment of the time will be occupied.
I was very much pleased with the address of the president, and there are two or three points that I should like to touch on. I agree with his remarks relating to the benefits obtained in attending dental societies, and I can truthfully say that I have been amply repaid already for the time and expense incurred in coming to this society. I have been repaid in the friendly handgrasp of my fellow practitioners. I am repaid in the fellowship that comes to me as the result of these meetings. I do not believe it is possible for any man to estimate the full value and benefit to be derived from these meetings without attending them. There is another thing, the president in his address spoke of there being a twofold duty that the practitioner has to perform, one to himself and the other to the profession at large, and that is true. Those are both important duties, but I would go one step farther than that. I believe that the greatest duty we owe has not been mentioned, and the more I live in the profession the more I am impressed with this one thing, that our fundamental duty as dentists is the one we owe to the public at large. We do not meet here alone for the personal benefit that we may gain by it; we do not meet here simply for the benefit of the profession; we are meeting here for the benefit of humanity, and when we consider that every man who attends one of these meetings and gains some new points in science, and goes out into the world and meets his patients so much better equipped to treat them intelligently, I think then we have come down to the gist of what these meetings really mean, and I hope we will all keep that aim in mind.

Dr. Edmund Noves, of Chicago: I want to make an amend- ment to what Dr. Johnson has said and add to it a little. The statement he has made is pretty broad. He says our first duty is to humanity. I would say that the first duty of a professional man is to his patrons; to serve them is the business of his life. That is what we live for, or what we should live for. It is our every day work, and the duty which takes our thought, our time and our strength from hour to hour and week to week. It should be the first duty and is of the greatest importance. Second to that, (I would not put them quite in the order that has been done) second to that a man's duty is to his profession, and this is closely related to the other and is only an enlargement of it. Every help and value which a man can contribute to his profession is a contribution to a larger number of patrons, those who are depend-
ant upon the profession for service. Last instead of first is a man's duty to himself, and this with reference to preserving his power, increasing his ability, his strength, his efficiency of service for his profession, for his patrons, for the community in which he lives and for the great world of humanity. That is the way it seems to me this matter should stand in the minds of right thinking men. There is one other thing referred to in the address which we always hear and which I sometimes think may possibly be just a little overworked. I mean the statement that prior to about forty years ago there was practically no fellowship among dentists, and a spirit of selfish exclusiveness with respect to every man's particular knowledge and skill, and this is always attributed to a desire to retain personal possession of individual or exclusive knowledge or methods of practice. It seems to me that it is hardly fair for us to assume that human nature is so very different now to what it was then, and I believe a good part of this secretiveness may just as reasonably be explained on the ground of diffidence and want of knowledge of what other people are doing, as on the ground of selfish rivalry. Men who do not know what other men do are sometimes timid about making public their own performances. If you can get them together and get them started they may find that they have something to give and that other men have something which they can receive, and they begin to feel that the foundation under their feet is more secure, and they become less diffident about giving themselves away and more free in exchange of ideas. The communication in societies is, and has been for a long time, almost the only way in which this secretiveness can be broken down, and it is undoubtedly one of the most important uses which the societies have served. The value of it can scarcely be appreciated by young men who have been educated in college communities and have no idea of the isolation and exclusiveness that was in the lives of men who were trained in offices in contact with single preceptors. And so the societies and colleges have both been strong factors in breaking down this spirit of diffident exclusiveness that undoubtedly did characterize the profession forty or fifty years ago.

Dr. Garrett Newkirk, of Chicago: I thought that was a most excellent address, full of suggestions, and I think that the president and both the gentlemen who have spoken are substantially agreed. The president, in speaking of the first motive, or the
important part of the education as being related to one's self, intended to make that broad enough to include the two points mentioned by Dr. Noyes. Now I wish to emphasize again this one thing which I have been harping on for many years, the importance of local societies everywhere in the State, and the importance of every young man attaching himself to one or more of them. There is not anything which will do a young man so much good as to unite with the society which has a local habitation in his city, or associated cities (as at Rock Island, Moline and Davenport on the Mississippi), or in the district where he lives. There is in such societies a good fellowship; a lack of that restraint which young men are apt to feel in the presence of those older in the profession. The local society is the place for the young man to get a start, and then afterward he will probably want the State society. There ought to be more of these local societies than there are, and those we have should be more thoroughly sustained and encouraged by those immediately interested. If there is any young man here who does not belong to his local society, I want to urge upon him to go to the first meeting and join it, and take part in the proceedings.

There was one recommendation which was made in the address that I am doubtful about, and that is in regard to meeting in Chicago and having a great clinical meeting. Now, we have several alumni associations there who take up this clinical business, one or more of them every year, and they do it up pretty thoroughly. I am inclined to think that the office of the State society is just a little outside of that, and that we had better meet some other place than in Chicago. I think we would have a better meeting at Rockford, Peoria, Quincy or Ottawa. It is such a rest for us Chicago men to get out from under the everlasting cloud of smoke that obscures the whole sky and makes the horizon absolutely invisible; such a relief to get out and see God's blue sky, and the green fields, the orchards in bloom, and to hear the birds sing once in a while. Oh, do not make us meet in Chicago, please.

Dr. J. W. Cormanv, of Mt. Carroll: I was just about to call Dr. Newkirk down because he was getting just a little bit on my subject. But I want to call the attention of the members, and those here who are not members, to the practical side of being a member of the Illinois State Dental Society. I paid my dues this morning for the twentieth time. The least that I ever paid in
attending a State meeting was $25, and the most that it ever cost me was $50. But I was going to say that the more societies I go to in the course of the year and the more that it costs me to get there and get back, the more money I make that year. Now that it is an absolute fact, I know it. And it just seems that my community say to me: "Here's a man that goes to the State meetings, he goes to his district meetings and he takes part in those meetings; surely he must come home and know more than he did when he went." And I do, and I hope to continue to attend them so long as I live.

Dr. T. W. Brophy, of Chicago: I was very highly pleased with the address of the president because of its great breadth. In the preparation of his address the president kept in mind the fact that our usefulness is not limited by any means to ourselves or to our patients. The greatest usefulness of the professional man is in the dispensation of knowledge. Every man is a teacher. Those who come under his instruction may not be many, but he teaches some of them. We teach one another, and if we were not to do so we would not be fulfilling our duty. There is no practitioner no matter where he may be located, who is unable to teach some fellow practitioner some special thing. And the greatest usefulness of a professional man is in the capacity of a teacher. If he be connected with a college and has the education of pupils in his hands, his responsibility is great indeed. The greatest duty of a professional man is to the public. I have made this statement a number of times, and I will repeat it, that a large majority of the people are uninformed as to dentistry and as to its usefulness, as to its importance to them, and so our greatest mission is to teach the people, and this we should do whenever it is possible to do so. We come here, we teach one another, and the young man who fails to come makes a mistake. I congratulate the society on having listened to so able an address. It gives us something more to think about. I met a young man in the elevator yesterday in the building in which I am located, and I said to him: "Are you going to the State Society meeting?" "What meeting?" said he, "why, I didn't know anything about it." "Why," I said, "don't you know we have a State society?" "I supposed you were going," "No," he said, "I can't get away." I said, "Young man, you will find after you have been in practice about ten years that you will be unable to stay at home during these meetings providing
you catch the proper spirit. You cannot afford to stay at home; you cannot afford to miss the great flood of instruction that will be given at these meetings; there is always at every meeting many valuable papers read."

As to the place of our next meeting, I always delight in the beautiful expressions of Dr. Newkirk, who has been so gifted in his utterances in poetry and in song, but I do not agree with him. I believe if the mission of this society is to teach—and I certainly believe that is its mission, it has shown that by its existence—and therefore, I believe that at this time it cannot do better than to go to Chicago to hold its next meeting. It is said that there are nearly one thousand dentists in Chicago. Out of that number a very small percentage come to these meetings, and if this society goes to Chicago and gives out that there is to be a meeting of this kind, there will be the largest meeting that ever convened in the State of Illinois. I think we will get 150 new members in Chicago, and if we get 150 new members, providing not over twenty-five per cent of that number remain in the society, we will do a great work. I think our society increased last year about fifty members, and I believe that seventy-five per cent of them will stay in the society. We will do the profession more good, gentlemen, by going to Chicago, I think, next year, than by meeting any other place. The judgment of the society may not lead us there, but if we go I think it will be a wise step.

Dr. E. K. Blair, of Waverly: The line of thought that seems to be uppermost in the minds of the members of the society who have just spoken, is that there is a great degree of diffidence on the part of some of our very best men in the State. Something ought to be done, if it is possible, to lift them up out of that position. Some of our best men are timid, or backward, or whatever word you choose to use. They are backward about coming before the society as clinicians. I do not offer this in a critical way; I simply say it is a condition that exists; I have found out to my satisfaction that it is not a theory. Now, for a long time the society has made a strenuous effort to increase its membership from members of the profession throughout the State. I believe that the society ought to grow, and yet, the thought is gaining a foothold in my mind that continually urging people to join our society, may be keeping some of them out. I note that organizations that have a key turned in their door, and a password, have
to have a guard with a gun to keep people out. If there is something just a little bit mysterious the applications come in just as fast as you want them, but if you throw the doors wide open and extend the right hand of fellowship before it is extended to you, the thought is that it is a little bit common. I agree with Dr. Corman in what he has said in regard to the practical side of the question; and as to the expense account that I have made in coming here, it has never cost me $50, but I have received a sufficient amount of benefit from this society to enable me to realize in a very short time after going home that I was ahead financially. I wish to have you think about the matter a little, as to whether we ought to urge these fellows quite so much. I know there are two or three thousand dentists in the State, and they ought all to belong to a society, and I lose a little bit of patience with some of them who stay outside. It is a good thing and they ought to know it. They ought to see it is a good thing and take hold of it.

Dr. E. H. Allen, of Freeport: I was asked a day or so ago if I was going to attend the meeting of this society. My reply was that there were only two things that could possibly keep me away, one was sickness and the other death. I told the individual that I could not afford to stay away from this meeting. The president in his address has very happily stated the subject, and he speaks of the work of the society as being educational. Some one in the replies that I got last year in gathering the material for my paper called this society a post-graduate school. Now, it is. Then, to go a little farther, one of the aims of this society is to show a missionary spirit. I tell you I do not believe anybody in this society understands the value and the necessity of a missionary work better than I do. I regret to say that I am the only one here from Freeport. I have tried to get others to come. To show you how some feel about it, one stated in a cringing sort of a way that no, he couldn't go this year, he was fixing up his office. He has been doing this for two months. Another one would like to come, but he thought that $5 a year was a pretty big fee, and he had to pay $5 every year in order to keep his membership, but if he could come here when he felt so disposed and pay while he was here and still retain his membership, he would be very glad to come. Now, the work is to eradicate that spirit and that feeling. I do not believe, however, (I may be pessimistic in my views) that
we can get a society of 600 members in this State. I at one time
did think so, but I do not believe it now, because, as I said before,
of the incompatibility of temperaments and characters. I think
that human nature in the dental profession is just the same as it is
anywhere else. There are people who never affiliate with any
society; and yet, not alone in the dental profession, but in all other
professions, there seems to be a tendency among the people to
organize societies and carry on society work. We have our labor
organizations; we have our fraternal and educational organiza-
tions. But, on the other hand, I think that the dental profession
is away ahead of the medical in regard to society work. I have
no statistics to carry out that statement, but I simply make it from
observations that I have made in my personal acquaintance with
medical fraternities. Now, there are possibly in Freeport only one
or two physicians that attend any medical society, and the rest of
of them all stay at home; they think they cannot go. I also have
observed that the representative men of any profession are engaged
in society work. I wish I knew of some plan to work up this mat-
ter, but I confess that I don't know any better how to get at this
work and create an interest among the outsiders in society work
than I did three years ago.

The suggestion of meeting in Chicago next year I think a
good one. The idea that if we get the country people up to Chi-
cago they will all attend the theaters and other places of amuse-
ment, and that we won't have any meeting I think has been entirely
refuted by the clinics of the Chicago dental societies and by those
given in St. Louis, and if there is any need of missionary work
anywhere in this State it is in Chicago.

Dr. Grafton Munroe, of Springfield: I was pleased with
the president's address, especially that part of it which referred to
education. Our president's address of last year sent me home
imbued with the idea to do what I could to start a local society.
And several of us got together to think of some way to get that
society started, and we started out on the round robin style so that
no one would receive more credit than the other. It worked
beautifully, and in regard to missionary spirit, I think Dr. Allen
would find that just the finest sort of way to start the missionary
spirit in connection with the State society, is by getting his own
community started on a local society. It pertains to dental work
as well as to general work, and if we can get up local societies and
get them to going we will get the men interested in dental work and in dental talk and in topics that pertain to dentistry, and in that way we will get the missionary spirit worked toward the State society. Our local society has met the second month. We have no very formal organization, although we have been working over two months on constitution and by-laws. At the last meeting we passed around a hat with questions in it. We were at a loss to know just what to do, and we appointed a committee and they decided on this plan, and we got a whole hatful of questions. At our first meeting we had fifteen dentists present; that was a starter. They had signed that petition and they thought that they must go after signing it, although some of them did not come who did sign it. But we did not let anybody escape; we went even to the advertising men in our city here and asked them to join. We wanted to get together in friendly intercourse and do away with the hostile feeling that so often keeps dentists apart. After that meeting our second meeting was called with the program announced and we had quite an interesting meeting. They all took part, that was the important matter, and I expect our third meeting will be even better than our second.

In regard to the way in which a dentist can educate a community, I found that when I attended the Odontographic meeting in Chicago most of my patients knew that I had been away. When I came back I would speak to my patients about little things that I happened to catch at that meeting. I would say, "Now this is something that I got at my convention." They saw that I had my eyes open while I was away. I think that anybody that does not enjoy a dental meeting for their own benefit, as well as for what they can get for their patients, must be a queer sort of a fellow. To-day in this State building a gentleman said to me: "What are you meeting for?" I said, "We are meeting for the people's sake." "Oh yes," he said, "is that so. Don't the people have to pay you?" I said, "No, we are paying the expenses." "Oh," he said, "but don't the people pay you for fixing their teeth?" I said, "Yes, but we learn better how to do it."

Dr. G. H. Henderson, of Springfield: There has been considerable said about how much we can do and what we ought to do. Two years ago I joined this society; it has amply repaid me. All along in Springfield it has been told me and others that it was utterly impossible to form a local society. I did not believe
PROCEEDINGS OF SOCIETIES.

527

it then and I do not believe it now. If you want to get members into a local society, get after them, and show those who are around you that you are willing to talk to them. Our Springfield dentists I believe to a great extent have gotten over the idea that the others were down on them; that the others were rivals. There are no rivals; there is room for us all. There is a place for all of us if we can succeed in finding that place, and by joining societies and helping along in that way we will find our place and be better fitted to work for our patients. If any of you have not a local society, get one, and if you want one go out after it.

Dr. J. G. Reid, of Chicago: I want to say a word with reference to what Dr. Allen has said. One thing rather surprised me a little, and that was, he did not think it was possible for the Illinois State Dental Society to increase its membership to 600. The gentleman who just sat down has very aptly hit one of the keynotes in the success of a dental society. If we expect to have a society we must work for it, and that rests with the members of the society. If every member of this society has the society at heart, and its interests and its future, he should work for it. Now, there are about 265 members in this society. There are about 25 out of the 265 that make an effort to increase its membership. Now, there is a lack of interest, individually, in approaching and soliciting your neighbor to join the society. I believe that if this method is followed rigidly and in the right way, this society would have a membership of 600 without any trouble.

Dr. Geo. D. Sitherwood, of Bloomington: I only heard the latter part of the president's address, but I am glad to hear this talk. I was interested in Dr. Allen's remarks. We tried to start a local society in Bloomington recently, and I believe we will have one yet, in regard to all this talk about the increase of membership, I believe that we will increase the membership. There is no doubt about it, because dentistry is growing as a profession, and it is becoming better known in the world. You all are aware that dentistry is yet divided into two classes—the mechanic who remains at home, and the professional man who attends the State society meetings and the meetings of the other societies. A great bulk of the public at large do not know of this and have not yet learned to distinguish between a mere mechanic who fills teeth and a professional dentist who treats teeth successfully. While it would be pleasant to us, and a great deal better for the
world if we had a much larger attendance, yet, the world is benefited because of the attendance we have in this society. When I look around me and see the faces of members of the dental profession of the State of Illinois who make dentistry what it is, who are the leaders, the teachers, the educators in dentistry, and while comparatively few meet here, yet, the others get the benefit, just as it has been in the Dental Protective Association; a few paid the money, the others got the benefit. So I am not discouraged with reference to our work as to what we gain and what goes forth, because our numbers are not so large as we would like, our influence is great and the public is lifted up and benefited, and we mould and make the sentiment or whatever you may call it. One point I wish to speak about is that which keeps many men out of the State society. I have made considerable effort to get more into the dental societies. The code of ethics which we have being on a high plane as in all good societies, keeps out a large number of men. They say they cannot live up to them so they stay out, and it is better for them and better for the society that they do stay out. Yet, at the same time, I am in favor of this missionary spirit. Each one do all they can, and if each one will do their best, we will increase the membership of the society.

Dr. J. G. Reid, of Chicago: There was one other point that I forgot to speak about, and that was the education of students. I believe we should start our work in our institutions of learning; educate the student to associate himself with professional gentlemen and in a professional way, and if he is started on that track he has some guide to go by and will generally follow it.

Dr. Shryock, of Fort Wayne, Ind.: I have had the pleasure of attending the meetings of this society every other year for the past ten years, and I have never attended any society I have enjoyed more or that has done me more good.

A great many who are not members of our societies claim that it is the code of ethics, that keeps them out—I have had experience for twelve years in our own State society and have tried to bring in other men—their general excuse is that they are opposed to the code of ethics, but I am inclined to think that they do not wish to display their ignorance. A man who is a man, whether he is in the ministry, law, medicine or any of the learned professions, does not need any code of ethics. In the first place, no
code of ethics will ever make him professional; that is the stumbling-block, and the gentleman who just spoke with reference to the difference between the professional man and the mechanic certainly explains it to a nicety.

Another point: I believe that for the past forty years we have been having dental societies, and as I said before, I always look upon the Illinois State Dental Society as being one of the best in the land. It seems a little queer that the capital of this magnificent and progressive State has just started a local society. About three years ago the Isaac Knapp Dental Coterie, of Fort Wayne, Ind., issued what is known as the Dental Instructor. I corresponded with Dr. Munroe, asking if he could use any in his practice for the good of the public, but he wished Illinois to have the credit of originating all good things. In the end, however, he gave me an order and I hope was pleased. This is why it seems queer to me that he should have been so slow in starting a local society.

At home we had a society thirty years ago, and have had with the exception of a few years. The Coterie passed its seventh anniversary January 20, last.

With reference to our dental colleges teaching ethics, there is a young man from a Chicago college now in a dentist's office in Fort Wayne. He called the other evening, and in the conversation I asked what was taught in the college with regard to the code of ethics. "Why," said he, "it is never spoken of." He just laughed and said, "Why should the professors want to teach us the meaning of the code of ethics, when the colleges advertise as they do in the city papers?"

Dr. T. W. Pritchett, of White Hall: I do not have much fear for the future of this society. We all know that it is very good or we would not be here. I do not know that I am in such hearty accord with the idea of building it up so exceedingly large. If a large body, six or seven hundred dentists, were to meet together I can hardly imagine what sort of a meeting it would be. It would have to be planned on very different lines from those on which we now conduct it. I think it is certainly true that every man who is worthy to become a member of this society ought to know that he has a welcome here if he will come and take it. And I am not spending a great deal of time in this missionary business. Every one that I meet I talk to about it, but I do not go out of my way great distances to hunt them up. Every man should know—he
does know—about the terms on which he can ally himself with our societies, local and State, and I am very well satisfied with the conditions of our society as they exist. We had a fine addition last year, and I have no reason, so far as I know, to doubt that we may not have a larger addition this year.

Dr. P. J. Kester, of Chicago: I do not know that I can add much of interest on this subject. It is one, however, in which I am much interested.

Having been associated more or less in college work for years, what has impressed me most is the spirit of commercialism that seems to be developing in the profession. Gentlemen attend dental meetings, and contend that it is a profitable investment, meaning that they are able by some means to transform their attendance here into profit at home. This is an age of commercialism and it pervades the dental profession in their ordinary practice, and many times in their experimental work. I think I can illustrate in my own case the difference between the truly scientific and the imitation man of science. Every experiment that I make, the idea of the cost enters my mind. The true scientist does not consider that at all. I have occasionally been associated with a truly scientific man, and he has no regard for the cost of things at all, and only considers the benefits that may result.

True professionalism should be taught in our schools, something akin to the fraternalism taught in some of our social orders, which advises you to defend a brother if the chances of saving his life are greater than those of losing your own. To benefit your patients regardless of whether you shall be repaid in dollars or not, you may serve or not; but if you do then it becomes your professional duty to do the very best thing, even though you may know that your patient cannot afford to pay a proper fee. That is none of your business; that is simply unfortunate.

Dr. L. W. Skidmore, of Moline: I have been very much pleased with our president's address, and I am glad that he has brought out so prominently this feature of benefiting our profession by associating ourselves together. I presume many think that they can gain what knowledge is necessary from reading our proceedings in the dental journals, but they certainly cannot get the benefit from it that they can by coming, listening to and seeing the men who take part. I am glad also that he spoke of the Dental Protective Association. I do not believe that any man should get the benefits of the association without helping to pay the costs.
Dr. J. N. Crouse, of Chicago: There is one important question which should never be lost sight of—what constitutes the dental profession? It certainly is not limited to the Illinois State Dental Society, nor to all the men of the various societies, which would constitute probably four or five thousand out of the many thousands in the profession. When we reach the place, as the essayist stated, where there is no opportunity of increasing the membership of the dental societies to a greater extent than we have, the question arises whether we are a profession or not. The danger is greatly increased by the fact that we have about sixty colleges which claim to teach the young men of our country to be dentists. While the technique of the various schools is very much improved, thereby necessarily bettering the skill of graduates, the professional spirit is not augmented by such a host of young men coming in as it should be.

The great mass of the dental profession are very hard to arouse and a reform cannot be brought about by any one man, but it must be done by many men in small ways. Let me illustrate. In the little town in Vermont where Judge Wheeler lived (he is the judge who heard the case reversing the decision of the higher court regarding the Low bridge patent) there were five dentists. When I was up there in connection with the suit, I found that four of the five dentists were members of the Protective Association, and it struck me that there must be a pretty good class of men in Vermont. Upon questioning as to how there came to be four members out of five dentists in the town, I found that it was due to social intercourse. These men met evenings in their various offices and a brotherly and professional feeling was engendered, which I am sorry to say is very much lacking in the profession today.

This society has had a great record, but not especially great in proportion to the number of years since its organization. We should have at least half of the men in the State members of this society. While there are a great many men in the dental profession to-day who are beyond recall, there are a great many others who ought to be in the societies and helping us with our work, that we do not get hold of.

Dr. G. V. Black, of Chicago: I want to say that I congratulate the society and the president upon this address. I have been highly pleased with the discussion. I see that the clock is point-
ing to the hour of twelve and many may not want to sit longer at this session. There are a considerable number here, Mr. President, for the first day in the morning, and I congratulate the society upon that also.

Dr. Garrett Newkirk, of Chicago: May I add just a word? We have here a number of college professors who are engaged in teaching young men. I want to suggest that every graduate of a dental college ought to be pledged before he leaves college that he will become a member of some good, live society.

Dr. R. N. Laurance, of Lincoln: A dog will be a dog in any country. No code of ethics, no local or State society nor any amount of teaching can make a gentleman out of a chump.

Dr. T. L. Gilmer, of Chicago: I do not know from which college the man spoken of by the gentleman who has just addressed you is graduated. We have many so-called colleges in Chicago that are not colleges. I am fully conversant with the fact that in the two large colleges in Chicago there is scarcely a teacher who does not teach ethics throughout the entire course. There are gentlemen present graduated from the school with which I am connected who know that this is a subject the importance of which I am always reminding them. I know that we do not teach any such doctrine as the gentleman has indicated.

I wish to compliment the president on his address. I was very much pleased with it. I have been a member of this society for so long that I have grown old in the work; indeed, I wear a badge, and have worn it for two years, which indicates that I have been a member for over twenty-five years. I know something of what this society can do for dentists. Yes, it pays in every way to be a member of a society of this kind, and I am not ashamed that it does pay. I would like to tell you, if I had time, the many things that I have learned from the Illinois State Dental Society, but there is not sufficient time. I have attended twenty-six of the twenty-eight meetings, and it would take me a good while to tell you all that I have learned in that time. I do not believe we should feel unhappy because the society is not larger than it is. You must remember that we have a great many other societies in the State of Illinois. We have in Chicago a membership of six or seven hundred. The local societies are all doing good work and there are a great many men who are members of these societies who are not members of this. It is
desirable that they should be members of the State society, but not essential, as they can grow and develop in the other societies.

Dr. J. A. W. Davis, of Galesburg: I just have a word or two to say. First, in regard to what Dr. Noyes said relative to the way the old time dentist felt about the profession, and the exclusiveness manifested. He was not to blame for it then; they looked upon it as some men do now who are inventing something. You do not take a man into your laboratory if you are going to invent something that you believe will bring you a hundred thousand dollars. His skill was his bread and butter, his capital, and therefore, he thought if he took others into the secret he was giving away his own. He did not know that it would help him along instead of taking away from him, as we know now.

Also a word to Dr. Newkirk in regard to meeting in Chicago. I really believe that we can greatly increase the membership if we go there. It is not like it was when we met there last. It was almost a village then compared to what it is now. There are so many dentists there now that I believe we can get 200 easily, and I believe it will be a great benefit to the society to meet there.

Another word to Dr. Pritchett. His remarks make me think of a man who is going to get married. He was talking with a friend, and finally he began to shed tears; his friend wanted to know what was the matter; well, he was going to get married, his wife might have a baby, and he was afraid the baby might die. I would say, "Sufficient unto the day is the evil thereof."

DISCUSSION ON AMALGAM. SEE PAGE 493.

Dr. T. W. Pritchett, of White Hall: I have thought it best to make a few notes of what I shall say upon this subject, written before coming to the meeting and being entirely independent of any knowledge of Dr. Pruyn's lines. I offer these notes rather as a keepsake of the society than any particular wisdom that you will get from their reading.

This is an old and very interesting theme for a dental society to discuss. Old, because of its extensive use in filling operations during most of the present century. Interesting, because of the fluctuation of opinion entertained by the profession as to its merits for the purpose used. Interesting, because of the ample space it
holds in the literature of dentistry by means of books, journals and papers. Interesting, because every manufacturer makes the best in the market, and every practitioner swears by his own selection. Interesting, because from away back it has apparently been a great liar and deceiver of men. Recent investigation, however, accords to it the very essence of truth-telling and veracity, according to formula and according to rule. In the past, certain observed effects were thought to be due to expansion, when in reality contraction had taken place. Others believed contraction had taken place, when in reality expansion was the effect they saw. In many instances, we may now believe, they saw both effects in the same case. In some instances they were probably right, and more often perhaps they were wrong.

Those were the halcyon days of big ditches around cavity margins in one or more years from the time of the insertion of the filling. Whether due to contraction or expansion, or both, the practical result was the same—leaking margins and recurrence of decay established or invited.

It is a curious fact to note that notwithstanding the confusion of knowledge that existed upon this subject, a great deal of quite satisfactory work has been performed with this perverse material, better perhaps than with any other at our command. It is also a curious fact that the most wretched failure has been quite as often the result of the most painstaking care, and it is little wonder that some have said, "I will have none of it."

But thanks to the persevering faith and laborious research of a few—led by our gallant Nestor—a new era, a new dispensation has been ushered in. And if in-the-mouth experience shall confirm out-of-the-mouth demonstration, then will amalgam have a fixed and recognized status, until superseded by something more in harmony with tooth color, and with perhaps other desirable properties not known to us. The profession has for some years been looking for some cunning workman in metals to produce an alloy that would keep tight margins in a tooth cavity. Have we got it at last? Crouse says we have, and that its name is Fellowship. Kester says—but Kester is a very modest man, and besides he has no organ—others say, however, that Kester's special will neither shrink nor expand. Other testimony might be mentioned, but these will answer our purpose.

Now that it has been clearly demonstrated that alloys can be
made that give perfectly satisfactory out-of-the-mouth tests, it is the duty of the profession to accept them, and improve its skill in their application to teeth in the mouth, and thereby remove much of the opprobrium that has clung to this material for so many years. Doubt of the stability of the form of the filling, after being made, may have begotten careless habits of preparation of cavities by many of us. Also many of the nice manipulative details that are essential to success with any material, may have been left out. If any of us are at fault on these lines we must amend. Indeed, these are piping times of progress. The standard each year rises higher and higher, and he who would march in the front rank must keep right in the middle of the road, lest the enemy of progress capture and hold him a perpetual prisoner.

Do we all possess mechanical and manipulative skill alike? Certainly not, or we would have no need of the clinic. The obvious intention of the clinics is to teach. Are we getting the most possible good from this object method? Let us see. This society is thirty-four years old. I doubt if the record of the clinics would show twenty amalgam fillings made in all those years. Of this small number, how many of the members saw any considerable part of the procedures? But few, necessarily. We may as well write failure to this part of our society work. Can we do better? I will suggest a scheme. Let the supervisor arrange, say next year, for from six to twelve clinicians to demonstrate filling cavities in teeth with amalgam out of the mouth. Let each clinician prepare from six to twelve or more cavities, and arrange the teeth so prepared in some convenient and practical manner, as in the mouth. I will enumerate some of the advantages that might be derived from carrying out such a scheme. The preparation of such a number of cavities would most likely be of much advantage to the operators themselves. A critical examination and careful study of such a number of prepared cavities by the society would be of very great advantage to the members. The filling of such a number of cavities, in which such a variety of the details, management (the personal equation), could be demonstrated to so many of the members, that much good should result therefrom. With such a number of cavities the clinic material would be practically without a limit. They could be filled over and over again, the whole society taking a hand at it, and with but little exhaustion to itself.
I will now say what I might as well have said in the beginning, and have said no more, I believe what we most need now is a better acquaintance with the technique of our best operators in the application of amalgam to cavities in teeth in the mouth.

Dr. W. A. Johnston, of Peoria: I found out this morning after I entered the room that I was on the program to take part in this discussion. Through some mistake of Uncle Sam no notice came to me from Dr. Allen.

Amalgam has been at once my hope and my despair, my joy and my sorrow, the birthplace of my expectations and the cemetery of all my realizations. It has been the salvation of many teeth and the destruction of many others, and the question naturally arises, why is this thus? The keynote of Dr. Pruyn's paper was thoroughness, and this one word seems to answer all the questions as to the reason of failures in the preparation and filling of teeth with amalgam. Perhaps the reason for lack of thoroughness is that we do not charge for our time. A great many dentists, possibly the majority of us, have a fixed charge for inserting an amalgam filling. In a gold filling we are more apt to charge for the time consumed in making it, but a great many of us are apt to lump off amalgam fillings at a certain sum. That is certainly not an encouragement to good work. The personal equation Dr. Black said two years ago entered very little into the success of amalgam fillings in steel tubes. It certainly does enter to a large extent into an amalgam filling in the mouth or into any other filling for that matter, and while it may not enter very largely into the shrinkage or expansion or the flow of a certain amount of amalgam in a steel tube, it begins further back with a filling in the mouth, with the judgment exhibited in choosing the proper filling material for the tooth. That is where the personal equation comes in, where the skill is manifested and where the question of failure or success must necessarily be. The combination of gold and amalgam I think has been largely neglected. Possibly we have all used it, but I have not heard of it being used sufficiently to make me think that the subject has really had a proper amount of attention, or that it had been used enough for us to know whether or not it is the ideal filling material. If amalgam is better at the cervical margin and gold is better at the occlusal surface, why should not the ideal filling material be a combination of amalgam and gold? The continuous matrix to be placed upon the tooth is made very
easily of German silver, the band being tried on, taken off and soldered. Surely in a great many cases this would be a very great advantage in the contouring of amalgam fillings, and in saving them from the breakage which so often occurs before the amalgam has become fully hardened.

The continuation of the same paper by Dr. Pritchett was very interesting, and his suggestions were very good. The paper of Dr. Pruyn was an excellent one, and it ought to be thoroughly discussed.

Dr. E. H. Allen, of Freeport: I cannot say very much about amalgam in an experimental sort of a way, but I have been impressed by some observations that have come to me. The success of amalgam work I believe lies in the individuality of the operator who prepares the cavity. As beautiful an amalgam filling as I ever saw was in the mouth of a young lady who happened to fall into my hands for treatment. She had in a lower first molar a beautiful amalgam filling; all the margins simply perfect. Talk about perfect margins in gold fillings. You could not imagine anything more perfect in gold than the margins of that amalgam filling were. I asked her who inserted that filling, and she said Dr. McKellops, of St. Louis. Now, I am aware that Dr. McKellops declares that he never put in an amalgam filling. Of course, it is possible the young lady's memory may have been at fault as to who made that particular filling. But still if Dr. McKellops did insert that filling he need not be ashamed of it. But the point that I wished to bring out more was the perfect preparation of the cavity, and I believe that is the one particular point in amalgam work, carefulness of detail in preparing margins and everything about the whole operation, and when finished you will have a beautiful filling. Of course, I have been led to think that some amalgams I have used have brought about better results than others, but, as I said in the beginning, I believe the most important thing is the perfect preparation of the cavity.

Dr. W. A. Stevens, of Chicago: In the first place, as far as amalgam is concerned, I want to make the rather bold statement, that according to the number of teeth that are filled with amalgam you save just as many as you do with gold. I do not think there is a particle of difference. At the same time you will fill teeth with amalgam that you could not possibly fill with gold. Now, I claim that I do use amalgam. I have heard members
of this society claim that they did not use amalgam, and yet they buy five ounces at a time. Now I do not know but they make pudding of it for their children. But I do use amalgam, and the greatest amount that I ever bought at one time was one ounce.

Dr. Edmund Noves, of Chicago: I rise to a point of order. It seems to me a rather severe thing for Dr. Stevens to say that members of this society assert that they never make amalgam fillings, and also to say that they buy amalgam in five ounce lots.

Dr. Stevens: I did not say that they said it, but I have heard them state that they did not believe in amalgam and would not use it, and yet, at the same time, the dental depot agents have told me that they sold them five ounces at a time. Now that is only a question of veracity between the agents and them. I want to know what you are going to do with a tooth like this (referring to blackboard). Now you have a cavity here which is decayed like this (indicating). What are you going to do with that? There is a cavity which is decayed probably clear through here (indicating), leaving the labial and buccal surfaces perfectly sound. Are you going to fill that with gold? Are you going to fill it according to Dr. Pruyn's idea? I would say so far as my own operations are concerned that I have saved just as many teeth with amalgam, in proportion to the number that I have filled, as with gold, the conditions being the same. I have made some poor fillings with amalgam and I have made some poor fillings with gold, and I have used some poor alloys and I have used some good alloys. What are you going to do with this? (Indicating.) I would fill that tooth with amalgam simply for the saving of the tooth. If you attempt to fill that tooth with gold it is an utter impossibility, in my opinion, to fill this part (indicating) so as to make it perfect. Suppose it to be upon the inside next to the tongue. My process for doing that is as follows: I make a band, as mentioned by Dr. Johnston, using Tagger's tin. I have in my operating case a pair of shears, Tagger's tin and a small soldering iron. I band that tooth perfectly and bring it tight to this surface here (indicating), and if I want a contour to it I bring it out there, and I fill that with amalgam, and I have seen those fillings remain in the teeth eleven years after they have been filled.

Dr. Gilmer, of Chicago: How long do you leave your matrix on?

Dr. Stevens: At least twenty-four hours.
Dr. Gilmer: How do you get it off; does not the amalgam unite with the tin?

Dr. Stevens: I get it off very easily, just take a knife and cut it. I have never had the amalgam unite with it; some people may have, but I never have. A patient came to me a few days ago and I wanted to save the wisdom tooth. They could not afford to pay for a gold filling, but I could fill that tooth with amalgam and save it a number of years, and next year I will report on it if I can get a chance to see it in the mouth. That tooth is decayed down clear across there (indicating). You see a margin encircling that tooth perfectly. I filled that tooth only last week with an amalgam, putting the band on as I mentioned in the case before, fitting the band as nicely as if I were going to put a gold crown on. This shows amalgam all around the tooth and here is my foundation down as low as this to hold it in (indicating). Now I believe that tooth will stay there at least eight or ten years. I do not know about the case of Dr. McKellops. I know one time he said that he sent a case to Dr. Atkinson, of New York, and asked him to fill it with gold, as Dr. Atkinson said he never filled with anything but gold. Dr. McKellops tried to fill it with gold two or three times and failed, and Dr. Atkinson tried to fill it with gold and failed, and finally filled it with amalgam. What are you going to do with teeth of that kind? Are you going to pull them out if the patient cannot afford to pay you for filling them with gold? I do not advocate the use of amalgam in every case, but I do advocate the use of it, if it is used judiciously and discriminately. I take exactly the same pains in preparing a cavity for amalgam as I do for gold. There is seldom any case like this but what I have to use the rubber dam, but there are many cases in which I can use simply a napkin in the mouth, and with the saliva ejector I believe you can keep the mouth dry from ten to fifteen minutes, if the saliva does not run like a river, as it does in some mouths, but those are few. I have one more to fill in the same lady's mouth that is broken down similarly, but I am not sure whether the pulp is alive or not; I am testing it now to see. If you will take the same pains in preparing your cavities for amalgam as you do for gold, and then compare them equally with each other, the conditions being the same, you will find that you will save just as many teeth with amalgam as you do with gold.

Dr. G. V. Black, of Jacksonville: I hardly know where to
begin or end on this subject of amalgam, but let me first speak of use of the matrix. I would say, do not put a band around a tooth; I would not solder it to make a matrix in which to build an amalgam filling, but cut your band of sufficient length to cover the missing axial surface of the tooth, whatever that may be. If it be the mesial or the distal, let it go far enough around to cover those missing surfaces, and then tie it tightly to the neck of the tooth, and you will have a matrix fitting closely to the gingival walls of your cavity, wherever those walls may be. Now, it is simple, easily applied and you get it just where you want it, get it to fit your tooth where you need to have it fit your tooth, and you can wrap it as far toward the occlusal portion of the crown as you choose. Perhaps brass or copper rolled thin and annealed immediately before using makes the best matrix, because it is sufficiently pliable to be contoured as you like and the amalgam will not cohere to it. In many cases thin steel is excellent. Tin is not so good because of the liability of the amalgam to cohere to it.

As to the preparation of cavities for the amalgam, I should say that there should be no difference at all in the care used between the preparation of cavities for amalgam and for gold. The same care, and generally the same forms should be used. The same care in seating the filling, giving it a broad, flat seat upon which it may support the stress that may be brought upon the filling, and giving it sufficient anchorage so that the dipping strain may not move the filling from its position. All of these points need to be guarded in the making of amalgam fillings with more care than with gold, because there are none of the amalgams that are as strong as gold; hence we need to exercise more care as to the squaring of our seats, making them broad and strong, and more care as to the forming of anchorages, that they may be strong enough to support the filling. There is also much in the manner of inserting the filling; the mode of manipulation makes much difference as to the strength of the amalgam after the filling is made. We may have too much mercury in our mass and our filling will be weak; again, we may have too little mercury in our mass and our filling will be weak. Just about a certain proportion is necessary and that varies with the alloy used. All of these things come in in making what is termed personal equation. There is one thing, however, that personal equation will not affect, and that is the physical characters of the material. They
will remain the same no matter who manipulates it. Now, I want to make this statement, an alloy that shrinks cannot be so manipulated as not to shrink; it may be slightly modified, but it cannot be so manipulated as not to shrink. An amalgam that expands cannot be so manipulated that it will not expand. This is a physical property of the material and cannot be changed by any method of manipulation. Any one who thinks differently will have the opportunity of testing it in the tubes that we have here, and I shall be heartily glad for the test to be made by any one, because if there is any manner of manipulating the material so as to change its physical properties in this respect, we want to know it. I have not found it out yet in three years of careful effort. I have had gentlemen at Albany try it, I had the gentlemen at Toronto try it, and I have had gentlemen in Chicago try it, and they have tried it over and over again, and not one case has occurred yet where I can safely say that there has been any change made by the method of manipulation. So that this matter of shrinkage and expansion is not a personal factor at all in the placing of amalgam fillings. Other features, however, do become personal factors. The matter of close packing is important, and generally it requires a good deal of force to pack amalgam properly, and furthermore, it requires an amalgam of certain physical properties in order that it may be packed perfectly. I will venture to say this, that there is not a gentleman in this room that can take the ordinary amalgams now upon the market, (there are some exceptions to this, I am glad to say) and take one of my tubes and make a filling in which the margins will be anything near microscopically perfect. We can see between the tube and the filling in every case. Neither can they do it in the teeth, even if the amalgam did not shrink. A considerable number of gentlemen have had enough experience in making experimental fillings to corroborate or deny this statement from their own personal knowledge in the effort to make close fillings with comparatively soft amalgams.

I do not know, Mr. President, whether I should present some of the features at this time that have been discovered in amalgams as a kind of a report; perhaps not, but I owe to the society a report of what has been done in the discovery of the physical characters of amalgams. This society has rendered me substantial assistance in this work, and I feel that I owe a report to this
society. Perhaps now would not be the best time to make such a report. And that report will show valid reasons why with the same alloy, out of the same bottle and with the same care and the same manipulation, one filling may be perfectly good, retaining its margins perfectly for years, and another may be perfectly abominable.

Dr. Stevens: I would like to ask a question. He says he would put a little band on one side. In the case which I represent the whole top of the tooth is gone. How are you going to get around that?

Dr. Black: I would tie my band all around. So much of the walls that are missing should be supplied with the matrix.

A Member: Is there any objection to using thin German silver and burnishing it down to the tooth and using a small wooden wedge?

Dr. Black: Only that a wooden wedge does not support the band very well and is an unhandy thing to use. I sometimes hold it with a separator, but a ligature is the easiest way to do it.

Dr. Pritchett: I was not quite clear as to what you stated in respect to the amalgam from one sample, the one case would be good and the other abominable. What amalgam were you referring to at that moment?

Dr. Black: I might refer to quite a large number of alloys that are on the market.

Dr. Pritchett: Does it refer to what we might call improved amalgams now?

Dr. Black: We may make amalgams now in which those physical changes will not occur. I can now state, I have observed them for two years.

Dr. T. W. Brophy, of Chicago: There were some statements made in Dr. Pruyn's paper which occurred to me at the time were not in accord with the experience of many practitioners, certainly they were not in accord with my own experience. If I remember correctly, he stated that the reason why, at least, one reason why he made use of amalgam at the cervical margin and finished with gold on the occlusal surface, was that amalgam failed on the occlusal surface while it was a better preservative of the teeth at the cervical border, and about the proximate surfaces, or words to that effect. It seems to me that this is a mistake. I am of the opinion that nearly all the practitioners who find it necessary to
remove amalgam fillings because of their failure, do so because they fail at the cervical border or about the walls of the proximate surface. Moreover, I see no reason why a practitioner should make use of amalgam upon the proximate surface and down at the cervical border and finish with gold. If I were to make use of amalgam in a case of that kind I would finish with amalgam. I do not understand the philosophy of making a base of poor material and then finishing with good material. I desire, in this connection, to say in a general way that the whole discussion of this subject is only a revival of discussions which occur periodically. In my connection with the dental profession, extending over a period of thirty years, I find that this question comes up about every fifteen years. When I was a student in the Pennsylvania College of Dental Surgery there were no amalgam fillings inserted while I was there. So prejudiced was the dental profession against the use of amalgam that it was discarded and its use was not taught in the school. It was mentioned and spoken of as being so objectionable as to be unworthy a place in the school. A little later it began to be revived, through the efforts of Dr. J. F. Flagg and Dr. Palmer, of Syracuse, N. Y., and Dr. Chase, of St. Louis, and now it has grown to enormous proportions. I do not know how many kinds of alloys are made in the United States. I made the remark in company with a few gentlemen this morning that I presumed there were at least 200 different makes of alloys; one said that my estimate was very conservative. If there are 200 different kinds of alloys prepared for the use of dentists, I do not think there is any doubt that of that number a very large majority are unfit for use, because of their cheapness, being made of material that is not fit to be used as a filling material for the teeth. Now, presuming that twenty-five to forty per cent of the different kinds are good; we see the effect, and I tell you this whole amalgam question is demoralizing to the dental profession and it is a condition of things that is absolutely deleterious to the people that employ dentists. One gentleman said that he saw an amalgam filling that was put in by Dr. McKellops. I do not want to question anybody's statement, but I do not believe that Dr. McKellops put in that amalgam filling. He has repeatedly stated that he has never put in an amalgam filling, and I have no reason to question that statement. I think there is some mistake somewhere. It has clearly been shown to us that the statements of patients are unreliable, not because of their
desire to deceive, but because of their inability to remember; and I will venture to say if the case that was spoken of is traced back it will be found that some other dentist than Dr. McKellops put in that amalgam filling. If there is anything on earth that Dr. McKellops abhors it is amalgam. I hear men state, who are somewhat indifferent as to the progress of our profession, that distinguished representatives are advocating the use of amalgam. These men who are not strictly honest in practice (and I am sorry to say there are quite a number of such men) make use of anything, no matter what, and they hold up as an argument that many distinguished men use amalgam, advocate its use and so on, and so the public are getting the worst of the argument. I do not believe there was ever a material made with which to fill teeth so good as gold, and I believe this discussion of the amalgam question is demoralizing, and yet I hope and expect that the result of the experiments that are being conducted will enable us to get a better material than the amalgams which we are now acquainted with. In a conversation with Dr. Leslie, of Cincinnati, he claimed that an amalgam was made fifty years ago by him that would compare quite favorably with anything at the present time. He claimed that the best amalgam he ever used was that made by filing a Mexican coin. We know that is largely silver and has a small percentage of copper, and if that kind of amalgam made fifty years ago would preserve teeth for forty years, as he claims, it certainly must have been as good as the best amalgams on the market to-day. We are short in clinical experience in regard to the new alloys. Experimentally they seem to be an improvement, but I believe the environments of the alloy when placed in tubes are altogether different from those present in the mouth and that we need and must have an experience extending over a number of years before the question can be settled as to the merits or the advantages of special alloys. We all know what a furore the copper amalgam created a few years ago. It did not seem to shrink, made a fine edge, a good surface and was apparently better than anything that had been found, but I do not know of any one now who is using it to any extent—because it failed—clinical experience demonstrated that it was a failure. Now we must have clinical experience to back up these experiments that have been made to determine whether these metals or alloys when used for the filling of teeth will answer our purpose. I believe amalgam is a material upon which we cannot rely for the preservation
of the human teeth, and that there is no material in existence, according to our present knowledge, upon which we can rely except gold.

Dr. J. N. Crouse, of Chicago: I think the essayist made a great mistake in his conclusions as to why amalgam fillings failed. He made a statement that it is due more to the manipulation than the material, and I think he is far from the truth. The fact is, that with most of the alloys on the market the more you try to pack them perfectly the worse kind of a filling you get. It is impossible to pack the soft amalgams and make perfect margins. I have had the opportunity of collecting specimens from various offices throughout the country, and the amalgams that were used the most could be the least relied upon. With many of them you can make the best filling simply with your finger. Most of them shrink so much in the steel testing tube that the fillings will drop out of the tube. Any man who watches these things will be very indignant at seeing what the practitioners of this country have been using as filling material. I say that the quality of the alloys accounts for the failures, and I only wonder that amalgam fillings do not look worse than they do.

Dr. C. N. Johnson, of Chicago: I hesitate somewhat to say much upon this amalgam question. A few years ago I could have talked very glibly upon it, but I am not so sure of my ground to-day. However, there are a few points that I want to mention. One was in regard to the method of manipulation. I believe the essayist made the claim that the reason better results were not obtained with amalgam related particularly to the method of manipulation. That has been spoken of several times during the discussion of this paper. But I want the impression to be permanently settled in the minds of everybody here that the majority of alloys upon the market to-day cannot, by any method of manipulation, be made into perfect fillings. It is undoubtedly true that a careful operator will do much better and more satisfactory work with amalgam than a poor operator, but we cannot change by manipulation, so far as I know, the intrinsic qualities that lie in the majority of amalgams. And in regard to his filling the cervical third of the proximate surface of a cavity in a molar or bicuspid with amalgam and completing the filling with gold, I know that he has done some very nice operations of that kind, and I believe if that method is successful at all it will be successful in the hands of
such a skillful operator as Dr. Pruyn. But I say here to-day, that for myself, so far as the element of labor and the difficulty of the operation is concerned, I would rather fill that cavity with gold than to fill it part way with amalgam and complete it with gold. I can do it with less trouble to myself. The perfect manipulation of a high grade amalgam is a more difficult problem in my hands than the manipulation of gold, to obtain the best results that can be obtained with either material. I want to commend what the essayist said in regard to "filling versus crown work." I think he made an admirable point, and I do say that I would prefer building up that tooth that was broken down, even with amalgam, and doing the best I could with it for a few years, rather than to crown it at that time, because I consider that I have gained just the number of years of service for that tooth that the filling lasts. It will last just as long after the crown is put on when the filling fails as it would before the filling was inserted.

Now, in regard to this question of frail teeth. I want to say that if we are going to save teeth at all it seems to me that above all teeth the frail teeth are the ones that demand gold. If we are going to make a serviceable tooth out of a given case, the frail teeth are the ones that demand the strongest margins to the filling. Gold will protect frail margins and walls better than will the best amalgam on the market to-day.

Now just one word regarding this matter with reference to Dr. McKellops and the amalgam filling. Do you know that when that filling was described by Dr. Allen, the beauty of contour, the high polish, the perfection of margins, etc., it reminded me very vividly of one of Dr. McKellops' platinum and gold fillings, and I believe there is such a thing as the operator being mistaken as to the character of that material. I do not say that Dr. Allen was mistaken, but I say that there was that possibility, because when the darker shades of platinum and gold are used, the color is precisely the same as fresh amalgam.

Another thing that Dr. Stevens mentioned—I do not suppose that Dr. Stevens would be very comfortable if I ever followed him up in a discussion without rapping him a little—he made the statement that Dr. McKellops attempted to fill a certain tooth with gold and failed, and that he referred it to Dr. Atkinson, I believe, who tried three or four times to fill it with gold and also failed, and then compromised by filling it with amalgam. I
would like to inquire a little bit closer into that and learn wherein they failed to fill that tooth with gold. I want to learn the nature of their failure. If I know anything about the ability of Dr. McKellops as an operator, or of Dr. Atkinson as an operator, I cannot conceive of either of those men undertaking to fill a tooth three or four times with any material and failing. I think that they would have had judgment enough to teach them as to whether or not they could insert a filling of that kind before they began.

Dr. R. H. Kimball, of Chicago: I want to say a word. I do not want to be regarded as a champion of amalgam, and not favoring gold. I consider that there is no material for saving teeth that begins to compare with gold; and yet, teeth have been filled with amalgam, teeth are being filled with amalgam and they will be filled with amalgam as long as there are dentists, and if we are going to use amalgam we want the best that can be had. I have listened to the discussion to discover if it were claimed by any that all teeth can be saved with gold; that has not been claimed. I want then to say a word for amalgam for those teeth that cannot be saved with anything else but amalgam. I believe that we need to strengthen ourselves along this line of work. I have amalgam fillings that are saving teeth to-day and have been in for fifteen years. I put them there because the conditions seemed to require amalgam, not that I would not have preferred to use gold, if it could have been used. We cannot rule amalgam out by anything we may say here to-day against it. We ought to consider those teeth that cannot be saved in any other way than by the use of amalgam, and welcome the advent of a superior amalgam that will help us to do this better. I think we ought to be honest with ourselves and admit that we have to use amalgam sometimes.

Dr. Garrett Newkirk, of Chicago: I just want to say a few words in anticipation of the report that we are about to hear from Dr. Black. Now, one of the gentlemen connected with the investigations, said last night, "I am afraid that whoever conducts this kind of an investigation, as we are doing here, is liable to be accused of partiality. If the reports happen to favor one or two or three manufacturers of amalgam and are against twenty or thirty others, those who are conducting the experiments are liable to be accused by interested parties with having been partial." Now, this is simply a scientific investigation. That microscope
shows no partiality; the gentlemen who are handling the microscope are not disposed to show any partiality. That micrometer is correct, as nearly as anything can be made; it simply tells the truth, and it does not matter where the chips fall; let them fall. For my part, if I can find one amalgam, or two or three that I have reasonable assurance will give me success, according to scientific investigation and demonstration, I am only too happy to find them, and I do not care who makes them. What we want is simply the truth in regard to amalgam, no matter who is hit. Whoever gets hurt, we and the people generally will be benefited. So I hope there will not be on the part of any one a disposition to disparage in any way the honest work that is being done.

Dr. G. V. Black, of Jacksonville: A little over three years ago I began this work of experimenting with amalgams, and I exhibited the first steel tube with an amalgam filling before this society at the meeting three years ago. I wish now to speak simply of what has been accomplished, or what has been found out in this investigation, as a kind of report of what I have done. I find it very difficult for men to understand what has been learned and how it is related to the amalgams for use and how it is related to the manufacture of amalgams; and it is that point particularly that I wish now to bring before you. In the first paper I published in 1895, I only exhibited—with the exception of a few fillings—the condition of amalgams then in the market as to shrinkage and expansion, what they did in the way of shrinkage and expansion. I, however, just at the last had a few alloys made that gave a sharp indication as to what fresh cut alloys would do. Almost immediately after publishing that paper I commenced the study of the effect of the aging of the alloys and various other conditions that were supposed to affect alloys in some way. There were in the report then made a great many things that were utterly incomprehensible with the knowledge we then had. In the study of the aging process, which was known from Dr. Flagg's work, and the work of others, to affect the working properties of amalgam prominently, I quickly found that it also affected the physical properties and the relation to shrinkage and expansion in a prominent way, a thing that had been unknown up to that time. I was enabled, with the instruments then devised and in use, to determine the shrinkage and expansion very accurately. I may say that this society donated to me $200 and I spent $400 for the machine
for this purpose before I got it to working satisfactorily. Then I went to work to find out the exact effects of aging. I did it in two ways. First, after a long search finding, as I supposed and stated, that oxidation caused this difference, and finally finding that oxidation had nothing to do with it, and that the results were due to thermal influences entirely. It required a great deal of search and trial of the different conditions to arrive at this conclusion, but this conclusion was arrived at definitely and has been maintained by results.

The effect of annealing. We may anneal for two years' time at normal temperature, or we may anneal for seven days' time at 120 degrees, or for fifteen to eighteen minutes at the temperature of boiling water; the effect will be precisely the same so far as shrinkage and expansion is concerned. Now, from the fact that this annealing takes place at ordinary temperatures and slowly changes shrinkage and expansion, we have in an alloy cut and put on the market a continual change going on, until the alloy has become completely annealed, and there it stops and will remain stationary at that point so far as shrinkage and expansion is concerned. Now, I have studied every possible combination of silver and tin, and I propose to try to illustrate on the blackboard the movement of the combinations of silver and tin, not running through all, but taking them in gradations of ten. Say we begin with a combination of forty of silver and sixty of tin, and let this be a horizontal line representing time (referring to blackboard), and we make an amalgam filling from that alloy, fresh cut. The first movement will be downward like this (indicating), for about six to ten hours, the time depending somewhat upon the amount of mercury combined with it; the amount of mercury will make very little difference, however, as to shrinkage and expansion. From that point it will begin to rise and will go up like this (indicating), and then drop just a little and remain stationary, taking about five days to accomplish this movement. Now this is when it is first cut from the ingot. If we let that alloy lie for about three months we will have a movement like this (indicating), making about five or six points difference between the two; the one will have swelled up above the margin of the tube, the other will not quite reach the margin of the tube. If we let it stand two years we will find that it makes a movement like this and will stop there, and will remain below the margin of the tube. (Indicating.) The same will
occur if we anneal it five minutes in boiling water, we will get this rise, indicated in the second diagram, or with fifteen minutes of boiling we will get this rise, indicated in the last diagram. Now any movement between those may be had by different time of annealing. Any movement between those may be had at different times in taking the alloy out of your bottle upon your case. Again, we take fifty of silver and fifty of tin and we will have a movement differing somewhat, in that the shrinkage will be a little more to begin with and will not rise quite so high, and half annealed we will get a movement like this (indicating), and the fully annealed alloy will shrink more and will not rise so much in the secondary movement. Now, if you can hold those in your minds I will place on the board the other combinations of silver and tin so that you can get the gradations. If any gentleman thinks he can escape these movements of silver and tin by any possible means of compounding the alloy, or any possible manner of manipulation, I would like to see him do it. If we take sixty of silver and forty of tin, as the first movement, fresh cut, we will have just a little bit of shrinkage, and half annealed we will have a shrinkage like this (indicating), and fully annealed it will drop down very badly, making a very bad shrinkage, ten to twelve points, making a very wide open margin. Then if we take sixty-five of silver and thirty-five of tin this will run just a little above the line, used fresh cut, usually about one point, depending a little upon the difference of combining the two; if you have a little more tin it will rise a little higher; then half annealed it would shrink, and fully annealed it will shrink badly, usually about nine points, making wide open margins, and it will do this regularly. Now, when I say fresh cut, I mean fresh cut without heating; if it is heated in the cutting machine or with the file it will shrink from the start, because the alloy is annealed by a rise of temperature in the cutting, and in that way we get various conditions. You take this alloy fresh cut and you will make a good filling; you take an alloy that had stood in your office for months and your filling will not be worth anything. Take seventy of silver and thirty of tin, and fresh cut, it will run away up here, expanding greatly (indicating), and half annealed it will rise to here (indicating), and fully annealed it will shrink down here, making a wide shrinkage-expansion range, and we may have anything between those two. Fresh cut, it will raise up in the tube forty points or more, giving
a good deal of variation; but this dual movement, first down and then up, has disappeared; it disappeared with about sixty of silver. Suppose we take seventy-three of silver and twenty-seven of tin, and we will find the amalgam running way off expanding like that (indicating) fresh cut; forty to sixty points rise, and half annealed it will come down like this, and fully annealed like that, that is, it will neither shrink or expand. (Indicating.) And when it has become fully annealed it will remain just so, as I know now, for two years at least, without a change. Now, I put up alloys fully annealed, and alloys with fractional annealing, and in various conditions as to annealing, two summers ago in June, July and August, and those that were put fully annealed produce the same results to-day as when put up; those that when fully annealed were just to zero are the same to-day. Those, however, that would anneal lower than zero, but were stopped at zero, have given away a little. For instance, one formula containing copper and zinc which I put up and which I found would anneal three points below zero, but was annealed fractionally just to zero so that it had no movement up or down at that time. I made a filling of it last week and got a shrinkage of one and one-half points; it had lost that much in that time. Others that were fully annealed and put up at that time, that varied from zero to one and one-half and one point above, gave the same results last week as they did two years ago precisely, no difference whatever. Now, suppose we take seventy-five of silver and twenty-five of tin, and let this represent the zero line; we will get an expansion running away off like that, comparatively (indicating), sixty or seventy points expansion; and half annealed we will get it like this, (indicating) and fully annealed it will still expand five or six points, and by no means can we get such an alloy into a condition that it will not expand. Now I have run through the limits of silver and tin alloys. Now you understand that our formula for silver-tin alloys, pure and simple, will be close to 73–27. It will depend a little upon the person who makes the alloy, how much tin is lost in the melting, and the perfection of the mixing, or alloying. As to the exact formula, we may use from seventy-two and one-half to seventy-three and one-half, and possibly some would need to use seventy-four of silver, depending upon the loss of the metals in melting. But any one undertaking to make such an alloy must do this. I wish to
make this point clear. He must compound his alloy and ascertain just what that alloy will do when fully annealed, then if it shrinks a little he must add a little bit more silver, one-half or one-fourth of a per cent, perhaps, and try again and see what that will do, whether it will shrink or expand when fully annealed. If that is not quite the thing, then he must change his formula a little again until he gets a formula that in his own hands, as he compounds his alloy, will, when fully annealed make an alloy that will neither shrink nor expand. In order to do that he must have the instruments, the arrangement for annealing, the micrometer, etc., otherwise he will simply be guessing at it. When he has found the formula that in his hands will neither shrink nor expand, then he may try it over and over again until he finds that he can make it with perfect regularity so that each batch will produce the same results. Then he is ready to make an alloy for use, or for the market, and not before. And also, he should go over this whole field and know for himself just what this or that formula will do. He must make these alloys in all their gradations right down through, and know for himself just what they will do.

Remember now I have been talking of the silver and tin alloys. Now I want to say a few words as to the modifications of the silver and tin alloys. We will take 65-35 as a basis, for instance, just to illustrate the subject. Now we may add to that five per cent of gold. That five per cent of gold is simply lost so far as effect upon shrinkage and expansion is concerned, with this exception, that the shrinkage-expansion range is not quite so great, about two points difference. It will make an alloy that will work a little bit smoother, and that will be the only effect of the gold that comes out as to the physical characters. But suppose we add copper (you will remember, now, that the line of 65-35 rose just a little and remained straight, while, when it was fully annealed it came way down, making a shrinkage of nine or ten points). Now if we add copper five per cent instead of making this slight rise when fresh cut it will run away up here, thirty-five points, as the effect of the copper, and when fully annealed it will drop a little bit below zero, increasing very greatly the shrinkage-expansion range. So that if we wish to put copper into our alloy, we must learn the effect of copper and be able to gauge the amount of copper in proportion to our silver, so as to make an alloy that when fully annealed will neither shrink nor expand. If we take
zinc instead of copper, then we will have a very different effect. Zinc five per cent, instead of this line rising up quickly, we will have a line that will rise slowly, like this, and keep going and going for forty days, but it will not rise much higher than the copper finally, and when we come to anneal it down, it will come down, not quite as low as the copper, but very much the same. So that we will be deceived with amalgams that contain zinc, very often. If it contains much zinc, we will watch it for the first day or two and perhaps we will think that it has made its movement and stopped; but if we follow it along for weeks afterward we will find that it begins to go and rises and rises and rises. So that zinc is a very treacherous metal, although it is a very useful one. We cannot use much zinc in our alloys, however, unless we can find some metal that will restrain this continued expansion.

Some seem to think that shrinkage and expansion occurs only while the amalgam is setting. There is much of the shrinkage and expansion of amalgam that occurs after the amalgam is fully hard, very much of it, especially if zinc has been used or aluminum. Now, suppose we take out the zinc and put in cadmium, the same amount, five per cent. Well, I would want to start my line at the floor and run it clear up to the ceiling to illustrate the effect for fresh cut; a rise of one hundred points and more; the amalgam will come way out of the tube ever so far, and when annealed down with this formula we never can get it to zero. Now, as to five per cent of aluminum, I never have been able to tell how far aluminum did expand because it always went clear beyond the range of my micrometer. I have followed it to 470 points and it was still expanding. Neither can we make a filling of it because we cannot handle it; it gets so hot that we cannot handle it. How hot it does get I do not know, but if it is not packed quickly into the tube it will fume and fizz and all go into a brown powder that cannot be packed at all.

Continually, gentlemen ask me to give them a formula that will make a perfect alloy. I cannot do it. I cannot write out any directions by which any man can make a perfect alloy. The only way he can do it is to go into his laboratory and work at it until in his hands it is perfect. And they must do this thing themselves. I can write out no directions by which they will accomplish this without taking the instruments and going to work
at it. Any man who will take the instruments and go through these performances himself can arrive at this.

Dr. J. N. Crouse: There is a combination which does not shrink any which contains a great deal of tin, and yet, it does not make a good filling.

Dr. Black: We make a combination largely of tin, with some copper and zinc, that will not shrink, but it will be a very soft compound, it will possess but very little strength; and furthermore, its working property will be very soft, and I defy any man to ever make in our tubes a filling of it with perfect margins to begin with, because it is spongy, like a piece of dough. You touch it at one point and it seems to move all through the whole mass. You bring it up at this side and it will spring away at that.

Dr. Crouse: Under the pressure of chewing it will change also.

Dr. Black: It will change its form and move out of position, if you have gotten it into position. It will break at very low stress, say a hundred pounds, whereas an alloy constituted of silver and tin in proper proportions, with, say, about four per cent of copper and one of zinc, will stand four to five hundred pounds before it will break.

Dr. Brophy: Do you not believe that the quantity of mercury mixed with the alloy is an important factor in regard to shrinkage?

Dr. Black: Now I want to make that as emphatic as I know how. Free mercury is not a factor at all in shrinkage and expansion. We may vary the amount of mercury almost indefinitely without affecting materially the shrinkage and expansion. The filling made up in a sloppy mass and put in with the finger will shrink or expand almost the same, but not quite so much, as the filling nicely made, mercury properly adjusted and put in with the proper instruments. Let me say this, you take the grades of alloys all the way through and that mass which will make the strongest amalgam will be the mass that is mixed with just enough mercury so that when you press it down carefully and gently you will find the skin markings of your finger upon the surface. If you have more mercury it will be weak amalgam; if you have less it will be weak in proportion, and if you have so little mercury that you have to force the powder together to make it stick, it will be a filling that would break at one hundred or one
hundred and fifty pounds, more or less, in proportion to the dryness or wetness, when if properly mixed it would stand five hundred pounds. In order to make an amalgam of good strength for the alloy which you use you must have just about a certain proportion of mercury, and each one of these alloys differ in the proportion of mercury required. For instance, you take this formula of 65–35 and cadmium five per cent; you want about eighty per cent of mercury with that to make the best filling, fresh cut. If you have annealed it thoroughly you will want about fifty per cent. You take the Fellowship alloy; it requires about fifty to fifty-two per cent of mercury to make the strongest filling. If you undertook to make the strongest filling of the fresh cut alloy it would probably require in the neighborhood of eighty per cent, and so on. The proportion of mercury to make the best filling must be found with each individual alloy.

Dr. G. M. Brunson, of Joliet: I would like to ask you one question in regard to that formula. What would be the effect in regard to expansion and contraction if you modified that to sixty of silver, thirty-five of tin and five of copper?

Dr. Black: It would make an alloy that would expand when fresh cut and would shrink when annealed. It would cross the line.

Dr. J. E. Keeffe, of Chicago: Take what you call a perfect alloy, one that neither shrinks nor expands, and after mixing it with mercury suppose you got an excess of mercury in and you squeezed it out and squeezed some of the metals with it. Would that make any difference?

Dr. Black: That is now one of the vexed questions, and I have had quite a little discussion on it with Mr. Fletcher, of England, and I will say that Mr. Fletcher from his observations concludes that it does make a difference. I, from my observations, with better instruments, apparently, to make these observations with, am of the opinion that it does not make a difference. No one has analyzed the mercury squeezed out, or the metals carried out with the mercury, to know whether or not the metals constituting the alloy are carried out in the proportion in which they are found in the alloy, or whether some particular metals are dissolved out in greater proportion so as to change the characters of the alloy. We hope to do that this summer, but it has not been done yet; and the question now as to whether it changes the alloy or not is a matter of opinion.
Dr. J. G. Reid, of Chicago: Take an alloy that neither shrinks nor expands, and mix it with an excess of mercury and then the excess is squeezed out. What effect does that have upon the flow of amalgam?

Dr. Black: Practically none. I think that a man will get a better result if he mixes the proper amount of mercury with his alloy to begin with, not so much because squeezing out will injure it, but for this reason: You cannot properly knead your mix if there is too much mercury in it. You will not accomplish the kneading that you should accomplish, and right here I must say this, that in the first of my experiments along this line I said that you should not knead your amalgams much—which is correct if you are going to make strong work with the softer alloys—but the alloys that we have found to give the best results, as regards shrinkage and expansion, work into an amalgam very slowly, and it requires a great deal of kneading to obtain the proper condition of the mass. To get a smooth working property they should be kneaded a considerable time, and you cannot do this kneading properly if there is too much mercury in the mass. They need to be kneaded until the granular appearance has fairly disappeared and they will work into a smooth mass.

Dr. Brunson: I would like to ask you in regard to what you advocate, filings or shavings.

Dr. Black: That is a matter of taste. I do not like shavings. In the higher grades of amalgams I like to have it in fine filings. That would be my preference, but so far as shrinkage or expansion or strength are concerned, it does not make any difference.

Dr. Brunson: If I understand these figures that you have made on the board, an amalgam that is partly tempered is much better than fresh cut or fully tempered.

Dr. Black: Not so, not so; you have misunderstood these figures. We want to temper our alloy until we have reduced it to the utmost limit and then it will stay there. You can temper an alloy fractionally until it will neither shrink nor expand and make a good filling, but as that lies in your bottle on your case it will shrink lower and lower until it reaches that utmost limit; and the object of annealing an alloy for use is to obtain permanence, arrive at a condition of that alloy in which it makes an amalgam that neither shrinks nor expands. The idea is this, in
cutting the alloy you harden it, just the same as you harden your
gold plate by swaging it—by annealing it you reduce it again to
its normal condition of softness. Now that normal condition of
softness will be the unchangeable condition, the thing we seek;
hence, in preparing an alloy for use we will seek a formula which
when fully annealed will make an amalgam that will neither shrink
nor expand. Then it will remain permanent, and we cannot get per-
manence without that; no fractional annealing will do. I started out
two years ago on the idea of fractional annealing and I have found
that I must anneal it fully. This fractional was based upon an
annealing of 350 degrees; fillings made a few days after showed that
there was a rise. An alloy annealed at the temperature of boiling
water showed no change. But here there must be a care again;
the manufacturer will find that out very quickly; he cannot anneal
alloys indifferently as to time, or the working property will be so
soft that a man cannot make a good filling of it. We must anneal
it just the right amount, and when we have annealed it so, it will
not shrink or expand. Annealing at a low temperature, 120
degrees, will give the best working property with most of the
alloys. And, furthermore, the older your alloy is after a certain
age, and the longer you have annealed your alloy after a certain
annealing, the weaker it will be.

Dr. W. V-B. Ames, of Chicago: I found that with some of
these amalgams I get a better working property by washing with
alcohol.

Dr. Black: There is only this danger. I find that if I weigh
my mass very carefully just before washing, and weigh it after-
ward, even though I have taken a dry napkin and rubbed it in
that—and evidently I must lose a little by doing it—my mass
will weigh more than when I began; and I know that some
alcohol is still there; sulphuric ether also remains in the mass, and
I object to it, and if I use water there is still more of it there.

Dr. J. N. Crouse, of Chicago: The dental profession is
under great obligations to Dr. Black, and much of what I have
accomplished has been largely due to the assistance I got from
Dr. Black in the way of getting my instruments perfect.

So many ask me why I do not give the formula of "Fellow-
ship" alloy. The only reason is that I think it would be a detri-
ment to the profession, because these "carpet-baggers" who travel
over the country and through the cities with a grip, would throw
together a mass of metals and claim it was the same formula as "Fellowship" alloy.

I will give the formula to Dr. Black when he pledges that he will not give it away. I am afraid he has done much harm by giving out formulæ, and he is coming around to my opinion. Dentists have taken his formulæ to the silversmith, had the metals melted up, and the resulting alloys are about as worthless as can be imagined. A good formula does not necessarily make a good alloy.

Dr. Chas. P. Pruyn, of Chicago: I feel very much gratified at the extensive range of discussion that has followed the reading of my feeble paper. Am a little disappointed that the subject of mercurial poisoning from amalgam fillings has not been touched upon by any of the speakers.

I do not believe there is anything in that theory, however, but should be pleased to have this society place itself upon record regarding it.

So much time has been consumed in the discussion that in closing the subject I will only reply to one of those who dissented from my views. Dr. Brophy said he was opposed to amalgam—was not taught how to use it during his student days at college.

His remarks it seems to me were of little worth, because of prejudice or former mental bias. He said that gold does its best work at the cervical border, and amalgam its best at the occlusal surface, which is contrary to my observation and experience.

Many of you day after day repair gold fillings that have failed at the cervical margins with amalgam, and you do better service for your patient by pursuing that method. Amalgam is in the market to stay and we might just as well study it carefully, honestly, and use it. Because there are some men who have misused opium, arsenic and other drugs that have been of great value to the world, shall I cast them aside? Not at all. Let us use these things. Let us study them. If there is truth, get the truth; if there is error, let us find the error and discard it, as true and honest men.

DISCUSSION. WHY COAGULANTS DIFFUSE THROUGH DENTINE.
SEE PAGE 496.

Dr. J. E. Hinkins, of Chicago: It is a special pleasure for me to have the honor of opening this discussion this afternoon,
for several reasons. The first is that the essayist has been kind enough to furnish me with a copy of his paper in ample time, that I might read it and re-read it and duplicate his experiments if I so desired. The second reason is that I have duplicated his experiments, which I did a year ago, and I also have done the same this year. And the best that I can do is to read what little I have done.

After reading the essayist's paper over carefully several times, the first thing that impressed me was the amount of work he had gone over in preparing his paper, and the second thought was, has his technique been good or has it been faulty? After a few visits to his laboratory and carefully watching his work I was favorably impressed with his methods. I found from my own observations from the laboratories of Prof. Long and Miller, that the technique of the essayist was up to date. Having satisfied myself so far, the next question was, can I duplicate his experiments and obtain the same results. Understand, if you please, I had no pet theories to prove or substantiate, but was looking and hunting for scientific facts only.

The first experiment I endeavored to duplicate was the analysis of the teeth, but I found after working at it a while that I did not possess the proper apparatus for conducting such an experiment, so I went to Prof. Long, of the Northwestern University, and paid him to make the analysis for albumin, which he did. He first duplicated the essayist's experiments, and then conducted some more experiments after his own methods, the result of which was that he found from $\frac{1}{1500}$ of one per cent to $\frac{1}{68900}$ of one per cent of albumin. He says that as the amount of albumin is so small in the teeth, the age of the patient and temperament of the person or persons that these teeth were taken from would make this difference in the per cent of the albumin found. There were sixteen teeth analyzed. So far as coagulating the different kinds of serum albumin in the capillary tubes and then redissolving it again in an excess of carbolic acid, I had no trouble in duplicating these experiments at all. It is a well-known fact in all bacteriological and pathological laboratories, that if pepsin is added to serum albumin and allowed to digest at body temperature, it is converted into peptonized substances, which are not coagulable.

As regards the time it takes carbolic acid to pass through the dentine of a tooth containing up to the time of procedure a normal pulp, it takes longer for carbolic acid to diffuse through the walls
of a tooth that has contained a normal pulp, than it does to diffuse through the walls of a tooth that has contained a putrescent pulp. I am inclined to believe that the longer the pulp has been dead in the tooth, the more porous are the dentinal tubuli, just like a tooth or a piece of bone that you have thrown away, see how soon it becomes porous; all the organic matter in the dentinal tubuli disappears. I have found that it takes 100 pounds atmospheric pressure to force ninety-five per cent carbolic acid through the walls of a tooth, just extracted, the pulp removed and pressure applied within five minutes from the time the tooth was extracted. The time required was one hour. The same pressure would force ninety-five per cent carbolic acid through the walls of a tooth which has been extracted for some months in a few minutes. Dr. G. W. Cook has gone over the same experiments and obtained the same results.

As to ptomaines: The essayist has quoted the best authorities, Vaughn and Novy, and according to their writings they give nothing very definite of the pathological effects which could be made applicable to the putrescent condition of the pulp, or chronic alveolar abscess, for these writers plainly state that they do not play any important part in diseased conditions in general.

The essayist has shown that in the decomposition of the pulp we do not have any insoluble albuminous substances; he has also proven that the end products of albumin decomposition are not coagulable.

Dr. J. G. Reid, of Chicago: I have been fortunate in being situated so closely to the gentleman who has read you such an excellent paper, and watching the results of his experiments, and the number of hours that he has put in to present such a paper as he presented to you, few of you know but little about. And this society is worthy of one of the highest compliments that could be paid to the essayist for contributing and making known some of the hidden secrets which we have been in ignorance of for a great many years; in fact, we never knew anything about them until this paper was presented. I think we can positively say that we have known that the coagulating agents would pass through dentine; we knew that last year; that was demonstrated conclusively; but we have never known why they did until this paper was presented here. This has been a mooted question for the last five or six years. It has been going the round of this country in literature,
and only recently has a paper been presented before the Ohio State Dental Society in which the essayist has said, "Who are we to believe?" One man gets up and says that a coagulating agent will not pass through dentine, another man gets up and says that it will. Gentlemen, I will ask you if, in the presence of these experiments, the question is not pretty nearly settled in your own minds why it does. There cannot be very much dispute about it; and if I had not heard any other paper, or never expected to hear any other paper, I have been amply repaid for coming to this meeting to listen to the paper which Dr. York has given us. I think that I owe it to this society to pay the very highest compliment to this gentleman for the service, and to know that it has come from the State of Illinois.

Dr. W. V-B. Ames, of Chicago: I am exceedingly pleased to have heard this paper in which I was very much interested. What strikes me most particularly is the very simplicity of this subject, after we get it presented in this way. What has been apparently such a difficult subject to get at, has, if I understand Dr. York's deductions, settled itself down to a very simple matter, and for that reason we are all the more indebted to him. If I understand it, it is simply a matter that fresh human serum albumin is coagulable, and is then dissolved in an excess of carbolic acid, but when decomposed the resulting compounds are not coagulable, there being no albumin. So, as I say, we are all the more indebted to Dr. York because he has given us such a simple elucidation of this matter.

Dr. Louis Ottofy, of Chicago: It is needless for me to add to what has been said by the essayist in an experimental way, but I want to draw the conclusions that naturally ought to be drawn from work of this kind, and I want to say a word in defense of the position held by Dr. Harlan on this question. Dr. Harlan has been drawn into this matter in a manner beyond anything that he ever expected, or anything that was just to him. As I remember it, the only contention that was ever made by him was that it was not a good thing to use carbolic acid in a tooth which has contained a putrescent pulp, the first time that the tooth has been opened, and after carefully listening to Dr. York's paper I believe that that position has been strengthened all the more. In saving a tooth after its pulp has been destroyed, the question is to make that tooth serviceable, and we see to-day any number of teeth that
have been treated by the old carbolic acid method, that are sore, the gums are blue and the teeth are useless. The use of carbolic acid in a tooth with a putrescent pulp the first time the tooth is opened—if it is true that it permeates the dentine more quickly than it does if it is introduced into a tooth from which the living pulp has just been taken—simply has this result, that it forces ahead of it the putrescent contents of the dentinal tubuli. This we will see in pericementitis. And again, certain irritations are brought about which are constantly kept up and for which there is apparently no cure. Therefore, Dr. Harlan is right in saying that carbolic acid should not be used, although he claims it is because he believes that it will not go into the dentinal tubuli. On the other hand, if the carbolic acid does go into the tubuli, all the more carbolic acid should not be used the first time, but some agent that has a tendency to draw out the contents of the tubuli first, and afterward the carbolic acid that can pass through, if you desire to get its effect.

Dr. Garrett Newkirk, of Chicago: I simply wish to express with others my satisfaction with the work of Dr. York. I am just now particularly interested in the operations of all English speaking peoples. I am especially delighted with the manifestations of sympathy that come to us from Canadian and English sources in this little difficulty that we are having with the Latin race. I have been delighted with some of the expressions that have reached us in Chicago from Canadian sources, and I look forward to that glorious time when there will be the disappearance of the old time spirit of hatred between England and America; when we and Canada and England will stand together; and here is a gentleman of English stock, born in South Africa, who has fought the Zulus, and who comes to us with an English addition to our American achievements.

Dr. Edmund Noyes, of Chicago: I would ask Dr. York whether his experiments indicated that carbolic acid would go through from the pulp chamber to the peridental membrane of the tooth.

Dr. York: I said that it would diffuse through dentine and not through cementum. The previous investigators said that it did not diffuse through the dentine.

Dr. Noyes: This has very important bearing upon the practicability of sealing carbolic acid into the pulp chamber of the
tooth, dead or alive. In my own thought in regard to this subject through all the past years, the objection to the use of carbolic acid in the root canals of pulpless teeth has related chiefly to its effect upon the apical space and the tissues in immediate contact with the apex of the root, rather than to its effect upon the tissues of the tooth or upon the contents of the pulp chamber and canals derived from the pulp. As I understand it, that which Dr. Harlan has laid most stress upon is the danger that in one of these cases of disease in which there is the exudation of serum from the apical space through the foramen of the tooth, and drainage in that way, it may be stopped by the coagulation of serum in the root canal or of the tissues in the apical space so as suddenly to stop necessary drainage and develop an acute abscess that might have been avoided by the use of a more diffusible and non-coagulating antiseptic or germicide. It seems to me that from that point and in that relation is the real and important question for the use of coagulants in pulpless teeth.

Dr. G. V. Black, of Jacksonville: I do not wish to enter into the general discussion of this paper further than to express my delight with the manner of presentation, for I like to see these more scientific phases of these subjects brought forward. We know more about it now that we did an hour ago, most of us, and we have knowledge coming to us in a way that is important and correct, apparently, to me, and that will stay with us as a landmark upon this subject. It does not affect as prominently as one might think the use or nonuse of carbolic acid in the pulp chambers of teeth, as I now see it. I think we need experiments in another direction yet to establish the usefulness or nonusefulness of carbolic acid in conditions which we may name in the roots of teeth. This line of work opens up many avenues for study. We are shown that we may use several disinfectants successfully in these places that under other conditions we could not. For instance, if we have an active suppuration occurring from an accidental infection after the pulp has been removed, we would be unable to use bichloride or mercury successfully because of the albumin present, but after the contents of the pulp chamber has become decomposed by microorganisms and the albumin removed, we may use bichloride of mercury successfully. And so the presentation of facts here opens up a whole field that we had not thought about before. Now, I would like to ask the essayist the
rate of the resolution of these different forms of albumin along the length of these tubes; for instance, how long does it take an inch of it to redissolve?

Dr. York: About ten days in a capillary tube.

Dr. Black: Suppose we had a quarter of an inch of albumin from serum drooling into the apex of the root, coagulated, and we had to wait for that proportionate length of time for it to redissolve, we will see that an abscess might cut up trouble in the apical space until we get through there again and get out that coagulated albumin, and so, while we have a whole lot of important news on the solution of albumin, we see that the original contention of Dr. Harlan was not far wrong.

Dr. York: In closing the discussion on my paper I would like to make a few remarks in regard to what Dr. Ottofy said. I am afraid Dr. Ottofy has put his foot into it. He states that in using carbolic acid there seems to him considerable danger of setting up an irritation. There is not any more danger of setting up an irritation at the apical space in using carbolic acid than there is in using anything else, unless you force it through. The trouble would not proceed from the carbolic acid; it would proceed from any poisonous matter that you might force through, therefore, you must not blame carbolic for imperfect manipulation. He also speaks of forcing the ptomaines through. Now, all ptomaines are not poisonous; some are, but the majority are not. All toxins are poisonous; that is why, if you open a number of putrescent pulps and you force substances in indiscriminately in five or six cases and you do not get a bad result, you become careless and you may do it the seventh time and happen to have a poisonous ptomaine. He talks about using the essential oils because the carbolic acid might force these poisonous matters through to the cementum. Carbolic acid will not penetrate farther than the cementum; it will cease there. If anything would carry these ptomaines through it would be an essential oil that would penetrate clear through the cementum. He also says he would prefer using an oil, as the oil would draw the poisonous matter out. I believe Dr. Ottofy is going to Tokio, Japan, and if he teaches these young dentists such lessons I am afraid the Mikado will send him back to Chicago as an unreliable man. An oil would not draw anything out; it simply displaces matter. If he wants to draw it out he should use a porous plaster, or something like that.
Dr. Black's expressions were the kind that would stimulate young men to do the kind of work that I have been doing, and coming from a man like Dr. Black, who has been over this field and can appreciate such work, I feel that his remarks are extremely kind and I appreciate them very much; and if some of the older men who have won laurels and occupy prominent positions in the dental profession would only encourage and stimulate the young men who have shown some slight ability, instead of freezing them out when they come to these meetings, they would leave behind them men that would be capable of taking the place of such men as Dr. Black when they retire from active service.

I would also like to correct a statement that Dr. Black made. He asked me how long it took to coagulate the albumin in those capillary tubes, and I told him about ten days; and then he said that he thought if it took ten days to redissolve this matter that an abscess might cause a lot of trouble. You will not find coagulable matter in the contents of a putrescent pulp canal. It was albumin that was not decomposed that was coagulated. And again, this would not coagulate in the apical foramen, because you will find that when you put oil, or carbolic acid or anything through into the apical space you have got to force it through. You need not be afraid of it causing any trouble there.

I do not know that I have anything further to say than to thank you all for the kind manner in which you have received my paper.

RESOLUTION ADOPTED BY THE TRI-STATE DENTAL ASSOCIATION.

Since it is a well-known fact that the defenders of our country are unprovided with that special branch of medical science whose function it is to care for the dental organs, and

WHEREAS, it is essential for the welfare of the whole body that these organs be kept in a state of health and usefulness, therefore, be it

Resolved, that we, the State dental societies of Indiana, Michigan and Ohio, jointly in convention assembled at Put in Bay Island, June 21, 1898, do hereby respectfully petition the Congress of the United States to enact such laws as will provide for the employment of dentists in the army and navy, by which act much suffering and disability will be prevented and the medical service as a whole rendered more efficient.

E. T. Loeffler, President, \{ Michigan Dental Society.
Sherman M. Fowler, Secretary, \{ Indiana Dental Society.
S. B. Hartman, President, \{ Ohio Dental Society.
Geo. E. Hunt, Secretary, \{ Grant Molyneaux, President, \{ Michigan Dental Society.
L. P. Bethel, Secretary, \{
To Our Contributors.

It is our aim to publish about eighty pages in each issue of the Dental Review, or about 1,000 pages per annum.

We beg to assure those whose papers are in our hands that we will be able to reach their contributions during the next month or two when the pressure of too much matter has been relieved a little by a few extra pages. In our August number we expect to print a superbly illustrated article, which will well repay waiting for.

Dentists in the Army and Navy.

As will be seen elsewhere, this question is being agitated again with some probability of a successful outcome. It does not need much argument to convince an unbiased person that the rank and file of the army and navy need the attention that a dentist alone can give to the mouth and teeth of soldiers and sailors. The pay of these men is so meager that they are in no position to pay for such services as a qualified dental surgeon could give them on board ship, at naval stations or while on duty at army posts.

In time of action many of the men receive injuries which can hardly receive the attention they deserve from the medical and surgical departments, and if we can only have a dental surgeon for every five hundred men, or even one for each thousand, such services as these would no doubt prolong life and usefulness of the real fighters and workers for National defense. If you have not already done so, write at once to your senators and representatives to assist in this work.
DOMESTIC CORRESPONDENCE.

THE NATIONAL DENTAL ASSOCIATION.

When the American and the Southern Dental Associations united at Old Point Comfort last summer to form the National Dental Association, this country was divided into three sections, the Eastern, the Southern and the Western, and the new association voted to hold its first meeting in Omaha.

The Trans-Mississippi Exposition opened in that city June 1, and by those who have visited it, it is said to be almost as good an exhibition as the World's Fair of 1893. Some one has started the proposition that a city capable of holding an exposition of this character cannot entertain 500 dentists for a week in comfort and ease. We have been in Omaha and looked at the hotels (American and European) and think from this examination that all who attend this meeting will be well cared for, although all will not be able to stop in one hotel. If the National Dental Association desires to increase its membership from the western part of the country, it will be well for those having its best interests at heart to pause before deciding to make a change of the place of meeting. We have been assured by at least one dozen dentists that Omaha will be able to entertain every visiting dentist for one week or longer at the end of August. We hope that the meeting will be held in Omaha as was originally intended, and we believe that a good meeting will be the result.

DOMESTIC CORRESPONDENCE.

Letter From Cleveland.

THE TRI-STATE DENTAL MEETING—M. I. O.—MICHIGAN, INDIANA AND OHIO.

The second tri-State meeting, held at Put in Bay, June 21, 22 and 23, has passed into history as a genuine success, as did the first meeting in Detroit three years ago. The meeting was a feast of dental education, the business having been relegated to the executive committee. Doctors Callahan, Hunt and House have immortalized their names as successful manipulators of dental conventions and too much credit cannot be given them for the admirable result of their efforts.

It was a notable gathering of dentists, their wives and sweet-
hearts, and dental dealers, over six hundred in all. They came from everywhere and their geniality and sociability have left a distinguishing impress upon the memories of the tri-State meeting. While the young men predominated, the old veterans were there, too, some of whom have practiced dentistry for fifty years.

Corydon Palmer was as quiet as a bug in a rug, and the loquacious Bonwill was full of his ginger, hypnotizing the young men who constantly surrounded him. Professor Taft, always active in debate, never allows his interest in dental associations to abate. The erudite Barrett, of Buffalo, was a conspicuous figure in the debate, and was one of the special attractions of the convention. Another was the incomparable Calvin S. Case, of Chicago, whose renown as a dental orthopedist has become international. The far north was represented by Hartzell, of Minneapolis, a progressive young man, and Washington was represented by Sweeney, who gave a clinic. Apropos of clinics, the failure of about half of the men listed for clinics to respond made that feature of the program less of a success than it should have been. The clinics being always an attractive feature of a convention, were reserved for the last day, and were witnessed by a crowd that immediately dispersed to catch their boats for their homeward voyage.

Every one seemed full—not of island wine but of knowledge—and it was the opinion of all that such a model crowd had never before been assembled together at any convention.

This convention, preceded by the annual meeting of the Delta Sigma Delta, was the first large convention of the season at Hotel Victory, and the management at the hotel is to be commended for the complete satisfaction experienced by all in attendance. It is quite unusual to hold a convention at a summer resort without experiencing some inconvenience, but this case was an exceptional one and Manager Peterson is to be congratulated on the efficient service and gracious manner in which all efforts to make the convention a success were satisfactory. The time of year, the beautiful weather and ideal place of meeting made the convention one long to be remembered. Owing to the time given to the Dental Protective Association, one paper had to be eliminated from the program, which seems unjust to the essayist. Of course we are all in sympathy with the Protective Association, but when a man has put time and energy in the preparation of a paper it seems too bad to have it crowded off the program on account
of lack of time. All papers of merit should be granted plenty of time and liberal discussion.

A detailed account of all the papers presented would be impossible, but all were meritorious and thoughtfully received. The Dentists' Posture at the Operating Chair and its Influence on the Body, was the topic of an illustrated lecture by Eliza M. Mosher, M. D., of Ann Arbor, Mich. This was a timely presentation in competent hands. The philosophy of curvatures of the spine, superinduced by positions at the chair, was illustrated by photographs, the photographs showing lateral curvatures.

Corrective exercises were illustrated by the use of a living model. Though known to only a few of the dentists present, it is a fact that the original of the photograph shown was one of the most noted dentists at the convention.

Prof. W. C. Barrett gave a clear and succinct lecture illustrated with the stereopticon, upon Dental Caries, Its Character, Cause and Effect. The Innervation of the Tooth Pulp, by Prof. G. Carl Huber, of Ann Arbor, was of extreme interest. He showed how nerves ended within the pulp, and averred that Tomes fibers were simply connective tissue and being such, were incapable of conveying nerve sensations. As a physiologist he construed the resultant action of the revolving engine bur to create either a chemical or metabolic change in Tomes fibers, which are connected with the odontoblasts.

The Development of Facial Contours by Moving the Teeth, by Dr. C. S. Case, of Chicago, was presented in such an able and interesting manner as to convince all his hearers that he was complete master of the subject. The liberal use of face casts and models of cases, together with appliances for the correction of facial deformities, shows the wonderful progress of modern art in its endeavors to overcome the malformations and deficiencies of nature.

Other valuable papers were presented by Dr. H. A. Smith, of Cincinnati, Dr. Geo. W. Cook, of Chicago, Dr. S. B. Dewey, of Cleveland, and Dr. Alexander Jamieson, of Indianapolis, all of which called forth an interesting discussion.

The crowning feature of the convention was the presence of the Apollo Club from Cincinnati, secured through the efforts of Dr. J. R. Callahan, who is a member of that famous chorus of forty-five male voices. The national reputation of this club was
admirably sustained and all who had the good fortune to be present at their concert Wednesday night, will long remember it as the pleasantest feature of a very pleasant trip.

This letter would be incomplete without reference to the admirable display of the dental dealers. Their display also demonstrating the wonderful advancement in modern dental mechanism. Taking it as a whole the tri-State meeting was an unqualified success and we that attended congratulate each other on our ability to take advantage of such a delightful and at the same time beneficial recreation.

"CLEVELAND."

REVIEWS AND ABSTRACTS.


This very concise work has been so carefully gone over by the author that it is a source of gratification to learn that it has so soon reached a fourth edition. It is now a pleasure for the student to study the anatomy of the teeth. This work teaches the correct use of terms, which is a great desideratum. The volume is compact and the mechanical execution leaves nothing to be desired. The word *embrasure* is the only new term used, which, as is carefully explained, covers "that portion of the interproximate space that widens toward the buccal or labial or toward the lingual." No student can afford to be without this volume.

Books Received.


MEMORANDA.

Dr. N. D. Edmonds has gone to California for a prolonged visit.
Dr. W. G. A. Bonwill, of Philadelphia, was in Chicago during June.
St. Joseph, Missouri, has a dental society. C. H. Darby is president.
Do you ever make a crown for a central incisor without a full band?
Dr. Arthur R. Gage, of New York, is dead at the early age of forty-one.
Dr. T. W. Brophy has gone to Europe for a short vacation.

About one hundred dentists attended the Section on Stomatology at Denver.

Dr. A. P. Southwick, an old resident of Buffalo, died June 11 at the ripe age of seventy-two.

The Dental Century is a new monthly magazine published at Madison, Wis. edited by W. G. Beecroft, D. D. S., with a long list of collaborators.

In Warren's "Quiz" Compound it is stated that there is no physiological antidote to opium poisoning. Permanganate of potash is generally considered to be the best antidote.

Mr. Chas. S Tomes, F. R. S., has been appointed to the Medical Council of Great Britain. As the Medical Council has charge of the admission of dental surgeons to practice this is a great boon to the profession.

INDIANA STATE DENTAL ASSOCIATION.

Alexander Jameson, Indianapolis, President; M. A. Mason, Ft. Wayne, Vice-President; J. S. McCurdy, Ft. Wayne, Secretary; W. W. Mungen, Ft. Wayne, Treasurer.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-eighth annual meeting of the Wisconsin State Dental Society will be held at Madison, July 19-21, 1898. An interesting program will be provided. A cordial invitation is extended to all dentists in the State of Wisconsin who are not members of the society, and also dentists of other States, to attend our meeting. Hotels and railroads will make the usual reductions.

W. H. Mueller, Secretary,  
21 West Main St., Madison, Wis.

R. G. Richter, President.

MISSOURI STATE DENTAL ASSOCIATION.—OFFICERS 1898-99.

President, Dr. P. M. Fulkerson, Sedalia; First Vice President, F. F. Fletcher, St. Louis; Second Vice President, Dr. W. L. Reed, Mexico; Corresponding Secretary, Dr. B. L. Thorpe, Billings; Recording Secretary, Dr. H. H. Sullivan, Kansas City; Treasurer, Dr. Jas. A. Price, Savannah. Board of Censors: Dr. R. E. Darby, Springfield; Dr. Fred Franklin, Kansas City; Dr. J. E. Megraw, Fayette. Committee on Ethics: Dr. John G. Harper, St. Louis; Dr. J. F. McWilliams, Mexico; Dr. J. T. Fry, Moberly. Committee on New Appliances: Dr. J. D. Patterson, Kansas City. Supervisor of Clinics; Dr. Chas. L. Hungerford, Kansas City. Committee on Publication: Dr. J. H. Kennerly, St. Louis; Dr. Wm. Conrad, St. Louis.

The next meeting will be held at Kansas City, Mo., the first Tuesday after the 4th of July.

BASEL, June 5, 1898.

Dear Doctor: On May the 7th the Rheinecker (Schweiz) paper published the following:

"Wie wir vernehmen hat Herr Hans Kuhn in Rheineck als geprüfter Eidgenössischer diplomirter Zahnarzt und auf grund eingereichter Dissertation über "Bromäthy" von der hohen Medicinischen Universität Illinois das Diplom eines Doctor Chirurgiae dentales summa cum laude erhalten—Gratuliren bestens!"
This was sent to me by a Swiss College, as President of the American Dental Association of Switz.

He also sent me a Prospectus (German) of the second year's course of the Illinois Academy, 324 Burling St., Chicago, Prof. Dr. B. E. Winther, "Magnificus," in which it is proposed to distribute diplomas on easy terms. And still I am told that there are no illegal graduations in America! How is this?

Yours,

Bryan.

Resolutions Adopted by the Odontographic Society, the Chicago Dental Society and the Odontological Society of Chicago.

To the Senate and House of Representatives of the United States of America:

Whereas, it has come to the notice of this society that a bill has been introduced into the House of Representatives to provide for the appointment of dental surgeons for the army and navy; we cordially indorse such a humanitarian proposition to provide this service for the comfort, welfare and endurance of our soldiers and sailors, which under the present organization, both in the army and navy, it is not possible for them to receive when most in need of them.

The equipment of the general surgeon is not wholly adequate to relieve the diseases that are incident to the mouth, teeth and jaws. The great advancement in the skill and efficiency of the dental surgeon in the United States of America, has made our people more than those of other nations, dependent upon them for much of their good health and comfort, and at the same time has broadened the field occupied by those practicing the healing art. The dental surgeon is fully equipped to render quick relief to those soldiers or sailors that meet with injuries of the mouth, and fractures of the jaws and bones of the face.

We believe it to be of the utmost importance that dental surgeons should be at hand at the time these injuries are received. Had this been so during the civil war, much of the disfigurement and after distress might have been prevented.

Ample evidence could be produced to show that immediate attention to the mouth, teeth and jaws of the rank and file of our army and navy is as essential as that given to other parts of the body, and such appointments, if made, will be of invaluable service in advancing and maintaining the health and endurance of our noble defenders.

Your honorable bodies must, therefore, see and feel the necessity of giving to them the full benefit of all the science of the healing art, while in the service of our country, therefore, be it

Resolved, by the Odontographic Society, representing three hundred and thirty-five dental surgeons of the city of Chicago, State of Illinois, that your honorable bodies be requested to take speedy action to secure such appointments with proper rank and pay, in the interest of the welfare and good health of the soldiers and sailors of the United States of America.

J. E. Hinkins, President.
E. Mawhinney, Secretary.
G. W. Schwartz, President.
F. H. Zinn, Secretary.
J. G. Reid, President.
E. R. Carpenter, Secretary.

Chicago Dental Society.
Odontographic Society.
Odontological Society.

Chicago, June 20, A. D. 1898.
NEW METHODS AND APPLIANCES IN ORTHODONTIA.*

By C. S. Case, D. D. S., M. D., Chicago, Ill.

The demands of a practice that is limited to dental orthopedy and the construction of artificial vela has led to the invention and practical application of so many ways and methods that are distinctively individual, that I am able to say to-day that everything in my practice covering every variety of movement of malposed teeth from the very beginning, where the material in the rough is worked into stock regulating material and implements to the final retaining appliances, is characterized by personal ways and means.

I do not wish to be understood as implying by this that I have not been dependent upon the thought and skill of other men—to whom I shall always feel grateful—for that foundation which has enabled me to build this system of practice. To Dr. Edward H. Angle I am principally indebted. In fact, it was by following his method, at first, of constructing regulating implements and finally seeing the almost unlimited opportunities presented by building a regulating apparatus upon bands cemented to the teeth, that led me to specialize my practice to this branch of dentistry.

To Dr. Norman W. Kingsley I am indebted for the foundation to my system of constructing artificial vela.

And so we are all indebted to other men—to some more than others—for the foundation of everything we know or accomplish. There is no year I teach, that I do not learn practical truths and often important ones, from students who have had no experience whatever. But it is almost entirely through the influence of

*Read before the Illinois State Dental Society.
our societies, our system of disseminating truth, scattering our
best thoughts freely to the world, our interdependence one upon
the other, our desire and ability to appropriate, use and individ-
ualize whatever comes to us of value from whatever source, that
we are able to say to-day with pride that we are members of a great
and progressive dental profession.

I have come to believe moreover that the success of a dentist
is not so much dependent upon his knowledge of what is under-
stood as the principal and specific methods of practice, as it is
upon his ingenuity and ability to individualize these principles
according to immediate needs with variations that are indispen-
sible to the real perfection of the operation in hand, and which may
be thought of at the time—if given any thought at all—as moves

that are so slight and unimportant that they are hardly worth
speaking about.

That is especially true in the practice of orthodontia. No
apparatus that was ever constructed, however simple and appar-
etly efficient for the purpose to which it is designed, will correct
that irregularity without frequent and intelligent variations to its
principal action—such as the tying of a ligature here or there, or
the immediate removal of a band or a part of the apparatus and
the application of other bands with different attachments that will
make it possible to slightly change the direction or quality of
force upon some particular tooth or teeth. Because of
this fact many of the appliances I have invented and published the
construction and action of, to the minutest detail, describing and
presenting models of case after case where they have performed
even marvelous results in my practice, have not so far as I can
learn met with similar success in the hands of others.
When our methods or teaching in this department become as perfectly developed as in other branches of dentistry, when a thorough knowledge of the simple laws of mechanics is insisted upon as one of the preliminary college requirements and every branch of dentistry that is dependent upon mechanical and manipulative skill is taught scientifically as in all other professions and trades that are dependent more or less upon a practical knowledge of the principles of force, then, and perhaps not until then, with the coming generation of dentists, will orthodontia take its proper place in dentistry.

With this preface to my paper I will proceed to describe as briefly as possible some of the new methods and regulating apparatus that I wish to present at this meeting.

Class I. The expansion of the lower dental arch.

Several years ago, wishing to avoid the use of plates and springs and substitute the far more desirable positive force of a screw, I conceived the idea of soldering to the ends of a tube that would rest just back of the incisor teeth right and left cut nuts. From these extended inflexible arms that were bent back nearly at right angles as they emerged from the prepared tube and rested upon the lingual surfaces of the teeth to be moved, the expansion being brought about by turning the entire tube with a wrench that engaged with one or the other nut. The difficulty of obtaining, in this method of construction, the necessary absolute correctness in the line of the two screws within the tubes, led to the very useful and effective apparatus shown in Fig. 1, which was presented at a meeting of this society in 1894 and published in the August Dental Review.

Fig. 2 shows enlarged section of the expanding tube. It will be seen that it is made of three tubes. The smallest, a. a., of 24 g. plate drawn to an internal diameter proper for required screw; b. of 28 g. plate drawn in same hole as a., and c.
of 28 g. plate drawn to an internal diameter equal to the external diameter of a. and b.

When these tubes are cut proper lengths, fitted and soldered together, the end pieces are threaded in right and left cut taps, which are made with right and left Martin screw plates, and in the same holes used for threading the mesial ends of the arms. The prepared tube is then partially squared at the ends and in such a manner to allow the wrench to grasp it at every eighth turn, as shown in Fig. 1.

While this expander will probably always hold an important place in my practice, I have been using of late another form which is quite as effective in most cases and much easier to construct. See Fig. 3.

A German silver wire should be selected for the lingual bow of sufficient size (B. and S. g. No. 14) to perform its work at the distal ends without bending. That portion which rests back of the incisors is filed flat to about one-third or one-fourth of its diameter in thickness.

In the process of soldering the rests for the jack-screw as shown in Fig. 3, the temper is removed from the flattened portion so that it can be easily bent. It will be seen that the expansion of the anterior portions of the arch will be in proportion to the amount of curvature given to the flattened part. For instance, when the flattened part has come to a straight line by the outward pressure of the jack, or has been made straight in the first place.
as shown by A, Fig. 3, no further expansion can occur between these points. The entire power will then be directed to the expansion of the distal portion of the arms.

Class II. One of the most common forms of irregularity is in those cases where the proper eruption of the cuspids has been retarded or prevented for the want of room. When this is due to the premature extraction of the deciduous cuspids the space will frequently be entirely closed by the adjoining permanent teeth. When this occurs upon one side only the crowns of the incisor teeth will often be found to stand at a decided lateral inclination, as in Fig. 4. An apparatus that is admirably adapted for the correction of this form of irregularity is shown in Fig. 5.

The object to be obtained is to force the bicuspids and incisors back to their proper relative positions sufficiently to give room for the cuspids and at the same time produce a symmetrical arch.

“A,” Fig. 5, shows detached movable bicuspid anchorage appliance. The distal ends of the power tubes are supported and freely move in troughs, made of open tubes, soldered to the molar. This permits a free relative motion to the bicuspids and molar. The tubes are attached to the bicuspid bands by means of intervening short sections of tubes soldered to the bucco-distal surfaces.

The object of this method of attachment is two-fold. First, it forms a firm attachment to the band and brings the strain at a point that will have the least tendency to rotate the bicuspid, a feature that is especially important when power is to be used upon one side only. Second, it permits of sufficient room for the action and turning of the nut.

In this paper, in speaking of the sizes of the several wires used I shall denominate them according to the hole in which they are threaded in the Martin screw plate.
"B" is a No. 10 or 11 alignment wire; "C" is a short section of tube slipped on to the wire and soft soldered (so as not to take out the temper of the wire) at a point to engage with a similar tube "C" soldered to the lateral band, with the joint outward so that it can be opened in placing the wire and finally closed around it. Thence the wire passes along the labial and buccal surfaces of the teeth as an alignment wire and into an anchorage tube on the opposite molar, where it is usually threaded to carry a nut at each end of the tube. By applying power at the nut "D" it exerts a reciprocating jack force to open the space required, while the tautness of the alignment portion of the wire can be accurately controlled by the two nuts at the molar tube. Instances will arise when it will be desirable to exert a traction force at this point. Again, it can be made to act as a spring bow to which the incisors may be ligated, to enlarge the incisal arch. When the cuspid space is only partially closed this apparatus, without the lingual portion, will answer every purpose. When the eruption of both cuspids is prevented, as in Fig. 6, the movable bicuspid anchorage can be duplicated on both sides. In cases where the cuspid spaces have become entirely closed and more power is required, the lingual jack can be added in the construction, as shown in Fig. 5.

Fig. 7 shows a variation of the apparatus demanded by slightly changed conditions.
Class III.—With many upper abnormal protrusions the bite is so short that the lower incisors strike the upper gums back of the incisor ridge, making it impossible to reduce the protrusion until this feature of the condition is corrected. Fig. 8 correctly represents a section of the models of a case in practice.

Several years ago I invented and published the very effective apparatus for opening the bite, shown in Fig. 9. The incisor and bicuspid bands are .003 of an inch thick. The hooks, which are wide and smoothly polished, where they come in contact with the mucous membrane, are soldered to upper edge of the incisor bands and turned up, and to the lower edge of the bicuspid bands and turned down.

Shell crowns are made for the first molars as follows: Bands .004 of an inch thick are first made in the usual manner and contoured to fit; the upper edges beveled and burnished to the irregu-

![Fig. 6.](image_url)

larities. Then an impression in Teague's compound is taken of each separately, the bands removed, placed in impression, which is then dried and filled with Mellote's or Babbitt's metal. This gives you a die or metal tooth with band in place, with which an occlusal cap of 28 g. plate is swaged, band removed and soldered, which when finished and gold plated, all made in short order, has the same appearance as any perfect gold shell crown, and one which you may be sure will accurately fit the molar for which it is designed.

While soldering the caps also solder open tubes (turned up) to the buccal surfaces. The tubes should take the direction of the alignment wire. When apparatus is ready to be attached, cement the first day, bicuspid bands only, to insure their not being pulled off in placing the wire.

At the next sitting the balance of the bands and the crowns
are cemented. In placing the spring alignment wire, after cutting it the proper length, place one end in the open tube of a molar, then spring it down under the bicuspid hooks, up and over the incisor hooks, down under other bicuspid hooks, and finally up into the other molar tube, after which bend all the hooks and tubes in closely upon the wire and polish off rough or projecting edges. I have not for years used piano wire or any form of steel in a regulating appliance for many reasons. A German silver wire drawn without annealing from No. 10 B. and S. g. to the desired size is sufficiently effective for every purpose.

The first wire attached may be as small as No. 13 M., which in a few weeks can be changed for a No. 12 M. I never use any larger. This apparatus is the most practically effective that can be imagined, is not difficult to construct, after the first week requires little attention, and gives no discomfort to the patient.

The necessity of at first masticating upon the molar crowns only is perhaps the most unpleasant feature, but the bicuspsids and
second molars, if the latter have erupted, soon raise to an occlusion; at the same time the incisors are gradually intruded. Usually in two months' time the case is ready for the apparatus to reduce the upper protrusion.

My object in again bringing this apparatus to your notice is to introduce an important variation to it that has not been published. It applies to cases similar to Figs. 10 and 11, which represent different views of the same case.

I think it will be seen that the real difficulty in retruding the uppers would arise from the same character of occlusion of the lower incisors as in the former type of irregularity. And that the former apparatus would not force the incisors forward—as well as down—to make room for the eruption of the cuspids, or tend to raise the cuspids to place.

In fact, that apparatus as described would tend to crowd the cuspids further out of place and make their eruption more impossible.

Fig. 12 represents the variation which I used for this and similar cases.

Below the molar open tubes, are soldered closed tubes for a No. 10 M. alignment wire. The cuspids are banded and carry short tubes open labially that are finally closed upon the No. 10
wire, the ends of which rest in the lower molar tubes. If the cuspids need to be retruded the ends of the wire should be threaded for nuts. Other than this, the balance of the apparatus is the same as shown in Fig. 9. The lower wire is placed in position and rubber bands cut from the smallest regulating tubing are carried from the incisor hooks under the wire and back. These will tend to force the incisors forward as well as down and lift the cuspids into place. As early as practicable, on account of the position of the cuspids, the upper wire can be placed as described.

Class IV. The next apparatus to which I wish to call your attention is for properly closing the space after the extraction of one of the lower incisors.

In a crowded and overlapping condition of the lower incisors where the arch should not be enlarged, and where it should not be retracted as much as would be required by extracting a bicuspid in each side, the extraction of an incisor is indicated.

When this has been decided upon, the next important consideration is: which one to extract. If they are equally healthy, their position should be a guide, with a slight favoring toward a central as it occupies less room, and the result more symmetrical.

One who is not versed in the proper method of determining this important question will be very apt to extract the wrong tooth, because it is the most irregular or thrown furthest out of align-
ment, and one if extracted often leaves a condition that is most difficult to properly correct.

In the treatment it is not sufficient merely to bring the crowns to alignment, or rotate them if necessary, and close the space by drawing them together, but it is equally important that the roots of the teeth adjoining the space should be near enough together to leave no marked depression at this point, or wide interproximate opening. The rule, therefore, that should guide, outside the question of disease is: Extract that tooth between adjoining teeth whose position indicates that the apical ends of their roots will require the least movement in the process of correction, and this regardless of the irregularity.

When a lower incisor is crowded completely out of alignment the incisal ends of the adjoining crowns are gradually forced toward each other; and when this has been going on for some time the irregular tooth will act as a fulcrum, with a tendency to force the roots in the opposite direction. At any rate, it is a fact that the most irregular tooth is rarely the one to extract on account of this decided inclination of the adjoining teeth, making it necessary to move the roots so far.
I can well illustrate this by a case that recently came to me. (See Fig. 13.) The crown of the left lateral was crowded out and stood well in front of the cuspid, the space being more than two-thirds closed. I decided rightly to extract the left central and tip the lateral back into the opening, which with a slight movement of the right incisors would have corrected the case easily without resort to the apparatus for moving the roots, (which I will describe).

By an unhappy inadvertence I marked on the extractor's card the lateral instead of the central. When the patient came back I saw the error, and immediately rushed to the operator, and gave him a little talk about being more careful. He politely showed me the card and my own mistake. Said he, “Doctor, I had great difficulty in extracting that tooth on account of the narrow space for the lingual beak of my forceps, but it certainly seemed to me to be the right tooth to extract.” And that I venture to say would have been the common but most wrongful verdict.

Fig. 14 shows correctly the position of the teeth after extracting. One can see at once, though far more perfectly by the mouth, that the roots of the left central and cuspid will now
require considerable movement to correct the very condition we would wish to avoid.

Fig. 15 shows position of teeth had the central been extracted. The space would have been wider, but the condition very much easier to correct.

Fig. 17.

It will be necessary for me to move the roots of both centrals and cuspid toward the space.

Fig. 16 shows the front view of the apparatus that was made for this case. Commonly it is necessary to move the roots of only the two teeth adjoining the space. Bands .005 inch thick extend from the incisal to the gingival margins. To the labial and lingual surfaces of these are soldered club shaped pieces of 28 g.

Fig. 18.

plate, extending down over the gum and carrying hooks to which are attached rubber bands that extend across the space from one to the other. See Fig. 17.

By this method the force is applied well down upon the roots of the teeth. Any amount of force necessary can be employed, and because of the lingual and labial attachments the teeth are
prevented from rotating, or, if required, can be made to rotate either way.

**Class V.** If there is one thing more than another that has prevented the operation of regulating teeth from becoming established as a part of the regular practice of dentists in general, it is the discouraging difficulties and frequent failures that have attended the final retention of the teeth in their regulated positions.

The many ingenious appliances and methods for regulating teeth that have been introduced have enabled almost every dentist, who has made the attempt, to greatly improve if not fully correct the positions of malposed teeth.

Up to this stage it has been one of the most satisfactory operations in dentistry, and yet one unfortunately that has so often been followed with failure, through the tendency of the teeth, under the forceful influences of inheritance or otherwise, to return to their former positions that many skillful dentists have abandoned the operation of regulating teeth altogether, while others will only attempt the simplest cases or those which can be brought to a position of self-retention.

I shall not attempt in this paper to go into the causes which operate to produce this tendency of the teeth, nor give my opinion in detail of the imperfection and inadequacy of retaining implements that have been and are still being used. There are, however, a few underlying principles that should be borne in mind. First. Teeth that are moved by orthopedic processes from one relative position to another are for a considerable time—often for years—surrounded by physical forces that tend to pull or push them back to the irregular position they formerly occupied. Second. These forces continue to operate until the tissues are

![Fig. 19.](image-url)
brought to equilibrium in their changed positions by the physiological processes of nature. Third. To most successfully aid nature in the upbuilding of sustaining elements and structures, the moved and loosened teeth should be held absolutely still during the entire period that is required for their permanent retention. The retaining appliance should be one that so firmly grasps the teeth that the aforesaid forces are not only completely held at bay, but the slight movements occasioned by mastication and otherwise are prevented. It should be one, moreover, that frequent removals for cleansings, etc., will be unnecessary and impossible.

It should therefore be as perfectly fitted, finished and cemented as a bridge denture, and so constructed that the teeth and gums can be kept in a healthy condition while it is worn with the same comfort and unconsciousness that a filling or crown produces.

![Fig. 20.](image)

To fulfill all these demands, its appearance in the mouth is of the utmost importance. Patients and friends of patients will submit to long, tedious and painful operations with cumbersome and unsightly apparatus, stimulated by the hope of ultimate success, but when the teeth are finally brought to a satisfactory position an all-round fight begins for the too early removal of every reminder of the unhappy ordeal through which they have passed. This often comes most forcibly through the influence of sympathizing friends and relatives, especially if the retaining appliance is at all unsightly or produces discomfort to the patient.

As these difficulties and demands apply particularly to the anterior teeth, an apparatus that has been used with the greatest satisfaction in my practice for the past two years and which has been developed during this time to its present stage of seeming perfection is shown in Fig. 18. A full description of its construc-
tion in every detail was published in the January, 1898, Ohio Dental Journal.

In brief, the six bands are soldered together and to a narrow plate that is swaged to fit their lingual surfaces, then the labial portions of the incisor bands are cut away so as to leave only small anterior extensions between the teeth which when properly reinforced with solder and finished, answer every requirement and look much like approximal gold fillings.

While this appliance—with variations that can be easily made to it—will perfectly retain the teeth after correcting all ordinary cases of irregularity, it is not sufficient, on account of the short grasp which it has, to retain teeth that have been moved bodily with the contouring apparatus.

I am now pleased to say that this demand is adequately supplied by a new retaining appliance that is giving me the greatest satisfaction in these cases. In fact, while it is a perfect retaining appliance for the purposes for which it is intended, it also can be made to exert a considerable contouring force in moving the roots of the incisor teeth forward. And I have no doubt it would be sufficient for this purpose in many cases of early youth when the required movement is not very great.

The incisor teeth are banded with rolled platinum and gold plate, .004 inch in thickness, cut straight and sufficiently wide to extend from the incisal to the gingival borders, with the joints of the bands on the lingual sides. When these are soldered and excess cut away the joints are flattened with smooth pliers and then the bands are perfectly fitted to the respective teeth. In this process a considerable portion is cut away, so as to leave a narrow band encircling the teeth on the labial and approximal sides at the extreme incisal portions—the entire lingual surfaces of the teeth being covered. See Fig 19. While the bands are in position, having been perfectly contoured and fitted to the teeth, a plaster impression is taken that imbeds the bands only and includes the bicuspids. The bands are then removed, carefully fitted in their respective places in the impression, which is filled with Teague’s or any investing material.

With the bands now in position on the model take a Teague’s compound impression with which make die and swage a 28 g. reinforcing plate to cover the entire lingual surfaces to which it
is soldered, carrying the solder through between the approximal surfaces and filling the V shaped spaces on the front.

The next step is: Solder tubes to the linguo-distal borders that shall take a direction and extend to the linguo-occlusal borders of the second bicuspids. The size of the tubes, which may be of German silver, or preferably, of platinum, should be drawn to exactly fit a No. 10 M. wire.

It will be seen by the illustration that when the apparatus is in place the distal ends of the wires are even with the occlusal surfaces of the molars. The molars are banded and carry an open tube soldered to the linguo-occlusal borders.

When the apparatus is cemented and sufficient time is given for the cement to perfectly harden, the wires—which are threaded and carry nuts to exert force at the mesial ends of the molar tubes—are slipped into the tubes, and then forced down into the open molar tubes which are closed over them. See Fig. 20.

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**Conservatism in Oral Surgery.*

By Truman W. Brophy, M. D., D. D. S., Chicago, Ill.

Surgery of the oral cavity and its adjacent parts, including facial deformities, will ever be of great interest to the surgeon, as it not only requires high skill of the diagnostician, but unusual delicacy in manipulation is demanded in order to obtain good results and avoid conspicuous cicatrices and other deformities of the mouth and face.

It is my purpose to briefly state some of the reasons why the surgeon who has been thoroughly educated not only in medicine, but dentistry according to the curriculum of the modern dental college, is especially well qualified to enter upon the practice of this branch of the healing art.

It is customary for the general practitioner of surgery, when operating upon the maxillary bones or in the performance of operations within the mouth, when of considerable magnitude, to make external incisions in order to gain access to, and a full view of, the field of operation. I hold that these external incisions, followed as they are by the formation of scars, are in a large majority of the cases in which they are made wholly unnecessary.

*Read before the Illinois State Dental Society.*
For example, a patient suffering from persistent neuralgia of the second or third division of the fifth pair of nerves, having undergone internal medication extending over a period of many months with only temporary relief, is taken by the physician to a surgeon for diagnosis and treatment. The surgeon decides that a nerve lesion exists and that an operation is required or indicated. The patient is prepared, the operation is proceeded with, and an external incision is made in accordance with the location of the lesion. If of the inferior dental nerve, the incision is made along the border of the jaw, the tissues are reflected up so as to expose the external surface of the inferior maxillary bone, a mallet and chisel are made use of; the bone is chiseled away so as to expose the inferior dental canal, and the nerve removed. A saw is sometimes employed instead of a chisel for the purpose of removing the external layer of bone covering the canal. The wound is closed by suturing and the patient cared for antiseptically until the wound heals.

These external incisions are wholly unnecessary as the operation may be successfully performed within the mouth with a moderate incision over the mental foramen, a small incision being made downward from the mental foramen, so that the canal may be entered with a silver probe. Then a drill, after the form of Gates' root canal drill, exaggerated in size, may be carried into the canal and the contents thoroughly removed.

In order that the nerve may not redevelop as it is inclined to do the canal may be drilled out so as to freshen the surface of the bone, thus causing the exudate to take place from the freshened bony surface, and the consequent filling of the canal with bony tissue. Experience has taught us, however, that the canal does not always fill with osseous tissue and the nerve will be reproduced in certain cases.

I am of the opinion that there is no more reason for making an external incision for the removal of the inferior dental nerve within the substance of the maxillary bone than there would be to make an external incision through the cheek to obtain access to a third molar tooth for the purpose of entering the pulp chamber and removing the pulp therefrom.

Abnormal conditions of the second division of the fifth pair of nerves, or the infra-orbital nerve, frequently require surgical operations for their cure. It has been customary in performing these
operations to make external incisions for the purpose of entering
the infra-orbital foramen and making exsections of the nerves. I
have found that equally good results may be obtained by raising
the cheek, making an incision over the cuspid tooth, dissecting up
the soft parts, seizing the nerves with a tenaculum as it makes its
exit from the infra-orbital foramen, carefully dissecting out its
branches distributed to the cheek, thence increasing the size
of the infra-orbital canal by means of a drill, seizing the nerve,
drawing it forward, and dividing it, will accomplish the same end
that may be gained by making an external incision.

Operations for the removal of tumors of the oral cavity of various
kinds may also be performed without external incisions. The tumor
known under the name of epulis, occurring as it does about the
margins of the gum, but having its origin in the periosteum, grow-
ing sometimes to an enormous size, may be removed in all cases
within the mouth without external incisions.

The method of procedure in removing tumors of the superior
maxillary bones, has been to make an incision usually either
through the median line of the lip to the septum of the nose, thence
around the ala of the nose to the inner canthus of the eye, thence
to the outer canthus of the eye, dissecting up the cheek; reflect-
ing it backward, or to carry an incision from the angle of the mouth
to a line midway between the lobe of the ear and the angle of the
jaw, and then to proceed to remove the superior maxillary bone
together with the tumor through the incision made. I have found
that such a procedure in a large majority of cases is unnecessary.
Tumors, especially of the sarcomatous, or carcinomatous type, by
no means always affect the bony tissue of the hard palate except by
absorption of that bone by contact and pressure. Especially is
this the case in the formation and development of giant cell sar-
coma, a tumor so frequently met with in and about the oral cavity.

Three times during the past four months have I found growths
of this character involving the nose, all the space occupied by the
antrum of Highmore extending back into the sphenoidal fissure
from which they often have their origin, and I have successfully
removed them by making incisions within the mouth, over and
immediately beneath the malar process of the maxillary bone, car-
rying them forward to the median line, dissecting the tissues away
and thus reaching the great mass of the growth. With properly
formed and suitable sized curettes these growths were removed,
and the parts, so far as time would allow us to judge, have assumed a normal condition, as there has been no recurrence to date of these growths, in any one of the three cases referred to. In one case in particular a marked absorption of the maxillary bones had occurred, leaving only the soft parts between the oral surface of the soft palate, and the tumor lying upon its superior surface. So extensive was the destruction of the bone in this case that that which was the summit of the vault was depressed or carried downward by the tumor so as to be on a line with the occluding surfaces of the teeth. In order to make this operation without the loss of the teeth, and without the loss of the palate, it became necessary to construct a splint of metal, made by swaging it with dies, so as to make it fit the surface of all the teeth of the upper jaw. This splint was cemented into place, the patient dismissed until the following day, when the operation was made of removing the tumor. The teeth were so loose that some of them might easily have been removed by the fingers. The splint, however, supported and held them firmly in place, and the tumor was removed. While the cavity has not yet filled, the parts are in an apparently healthy condition, and the teeth have become quite firm. This dependent part of the palate, caused by the pressure of the tumor, contracted and finally resumed its former shape. The palate is restored, and the articulation of the patient is in no sense impaired. If, however, the usual course of operative interference had been adopted, the patient would have been deformed through life.

In cases of osseous tumors, involving the greater portion of the maxillary bones, it is often expedient to remove them without external incisions. The superior maxillary bone may be removed within the mouth and without any external incision whatever. Necrosis and caries of the bones may be removed easily within the mouth. On several occasions I have removed one-half of the inferior maxillary bone without external incisions. In a case of necrosis I removed the entire inferior maxilla within the mouth. This, however, was a comparatively easy procedure as there were no attachments that were difficult to release. It is needless to say that tumors of the lower jaw may be more easily removed than tumors of the upper jaw, as better access to them through the oral cavity can be secured. It may be well to urge upon all the great advantages to be obtained in the treatment of fractures of the maxillary bones by the adoption of internal splints.
The skilled dentist, whose ability to manipulate metals in the construction of regulating appliances, crowns, etc., is especially well adapted to the construction of apparatus or splints for the successful treatment of fractures of the maxillary bones. The application of external splints and bandaging, even when most skillfully applied, is very inefficient in accomplishing the work desired in securing a good adaptation of the fragments and restoration of normal occlusion of the teeth.

I wish to make a plea for conservatism in oral surgery. It is true that we meet with cases, now and then, of such a character as to make external incisions a necessity, but I feel that it is the duty of every operator to consider the best interests of his patient before operating, and in all cases, where it is possible to do so, to operate within the mouth, and thus avoid the formation of scars which will be a disfigurement to the patient through life.

THE ESSENTIAL OILS AND SOME OTHER AGENTS, THEIR ANTISEPTIC VALUE, ALSO THEIR IRRITATING OR NONIRRITATING PROPERTIES.*


Very soon after assuming the duties of the chair of materia medica and therapeutics in college work, I became convinced that in our literature there was much loose statement in regard to the action of the drugs we employ in dentistry. Especially did this seem true in regard to the antiseptic powers of various agents employed as antiseptics. Further, the therapeutic action of these agents has generally not been especially considered. It seems that iodoform is still used by many as an antiseptic, though it has long been known that it has not that power. Also, that the presence of albumin renders the ordinary solutions of bichloride of mercury inert as to antiseptic power, and prevents its effectiveness in treating suppurative surfaces, yet it is persistently used for this purpose. Also, the essential oils, some of which have previously been shown to possess antiseptic virtues have seemed to be looked upon as a group of antiseptics, and, as it has seemed to me, are being used without reference to their relative merits as antiseptics, or to their therapeutic effects upon the tissues to which they are applied. For these

*Read before the Illinois State Dental Society.
reasons I have, in my teaching in the Northwestern University Dental School, made trial of these agents in the bacteriological laboratory, as to their effectiveness as antiseptics, and have also in various ways made trial of their effects upon the animal tissues in order that I might speak definitely of my own knowledge of these matters. In this paper I will give briefly my observations upon a number of these agents.

To determine the antiseptic value of these agents the following experiments were conducted: Test tubes, each containing ten c. c. of sterilized mutton bouillon, were used. The broth in these tubes were, for the most part, infected with saliva from various members of the class. In each set of plants made, a control tube was used, i. e., a tube in which the broth was infected with saliva, but into which no antiseptic agent was placed, simply to act as a control for the results of the remaining tubes into which antiseptic agents were placed. In each instance the control tube presented a full development of bacteria, thus proving the accuracy of each set of plants. One drop of the essential oil was first used in the tubes. When one drop prevented development of bacteria, the quantity was gradually decreased in other plants, until the least amount that would prevent development was ascertained. To divide the drop I placed ten drops of alcohol in a small vial, and into this placed one drop of the oil; the alcohol dissolves the oil immediately. I then used in the culture tube such proportion of the drop of the essential oil desired, one drop of the solution representing one-tenth of a drop of the oil. Those drugs that were found ineffective with one drop were increased in other plants until found effective, or were given up as unsuitable, or worthless as antiseptics. The same dropper was used throughout.

An antiseptic must be regarded as a poison to the vegetable cell, and many of them act also as poisons to the animal cell. I undertook this series of experiments for the determination of these differences of poisonous effects with the idea that in selecting antiseptics for use in practice we should have special regard to the effect of the agents upon the animal tissues to which they are applied. To determine the irritating or nonirritating properties of these oils an extensive course of experiments with them has been conducted during the winter months, in connection with sores artificially produced on guinea pigs, and also on my own person. To determine the effect of these agents when applied directly to soft
tissue the applications were made, in each instance, to my own person. And pardon me when I say that I believe I have come to positive conclusions regarding some of these agents along these lines.

**Oil of cassia.** We find that three-tenths of a drop is the smallest quantity that will prevent the development of bacteria in ten c. c. of broth, and there being sixty-seven drops of oil of cassia in one c. c., this agent is effective as an antiseptic in 1 to 2,233 parts, that is to say, one whole drop of oil of cassia would prevent development of bacteria in 2,233 drops of infected broth. This explanation, if you please, will hold good in connection with each agent we have used. Oil of cassia is undoubtedly the most potent of the essential oils as an antiseptic. I have had at least a dozen samples of cassia, obtained from as many different sources, and upon analyzing them have found them to be adulterated in each instance. One sample, especially, shipped direct from China to a dealer in Chicago, was found to contain fixed oils in considerable quantity. Others were found to contain alcohol, etc. This oil, as found in commerce to-day, is not as potent an antiseptic, by about one-half, as was the cassia obtained ten years ago. A reference to the work of Dr. G. V. Black along this same line, done about ten years ago, serves to prove the correctness of this statement. The samples of cassia he used at that time were potent in 1 to 4,000 parts. If I could have obtained a pure, unadulterated sample of cassia it would certainly have outclassed oil of cinnamon as an antiseptic by a wide margin; but as it is, as to the division of a drop, they have proven exactly the same. However, you will notice when we consider that agent, that of oil of cinnamon only sixty-three drops are required for one c. c., while of cassia sixty-seven drops are required. This simply means that one drop of oil of cinnamon is just slightly larger in bulk than one drop of oil of cassia, so that this discrimination in the number of drops to the c. c. still places oil of cassia ahead of oil of cinnamon as an antiseptic, the potency of oil of cinnamon figuring out 1 to 2,100 parts. While oil of cassia stands at the very head of the essential oils as an antiseptic, it is also true that it is the most poisonous in its effect upon soft tissue. As a test of the irritating properties of oil of cassia, a pellet of cotton was saturated with it and placed in a small rubber cup, to prevent evaporation. This was applied to the surface of the skin and held there by means of a piece of court plaster large enough to
cover it over and stick tightly to the surface of the skin about the edges. This was retained in place for twenty-four hours, during which time the irritation to the soft parts was by no means a pleasant feature. At the end of this period a blister invariably forms; however, the inflammation in the tissues at this time is not very great. The blister will occupy an area from one-half to one-third greater than that to which the oil is directly applied, and will fill and refill with serum several times before any tendency to recovery is noticed. At the end of forty-eight hours the inflammation in the parts involved is intense, and occupies an area four or five times as great as that to which the oil is directly applied. Numerous small, independent blisters almost invariably form about the circumference of the inflamed area. This condition continues for several days, and while the inflammatory process is at its height the sore is one of the ugliest and most formidable in appearance it has ever been my privilege to look upon. These sores, also, are very slow in healing. It is with seeming regret on their part that the inflammation is permitted to subside, and the parts to return to a normal condition. While these sores are in every way just as bad as has been described, they are, however, fraught with no serious consequences.

To further test the irritating properties of this oil, a sore, in connection with which there was considerable inflammation, was produced on a guinea pig and treated for a number of days with the spray of cassia, by means of an atomizer. So long as this treatment was continued the parts could not recover, but quite to the contrary, the inflammation was greatly increased. Suppuration was then produced by infecting the sore with pus microbes. This in turn was treated with the spray of cassia, with the result that the germs were destroyed, and the pus formation caused to cease, thus proving quite conclusively that this agent is an excellent germicide when applied to suppurating surfaces, as well as a most potent antiseptic.

To my mind, it is clearly proven that while the antiseptic and germicidal properties of this oil are of the highest order, it is one of the most irritating, in its effects on soft tissue, of all the agents with which we have anything to do. And because of these effects, as outlined above, I feel perfectly justified in making the statement that oil of cassia should never be used as a dressing in the root canals of teeth.
There is also another reason, aside from the above, why it should not be used, and that is, its proneness to cause discoloration of the teeth. In almost every instance in which its use is continued for a time the teeth are more or less discolored, and in some cases very considerably. This is one of the most difficult forms of discoloration to correct that we are called upon to treat.

Is it not reasonable to suppose that when cassia is used in the treatment of pulpless teeth, the above disagreeable conditions may occur in the soft tissues occupying the apical space and the periodental membrane become involved in the inflammatory process? Have you ever thought that the excessive flow of serum which so frequently occurs from the tissues of the apical spaces of teeth that are being treated with this oil, is nothing more or less than the discharge of actual blister, as in the cases above recited? If these are reasonable suppositions—and I believe they are—is it still a source of wonder to any of you that teeth, under these circumstances, so suddenly develop such extreme tenderness to pressure, as they so frequently do?

Oil of cassia, however, has a place in our practice as dentists. Cassia water, sometimes, in the treatment of fistulous abscesses, is very useful. It is so stimulating to the tissues that it excites a healthy action on the part of the latter when other agents fail. Oil of cassia in the treatment of severe cases of pyorrhœa, so-called, where the pockets about the teeth are deep, and considerable pus present, is exceeding useful. In such cases it may be used in full strength by means of a drop syringe. The oil is not permitted to remain in contact with the soft tissues a sufficient length of time to cause trouble, it is so soon diluted by the fluids of the mouth.

Oil of cinnamon of Ceylon. We find that three-tenths of a drop prevents development of bacteria in ten c. c. of broth, and that sixty-three drops constitute one c. c., thus showing this agent effective as an antiseptic in 1 to 2,100 parts. Oil of cinnamon of Ceylon, as you well know, is very much the same nature as oil of cassia. However, in some respects there is a marked difference between them. It has been demonstrated that oil of cinnamon is not so irritating to soft tissue as oil of cassia. An application of oil of cinnamon to soft tissue, in the same manner that cassia was applied, and left for twenty-four hours, caused considerable irritation, and formation of blister. At the end of forty-eight hours the inflammation was severe; however, not so intense as
that caused by cassia, and the area of tissue involved in the inflammatory process was not so great. Also, the blister that developed by the application of cinnamon was by no means as large as that from cassia, occupying the center of the inflamed area and spreading over tissue in extent equal only to that to which the agent was directly applied. The blister and inflammation are not so persistent as is the case with cassia, the former refilling with serum usually but two or three times, and the inflammation passing away quite readily.

A sore, attended with much inflammation, on a guinea pig was treated with the spray of oil of cinnamon with the result that it was further constantly irritated and thus prevented from healing. Suppuration was then produced in the sore, and again treated with the spray of this oil—the germs being destroyed and the pus formation ceasing. The action of cinnamon was not so vigorous as that of cassia.

To my mind, cinnamon is altogether too irritating for use in the treatment of pulpless teeth.

A synthetic oil of cinnamon, a sample of which I secured this spring from the first lot sent to this country (it being prepared in both France and Switzerland) proves to be as potent an antiseptic as the regular oil, three-tenths of a drop preventing development of bacteria in ten c. c. of broth. Sixty-four drops of this oil constitute a c. c., thus showing it effective as an antiseptic in 1 to 2,133 parts. It is, however, in its first effects more irritating to soft tissue than oil of cassia. An application was made to soft tissue, and at the end of fifteen hours a fully developed blister, in extent larger than the area of tissue to which the oil was applied, was the result. There was very little inflammation or discoloration of the tissues. The first effect of this oil on soft tissue was so vigorous, very much tenderness and inflammation were confidently expected to follow. In this, however, I was disappointed. The blister continued to refill with serum several times, but actually no tenderness or inflammation worthy of mention developed in the surrounding parts. I cannot recommend it for use in the treatment of pulpless teeth.

Beech wood creosote is the next agent, from point of potency, as an antiseptic; five-tenths of a drop prevented development of bacteria in ten c. c. of broth. There are sixty-four drops in one c. c., thus showing creosote effective as an antiseptic in 1 to 1,280
parts. This agent is practically nonirritating to soft tissue. An application remaining for a period of thirty-six hours produced practically no irritation. There was just the slightest evidence of irritation about the center of the spot where it was applied. There was no inflammation. The surface of the skin was slightly discolored and also slightly burned or seared over, but not to an extent that caused the loss of any tissue. A sore on a guinea pig was treated with the spray of creosote with the result that the inflammation gradually subsided, and the sore healed with little delay.

Another sore in which suppuration was produced was treated in a like manner, the germs being readily destroyed and the pus formation stopped. Continued treatment resulted in the gradual healing of the sore. Creosote has proven its right to stand among the first, from point of potency, as an antiseptic, and because it has been demonstrated that it is practically nonirritating to soft tissue, it is a safe agent, and in some cases a very desirable one, for use in the treatment of pulpless teeth. A case of putrescent pulp, for instance, of long standing, one in which the lateral openings and also the dentinal tubules are completely saturated with mephitic odors and gases, creosote, in my judgment, is the most potent and desirable of the available agents. It is very penetrating, and one of the most persistent in its effects of all the agents at our command. I have used it to good advantage in severe cases of apical pericementitis. However, in some instances, where discoloration of the teeth has occurred, it has seemed that it was due to the action of the drug. Creosote being more or less of the nature of carbolic acid, possesses to a certain extent the properties of a local anæsthetic, and because of this property it has quite a beneficial effect upon inflamed tissue.

Oil of cloves. Six-tenths of a drop prevented growth in ten c. c. of broth; sixty-nine drops constitute one c. c., showing it effective as an antiseptic in 1 to 1,150 parts. Oil of cloves is absolutely nonirritating to soft tissue. An application to the surface of the skin for thirty-six hours left no more evidence of having been confined there than so much sterilized water would have done. No irritation, no discoloration. Sores were produced on guinea pigs and treated with the spray of this oil. The inflammation subsided more rapidly than when treated with any other agent, and the sores healed as readily as they could,
simply proving beyond any possibility of doubt that, while effectively destroying microbes, the only action of oil of cloves in contact with irritated, inflamed soft tissue is that of a quieting, soothing agent, serving to reduce the irritation and inflammation, and returning the disturbed tissue to its normal condition. A sore in which suppuration was produced by being infected with pus microbes was treated with the spray of this oil; the germs were destroyed, and the formation of pus was stopped.

A sore on my arm, produced by an application of cassia, became infected and pus formed. This was washed thoroughly with a 1 to 1,000 solution of bichloride of mercury every night for several times, and dressed in turn with iodoform, nosophen and aristol, with no other result than an absolute failure to stop pus formation. One night, after having washed the sore thoroughly with the bichloride solution, I poured oil of cloves onto the raw tissue. There was only a very slight smarting for a few minutes, after which its action was that of a quieting, soothing agent. This application was held in position for twenty-four hours. It was then removed; no pus was present, and the little granulations could be seen springing up all over the surface of the sore. It was immediately dressed with aristol and let alone for forty-eight hours, at the end of which time it was perfectly healed.

Another sore on the lower part of my right leg, the result of an application of formalin, was causing a great deal of trouble. The inflammation was severe, the tissues were very tender, the muscles felt bound up and were very painful, it being exceedingly difficult to walk. Continued treatment with ordinary remedies resulted in no relief. One morning, after having thoroughly cleansed the sore, a liberal quantity of oil of cloves was placed on it, and the bandage applied. Within four hours' time the very disagreeable, drawn condition of the muscles passed away, the pain ceased, and the foot could be moved in all directions as freely and comfortably as could the other, and could be used in walking just as well as it ever could.

Oil of cloves, for general use in the treatment of pulpless teeth, is certainly one of the best agents at our command. It possesses the property of destroying or rendering inert septic and infectious material. In cases of apical pericementitis it is perhaps the best agent that can be used. It possesses local anaesthetic properties to a marked degree, and, like some of the other agents,
because of this fact, serves to reduce the inflammation in the tissues in the apical space and causes them to return to a normal, healthy condition.

Oil of bay. Seven-tenths of a drop prevented development in ten c. c. of broth. Seventy-two drops are necessary for one c. c., showing this agent effective as an antiseptic in 1 to 1,028 parts. Oil of bay, to me, is a comparatively new agent, and I believe I am warranted in making the statement that it is a new agent to the vast majority of the dental profession. A year ago last winter a gentleman spoke to me about this oil, said he had been using it for some time in the treatment of pulpless teeth, and that, so far as his clinical experience went, had found it to be an efficient and agreeable agent. He stated that he had not observed any bad effects along the line of producing irritation, or anything of that sort. He requested that I test it, which I did, with the result above stated, which places this oil in the foremost ranks of the list of antiseptics. I have used it more or less since, and in one case, that I have in mind, thought the irritation and tenderness which was induced was directly due to the action of the oil. But in subsequent use, have observed none of these effects. I came to the conclusion that I was wrong, that there must have been some foreign, irritating substance present which caused the trouble. I have made two applications of the oil to soft tissue, retaining each in contact for thirty-six hours, for the purpose of observing its effect, and no irritation resulted in either case.

A sore was produced on a guinea pig with an irritant which caused intense inflammation. This was treated with the spray of bay for several days, and the closest observation did not reveal any additional irritation, but to the contrary, the inflammation gradually subsided. However, not so rapidly or willingly as when some other agents were used—as cloves. A sore in which suppuration was produced, on being treated with the spray of bay, yielded very nicely, the germ being destroyed and the pus formation stopped. I think we are safe in concluding that oil of bay is a valuable addition to our list of agents for the treatment of pulpless teeth. So far, I can see no objection to its use, and it is certainly a most effective agent.

Oil of sassafras. Seven-tenths of a drop prevented growth of bacteria in ten c. c. of broth; seventy drops are required for one c. c., showing it effective as an antiseptic in 1 to 1,000 parts. Oil
of sassafras in contact with soft tissue for thirty-six hours produced no evidence of irritation. It has proven to be a very potent antiseptic. I have treated sores, in which there was marked inflammation, with the spray of sassafras, and the result was much the same as with the last previous agents; the inflammation subsiding, the irritation passing away and the sore healing. It has not exhibited the ability to destroy germs and prevent pus formation to nearly the extent that the stronger agents have. I have never used oil of sassafras in the treatment of pulpless teeth, but I certainly can see no reason why it should not be a potent and harmless agent in this connection.

Oil of peppermint. Eight-tenths of a drop prevented development of bacteria in ten c. c. of broth; seventy-two drops are necessary for one c. c., showing this agent effective as an antiseptic in 1 to 875 parts. An application of oil of peppermint to soft tissue continued for thirty-six hours produced no irritation, no discoloration of the skin, no inflammation, thus showing conclusively that this, also, is nonirritating to soft tissue. A sore in which considerable inflammation was present was treated with the spray of this oil, with the result that the inflammation readily yielded, the irritation subsided and the sore healed. Another sore in which suppuration was produced was treated in the same way, with the result that the germs were destroyed, and the pus formation was stopped, which proves that this agent is not only an antiseptic, but also destroys the germs and thus prevents pus formation. This is an agent which I have rarely ever used in practice. Three years ago I used it a little in treatment cases, but discarded it simply because of its persistent, penetrating odor. Other than that, I can see no objection to its use in pulpless teeth.

Dr. Black's "1-2-3." This is the next agent in point of potency. One and four-tenths drops prevented development in ten c.c. of broth; sixty-five drops are necessary for one c.c., showing this agent effective as an antiseptic in 1 to 454 parts. "1-2-3," as you well know, is a preparation given to the profession a number of years ago by Dr. G. V. Black, consisting—the mild solution, so-called, and this is the one used in these tests—of one part oil of cassia, two parts carbolic acid crystals, and three parts oil of gaultheria. It has always proven itself a most efficient agent in the treatment of pulpless teeth, and has been used by very many in the dental profession for the last ten or twelve years, possibly
more than any other one agent. I have used it continuously since I have been in practice, and have never observed any bad effects from its use. No irritation to the soft parts, no tenderness of the tooth to pressure, no inflammation resulting. Possibly some of you will wonder why "1-2-3" is such an efficient and desirable agent, consisting, as it does, of cassia, carbolic acid and winter-green; carbolic acid being not a positive persistent antiseptic, but one whose restraining effects upon the development of bacteria are only transient; oil of gaultheria being absolutely worthless as an antiseptic, and the use of cassia being so thoroughly condemned because of its extreme irritating properties. Of course, this agent depends upon the cassia for its antiseptic properties. The gaultheria is used as a diluent to the cassia. The carbolic acid was used more especially because of its anaesthetic properties on soft tissue. When these different agents are properly mixed to form "1-2-3," it is the opinion of Dr. Black that there is more or less of a chemical union between them, so that the individuality of each separate agent seems to be lost, and the result is the formation of a new agent, or one with different characteristics from those possessed by the three individual agents. At any rate, it is non-irritating to soft tissue. An application left on for thirty-six hours produced no irritation whatever. There was only a slight searing, and discoloration of the surface of the skin. Sores with much inflammation present were treated with the spray of "1-2-3," which did not produce further irritation. Its action was more like that of a neutral agent (so to speak), not irritating the sore, nor, on the other hand, imparting, to any appreciable extent, a soothing, quieting influence, the inflammation subsiding just about as it would if left to itself with all irritating influences removed. A sore, in which suppuration was produced, was treated with the spray of this agent. It demonstrated its right to be classed as a very potent germicide. The germs were destroyed and the pus formation ceased.

"1-2-3," as formed with the present cassia of commerce, is not so potent an antiseptic as that formed with cassia obtainable several years ago. This must be due to the fact stated above, that cassia is so adulterated at the present time. In fact, "1-2-3" is lessened in potency in almost direct proportion to the extent of the adulteration of the cassia.
Seven-tenths of a drop was effective in ten c.c. of broth, as shown by experiments conducted by Dr. Black several years ago. "1-2-3," as shown by these experiments, is abundantly effective, but if cassia is continued to be adulterated the time may come when it will not be. For general use, in the treatment of pulpless teeth, "1-2-3" is certainly an effective and excellent agent.

**Carbolic acid, ninety-five per cent.** One and eight-tenths drops prevented development in ten c. c. of broth; sixty-one drops are required for one c. c., showing this agent effective as an antiseptic in 1 to 338 parts. Carbolic acid is not a permanent, positive antiseptic. Its restraining power on the development of bacteria, in the majority of plants one makes is only transient. One and eight-tenths drops prevented development for a period of three days, after which the bacteria developed in almost every instance. The restraining effect of this agent upon the development of bacteria seemed to be almost in direct proportion to the quantity of the agent used in the culture tube. The use of this agent in dentistry is so familiar I need not dwell on that point.

**Oil of myrtol.** One and nine-tenths drops were necessary to prevent development of bacteria in ten c. c. of broth; sixty-eight drops constitute a c. c., showing myrtol effective as an antiseptic in 1 to 357 parts. Oil of myrtol is an agent which I have used but very little in practice. In the majority of cases in which I have used it there has seemed to be more or less irritation produced, more or less tenderness of the tooth developing, so that it impressed me as being somewhat of an unfavorable agent for this purpose. An application of myrtol to soft tissue for thirty-six hours produced decided irritation, and there was a strong tendency to the formation of blister. The surface of the skin was destroyed. The irritation and inflammation present continued for two or three days, gradually abating. A sore on a guinea pig being treated with the spray of this oil, showed evidence of further irritation. So long as the treatment was continued, the inflammation refused to subside. A suppurating sore, being treated in the same way, was certainly benefited by a consequent destruction of the germs and cessation of pus formation. There is no doubt but that this agent is quite irritating, and one that should not be generally used in the treatment of pulpless teeth. There are cases in which I use strong myrtol water, seemingly to good advantage, and
these are in connection with abscesses, with fistulous openings, especially those of long standing, in which there is more or less irritation of the soft parts throughout the tract of the fistule, and that uneasy, disagreeable sensation oftentimes experienced by the patient in connection with these cases.

**Oil of cajeput.** Six drops are necessary to prevent development in ten c. c. of broth; seventy-two drops are required for one c. c., showing this agent effective as an antiseptic in 1 to 120 parts. Cajeput is nonirritating to soft tissue. Applications of this oil to soft tissue, retained for thirty-six hours, produced no evidence of irritation; in fact, the discoloration of the skin was very slight and remained but a short time. A sore on a guinea pig, in which there was considerable inflammation, was treated with the spray of oil of cajeput, and no increase of the irritation was produced. Another sore in which suppuration was produced was treated in the same way, with the result that the germs were gradually destroyed, its action, however, not being very positive, for if the treatment was discontinued for a day or two the pus formation continued as before.

Oil of cajeput is an agent which I have never used very extensively in my practice. At first I did use it more or less in the treatment of pulpless teeth, but latterly I have not used it in this connection; in fact, the only use I make of it is occasionally to moisten the inner walls of the root canals previous to filling with gutta-percha. For this purpose its nonirritating nature recommends it, and especially the fact that it is a solvent of gutta-percha and causes the latter to adhere to the walls of the canals.

**Eucalyptol (Sander's and Merck's).** Six drops of each of these preparations are necessary to prevent development of bacteria in ten c. c. of broth; seventy drops are necessary for a c. c., showing each preparation effective as an antiseptic in 1 to 116 parts. Eucalyptol in contact with the skin for thirty-six hours produced no evidence of irritation, no inflammation, no discoloration, thus proving that the agent is nonirritating and harmless in contact with soft tissue. A sore in which considerable inflammation was present was treated with the spray of this agent with the result that the inflammation readily yielded, the irritation subsided, and the sore healed, thus further proving that it is nonirritating even to injured, inflamed soft tissue. A sore in which suppuration was produced was treated in the same way, with vir-
tually the same results as with cajeput; it exhibited a restraining influence upon the development of bacteria and pus formation, but the treatment being discontinued for a while, pus formation went on as before. As an agent to place in the root canals of teeth after the removal of a pulp, following devitalization, in order to keep the parts healthy for a few days previous to root canal filling, it is perhaps the agent that I use more than any other. It is certainly harmless, never exciting irritation. For the purpose of slightly moistening the inner walls of canals previous to root canal filling, eucalyptol is the agent that I nearly always use.

The oil of eucalyptus, as found in the market, only produced a restraining effect upon the development of bacteria when a satu-
rated solution was formed with the bouillon.

*Oil of gaultheria* was carried in my experiments as high as eight drops, this quantity forming a saturated solution in the ten c. c. of broth, that is to say, the broth had taken up, or dissolved, all of the oil that it could possibly retain, there being also a large number of free globules floating about in the broth, and still development of bacteria took place quite abundantly, showing that this agent is useless in restraining the development of bacteria. It is certainly of no use to us as an antiseptic.

*Eugenol.* This agent resulted in the same way as gaultheria. Eight drops were used in the ten c. c. of broth, which amount formed a saturated solution with numbers of globules of the free oil floating about, and still the bacteria developed, thus proving that eugenol also is useless as an antiseptic.

*Formalin.* Of late the dental profession has taken up this agent for the treatment of pulpless teeth, the treatment of abscesses and for devitalizing pulps, etc., and many are reporting wonderful results from its use. Not long since I read an article in one of our journals in which the writer paid a glowing tribute to this agent as a most efficient and desirable one for the treatment of nearly all conditions of pulpless teeth. Having had some expe-
rience with it myself, and because of many negative results expe-
rienced, having had my suspicions aroused as to whether it was a proper agent to be used about the mouth, I decided to investigate it as thoroughly as possible. First I tested it as to its antiseptic properties, and found it to be quite a powerful antiseptic. Of the formalin preparation, which is a saturated solution of the gas formaldehyde in water (the latter taking up about forty per cent of
the former), four-tenths of a drop prevented growth of bacteria in ten c. c. of broth; fifty-six drops are necessary for a c. c. This shows formalin potent as an antiseptic in 1 to 1,400 parts. Somebody has been so enthusiastic over this agent as to make the statement that it is fully as potent an antiseptic as is bichloride of mercury. This is certainly a mistake. I prepared a 1 to 1,000 solution of bichloride of mercury and found it required nine drops of this solution to prevent development of bacteria in ten c. c. of broth. I prepared a 1 to 1,000 solution of pure formaldehyde, which we have now in a solid state—the gas been reduced to such by chemical processes—and of this solution found that it required forty drops to prevent development of bacteria in ten c. c. of broth, thus proving that formaldehyde is not so potent an antiseptic as bichloride of mercury, by at least fourfold. I next resolved to determine its ability to irritate soft, animal tissue—the same as I did with the other agents. I took a small pellet of cotton, saturated it with formalin, placed it in a small rubber cup to prevent evaporation, placed it on the surface of the skin on the lower part of my right leg, and covered it over with a large piece of court plaster stuck tightly about the edges. This was placed there the 14th day of last March, at 12:30 A. M. I went to bed and went to sleep. Between four and five in the morning I was awakened by the pain, and could get no rest after that. The pain was quite intense, and of a very peculiar character. It seemed as if something were inside my leg gripping it as if in a vice. Then it would take a turn and twist about, as if tearing the inside out. It would stop for an instant, and then the performance would be repeated with renewed vigor. The pain continued more or less severe all day. I wanted to keep the application in place for twenty-four hours—the time adopted for the other agents—but at the end of twenty hours, the pain had been so constant and the tissues began to look so ugly, that I concluded to remove it. The tissues to which it was applied and for about two inches in all directions was turned as white as pure snow, as if all the blood were driven from the parts. The pain was lessened very considerably within a short time after the application was removed. The tissue to which it was directly applied was perfectly anæsthetized to a considerable depth. Just at the circumference of the application there was considerable tenderness. There was much swelling, which seemed to be more like that of oedema than of true inflammation. In about
two or three days some color began to return to the parts, except to which the agent was directly applied, which latter never regained its normal color. In about two days more a line, purple in color, began forming at the circumference of the point of application—a line of demarkation—and it became apparent there was to be a break in the tissues. This break occurred, and sloughing took place; considerable tissue was lost all over the surface of the inflamed area. The tissue in the center raised about the edges, but was very obstinate about coming away. From the time the agent was thoroughly absorbed in the tissues, physically I was not up to the standard; my appetite was more or less impaired; the digestion and eliminative organs were somewhat interfered with. These conditions continued to grow worse until the climax came in the form of quite a severe case of systemic poisoning, the poisonous matter being thrown off through the medium of a severe diarrhoea, and also much vomiting—the former continuing for a period of three days, the latter for one day, following which time my physical condition rapidly improved.

Having seen a number of cases that have been treated by physicians with various per cent solutions of formalin in which more or less sloughing of the soft parts has resulted—one which I saw not long since in which as low as a two per cent solution was used, in connection with which considerable sloughing resulted—and also because of the very vivid recollections of my own personal experiences with it, I have come to the conclusion that we should get along without it in the treatment of diseased conditions about the mouth.

As I have devoted a paper to this agent before another society, I will not give my observations of it in more detail here. My paper is now too long for me to consider the subject of the selection of antiseptics with a view to utilizing their therapeutic effects in individual cases in connection with their antiseptic powers, but this can be fairly made out from the observations related.
In July and August of 1895 Dr. Black published in the *Dental Cosmos* the results of his investigations of the physical properties of amalgams and alloys used for amalgams. In this work Dr. Black demonstrated for the first time some very important facts. First, the controlling action of various metals in varying proportions upon shrinkage and expansion. That some amalgams shrink and some expand had been known since the works of Dr. Fletcher, of England, and of Drs. Hitchcock and Bogue; but the measurement of shrinkage and expansion had never been accurately made and the controlling factors had not been determined. Second, the effect of various metals on crushing strength and flow. And third, the annealing property of cut filings, or tempering; and its influence upon the chemical properties of the alloy affecting its action toward mercury, and its physical properties, shrinkage and expansion.

The last point was absolutely new. No one had ever worked it out or even suggested that the properties of the alloy were changed by cutting and changed again by heat after cutting. It is true that it had been known for a long time that aging after cutting affected the working property of the amalgam, but that it also affected its shrinkage or expansion and its relation to mercury had not been discovered.

In the annealing property of cut alloys lies the explanation, or at least one of the explanations for the extreme uncertainty of amalgam as it has been used by the profession. The same ounce would not be the same at different times, but changed continually until full annealing was reached, which appears to take about two years at ordinary temperatures. It can very easily happen that an alloy which when first received will make a perfect filling, after it has been in the office for some time will shrink enough to leave all of the margins open. As illustrating this refer to fillings Nos. 103–104–105–106 in the third table. In this case the same effect was produced by boiling for seventeen minutes as required two years at ordinary temperature.

I do not want to be understood as saying that these facts control the uncertainty of amalgam in the mouth. Very recently some facts have come to my notice in regard to the electric currents of the mouth, and it seems more than probable that electric
conditions play a large part in the uncertainty which has characterized amalgam throughout its history. However, if we can have amalgams that will not shrink and will remain the same in that respect, we will have eliminated one of the causes of failure.

The great value of Dr. Black’s work can hardly be overestimated. It is a presentation of the facts which are the controlling factors in the production of an amalgam that will neither shrink nor expand, will have the greatest possible strength and will remain the same from day to day, and week to week. The theoretical explanation of the fact is not attempted and cannot be given till some very difficult scientific problems are worked out, as it involves the entire question of alloys, the relation of one metal to another in an alloy and the solution of one or more metals in another.

The tables are simply brief statements of the voluminous notes of the tests and will be understood for themselves; but I wish to make a few explanations and call special attention to some points.

Table I. is a statement of the fillings made during the meeting. Eighteen alloys are represented and but two have given results that would be called good. The movement as recorded by the micrometer is given in one column, one (1) point meaning one ten-thousandth of an inch or since the tubes are thirty one-hundredths of an inch deep one in thirty thousand linear movement. It will be noticed that many of the fillings show double movement, contracting first and then expanding. In such cases the expansion is counted from the lowest point, so that Cn. 7. Ex. 2 would leave the level of the filling still five points below the original position, while Cn. 1. Ex. 3 would leave the level of the filling two points above the original level.

Most of the double movements show from three to five points of contraction and from one to three points of expansion. As a rule a double movement indicates a basal silver tin alloy of about forty silver, sixty tin. In some of the fillings, as Nos. 15-16, 17-18-27, Table II., we have a slight contraction followed by a considerable expansion which shows fluctuation; that is in fillings that have been under observation a considerable length of time the movements continue for weeks advancing one point, dropping back a half, and so on. In some cases after three or four days of expansion there is a pause and for one or two days the filling will shrink, getting back almost to the starting point. Such movements
as these I have spoken of as fluctuating. Several examples will be referred to under the second table. From the action this would indicate an alloy where too much zinc or cadmium or similar acting metal has been added to a silver tin alloy of low grade in order to prevent shrinkage. The shrinkage is largely overcome, but if the margins have been sufficiently well made they will be seen to be slightly open; the amalgam is not strong and does not lie still.

A contraction of one point can almost always be clearly seen if the margins have been well made. Usually a contraction of even half a point can be seen at some places. An expansion of two points cannot usually be detected by the microscope, with certainty; five points can usually be positively seen, if the margins have been sufficiently well made and the observer is accustomed to the work. A filling showing an expansion of two points or less by the micrometer is practically perfect as far as the microscope reveals the condition of the margins.

There is at least one filling in this table that I am satisfied is an error. No. 15, Table I. The filling made an expansion of two points in about six hours, then was stationary for twelve hours or more, and then made a secondary expansion of one point. In the tests of a great many samples of this alloy I have never seen an expansion of more than two and a half points, and none have shown any movement after the primary expansion was completed. This sample was sent from a Chicago house, not the Protective Supply Company, and was not in an original package. I may say with some positiveness that this is not fellowship alloy.

No. 5, in Table I., gives a result not in accordance with other tests of the alloy and which are impossible for that alloy if properly made. The identity of this sample is therefore in question.

There is one thing, which while it has been noticed in this work before, has become very evident from these fillings, namely: A good formula will not insure a good alloy. There are in this set of fillings a number made from alloys after Dr. Black's formulae, but the results show that there is something wrong in some way; the formula does not represent the composition of the ingot or the filings have not been properly treated after cutting. It requires the greatest care and skill to manufacture an alloy that will be uniform and give perfect results. It is not going to be possible for each man to do this for himself. The majority of attempts in this direction have been failures. In order to know that an alloy is what it should be, every melt must be tested and each package
should bear the record of the tests of that batch of filings. Until this is done by reliable manufacturers we will not have made much advancement.

In regard to the records of the microscope, they are not entirely complete. It is intended that the margins be examined at the time of filling and a note made of these observations. These are placed in one column in the tables. After twenty-four hours they are examined again and a note made as to the condition of the margin. In fact the filings are examined with the microscope at each measurement, but in some cases the record of the condition of the margin has not been made, consequently the tables are not as complete as I wish they were.

The second table is a statement of the filings made in Chicago to be reported at this time. The alloys were bought from the dealers and two filings were made from each alloy, one as the filings were received, one after they had been exposed to the temperature of boiling water for from seventeen to twenty minutes. In this way the greatest change is produced that can occur by keeping the alloy in the office before using it. But few of the alloys have shown any great change, indicating that they were either aged or annealed before they were sold. Blocks were packed by my assistant, in most cases from the same mix as that used for the filings; and these were tested in the dynamometer on the sixth or seventh day.

Unfortunately, owing to the time required these plans were not quite fully carried out. A few alloys have no report after annealing, and a few have failed to be tested by the dynamometer. In the strength tests with dynamometer at least three and usually six blocks were crushed and the average taken.

I wish to call attention to the difficulty of packing amalgam with uniformity even in a steel matrix.

I found in the first lot of blocks that I packed there was a variation in crushing resistance of 150 lbs. between the strongest and the weakest, and my assistant had the same experience; and even with the greatest care and practice it is difficult to get the blocks to run within 20 lbs. of the same crushing stress. For this reason I feel that a few of the crushing stresses recorded do the alloy injustice, and in these cases I have added in the remarks the highest and lowest force required in breaking the blocks. It will be
noticed that almost all of the alloys on the market are way below the strength that is possible in an amalgam.

In this table 26 alloys are represented; of this number but 5 made what can be called good fillings; 14 show a shrinkage of more than 5 points; 19 show a shrinkage of more than 1 point; 18 show a double movement, shrinking first and then expanding back part way; 2 show an expansion of 2 points or more, and in both of these the movement is fluctuating in character.

Numbers 13-14 are Dr. Harper's alloy which was sold by Sibley to Dr. Black put up in packages of their white alloy to see, as the manager said, "if we could tell the difference." If you will compare this with No. 69, Table III., you will notice that it has given exactly the same record as the same alloy sent in by Dr. Harper.

The third table contains a record for all the alloys that have been tested in the past six months. Sixty alloys are reported on. You will notice that the same alloy does not always give the same record. That is because they are of different ages. In other words the same alloy in different molecular conditions will give different results, but the same alloy in the same molecular conditions will give the same results every time.

The molecular condition of an alloy is one of the most important elements in obtaining a perfect amalgam for dental uses. Cutting changes the molecular condition from the normal. Or at least when fresh cut the fillings are not in a stable molecular condition. At ordinary temperatures the filings of alloy return to their normal molecular condition in about two years. By heating to 212°F. they are brought to their normal condition in from ten to twenty minutes. The effect upon the action of an amalgam produced by different molecular conditions of the ingredients is shown by the following experiment made by Dr. Black:

Taking sixty parts of silver and forty parts of tin. If the silver and the tin are made in an alloy, when fresh cut it does not shrink. Annealed it shrinks 5 to 8 points Ex. 1 to 3 points. If instead of being made into an alloy the filings of silver and filings of tin are mixed and an amalgam made we have an expansion of 100 to 150 points. The proportion of the metals is the same, the molecular condition different.

A few fillings in this table are from purely experimental alloys that are put in for the purpose of illustration. For instance the filling made from coin silver filings and some others.

I wish to call special attention to Nos. 103-104-105-106,
which were made specially to illustrate the annealing property. No. 106 was made from filings of a silver sixty-five, tin thirty-five ingot that had been cut and kept in a bottle in a drawer for a year and a half and shows a shrinkage of 9 points. No. 105 was made from filings cut fresh from the same ingot, and shows an expansion of $3\frac{3}{4}$ points. No. 104 was made from a new ingot of 65–35 after the filings had been cut and exposed to the temperature of boiling water for seventeen minutes, and gave a shrinkage of $9\frac{3}{4}$ points. No. 103 was made from the same batch of filings without exposing them to the heat. You will see that the fresh cut filings—sact alike in both cases, and that the same shrinkage is produced by boiling seventeen minutes as is obtained by keeping the filings at ordinary temperature for about two years.

Nos. 79–81, 2–3, 44–50, are interesting as illustrating what can be done to control shrinkage by manipulation. Nos. 79–81 of Fletcher’s alloy—No. 79 was packed by Dr. Patterson, of Kansas City, “in the only correct method,” the Fletcher method, and No. 81 by myself, using filings out of the same bottle and the method I had followed for all of the filings in the tests, mixing with fifty per cent mercury and wringing out what was necessary to make it hard enough to pack. You will notice that they give the same movement within one forty-thousandth of an inch.

No. 3 was packed by Dr. Gunther, of this city, using his method, and No. 2 in the usual way. They have made practically the same movement.

No. 44 was packed by Dr. Holland at Springfield. After it was packed in and measured he asked me “What difference would it make if that had been put in soft.” I asked him to get the same bottle of filings and put in another filling making the manipulation as different from the first as he could. He did so (No. 50) and the two fillings gave exactly the same reading, showing that the shrinkage was not perceptibly affected by the difference of manipulation. It is undoubtedly true, however, that the strength of the fillings was very markedly affected.

The circulars accompanying the most extensively sold alloys are open to the severest criticism. Any one who has made fillings in steel tubes and studied them with the microscope cannot but wonder that amalgam ever preserves the teeth when it is put in as is recommended in the majority of the circulars, and finished “by drawing a muslin strip across it” as “the color is such as to need
I would like to ask the manufacturers of these alloys what teacher of operative dentistry has ever taught that the object of polishing a filling is to make it shine, or why there is less reason for polishing an amalgam than gold filling. The majority of dental colleges give little or no attention to the use of amalgam in their teaching, consequently most of the young men who go out into practice when they find that they are obliged to use amalgam, are dependent for instruction as to how it should be used, upon the circulars that accompany the package, and it is an imposition upon the public that they should be "instructed" by what are the best and most reliable houses, to use alloys that cannot be called other than bad, and in a way that must be considered bad practice.

I do not mean to censure the manufacturers for producing shrinking alloys, except that it has taken them three years to take up the work of improvement. Before that time they did not know how to prevent it, but the circulars of directions are abominable.

It is probable, in fact almost certain, that in the course of a few months the profession will be able to obtain through the regular channels alloys made upon the new lines. Arrangements have been made for the manufacturers to have all the advantages of all of Dr. Black's work in the special amalgam makers course which he has offered, and which the principal manufacturers have arranged to make use of. It is a wonderful service that the doctor is rendering to the entire profession, to offer to take these men over his entire work on alloys and amalgams in order that they may be able to intelligently manufacture what will be as good a filling material as its physical properties will allow. These amalgams will not work like the old ones. They will set faster and they will work harder; they cannot be packed into compound cavities without a matrix.

But let us hope that the profession will take hold of this matter and master the difficulties so that we may render our patients as good a service as the qualities of the material will allow, and it must never be forgotten that even at its best, amalgam is a poor material compared with gold.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Alloy</th>
<th>Packed By</th>
<th>Condition</th>
<th>Manner of Packing</th>
<th>Micrometer</th>
<th>Microscope</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Johnson &amp; Lund, Extra Gold and Platinum</td>
<td>T. W. Pritchett</td>
<td>Mixed in hand; packed with a rubber tipped pencil.</td>
<td>Hand mixing.</td>
<td>Cn. 10%</td>
<td>Fair; overfull part way around;</td>
</tr>
<tr>
<td>2</td>
<td>Johnson &amp; Lund, Extra Gold and Platinum</td>
<td>C. P. Pruyne</td>
<td></td>
<td>Mercury worked to surface and squeezed out; replaced with dry pellet.</td>
<td>Cn. 10%</td>
<td>Overfull; not very good;</td>
</tr>
<tr>
<td>3</td>
<td>Johnson &amp; Lund, White Alloy</td>
<td>E. M. Robbins</td>
<td></td>
<td>Mixed in mortar and finger stall; packed soft but firm.</td>
<td>Cn. 4%</td>
<td>Soft margins;</td>
</tr>
<tr>
<td>4</td>
<td>Dr. Kester, Frost White</td>
<td>P. J. Kester</td>
<td></td>
<td>Mixed in mortar; packed hard with steel instruments.</td>
<td>Cn. 4%</td>
<td>Fair;</td>
</tr>
<tr>
<td>5</td>
<td>Special tempered</td>
<td>H. A. Potts</td>
<td></td>
<td>Mixed in mortar and finger stall; a little mercury wrung out.</td>
<td>Cn. 1</td>
<td>Distinctly open;</td>
</tr>
<tr>
<td>6</td>
<td>Dr. Kester, Frost White</td>
<td>C. P. Pruyne</td>
<td></td>
<td>In mortar first, then in the hand.</td>
<td>Cn. 1</td>
<td>Fair;</td>
</tr>
<tr>
<td>7</td>
<td>“</td>
<td>T. L. Gilmer</td>
<td></td>
<td>Mixed in hand; packed with burnishers; not squeezed.</td>
<td>Cn. 1</td>
<td>Overfull at a good many points;</td>
</tr>
<tr>
<td>8</td>
<td>“</td>
<td>A. S. Waltz</td>
<td></td>
<td>Mixed in rubber finger stall.</td>
<td>Cn. 4%</td>
<td>Open;</td>
</tr>
<tr>
<td>9</td>
<td>“</td>
<td>T. W. Pritchett</td>
<td></td>
<td>Mixed with finger; squeezed out with muslin cloth; finished by rubbing with cotton.</td>
<td>Cn. 1</td>
<td>Rough but fair;</td>
</tr>
<tr>
<td>10</td>
<td>Fellowship Alloy</td>
<td>Dr. Garrett Newkirk</td>
<td></td>
<td>Mixed in hand.</td>
<td>Ex. 1%</td>
<td>Fair;</td>
</tr>
<tr>
<td>11</td>
<td>“</td>
<td>Dr. J. E. Keefe</td>
<td></td>
<td>Rapid manipulation and added mer. to make hard yet plastic; mer. taken up with anal. shavings; hard pressure, burnished against walls of tube.</td>
<td>Ex. 1%</td>
<td>Very fine margin;</td>
</tr>
<tr>
<td>12</td>
<td>“</td>
<td>Dr. B. J. Cigrand</td>
<td></td>
<td>None particular.</td>
<td>Ex. 1%</td>
<td>“</td>
</tr>
<tr>
<td>13</td>
<td>“</td>
<td>Dr. W. E. Holland</td>
<td></td>
<td></td>
<td>Ex. 1%</td>
<td>“</td>
</tr>
<tr>
<td>14</td>
<td>“</td>
<td>Dr. C. B. Powell</td>
<td></td>
<td></td>
<td>Ex. 0.</td>
<td>“</td>
</tr>
<tr>
<td>15</td>
<td>“</td>
<td>Dr. A. S. Waltz</td>
<td></td>
<td></td>
<td>Ex. 0.</td>
<td>“</td>
</tr>
<tr>
<td>16</td>
<td>“</td>
<td>Dr. H. K. Barnett</td>
<td></td>
<td></td>
<td>Ex. 0.</td>
<td>Close margins;</td>
</tr>
<tr>
<td>17</td>
<td>“</td>
<td>Dr. C. P. Pruyne</td>
<td></td>
<td></td>
<td>Ex. 0.</td>
<td>“</td>
</tr>
<tr>
<td>18</td>
<td>“</td>
<td>Dr. W. E. Holland</td>
<td></td>
<td></td>
<td>Ex. 0.</td>
<td>Overlapping part way around;</td>
</tr>
<tr>
<td>19</td>
<td>Standard, Frink's</td>
<td>Dr. D. Sitherwood</td>
<td>Mixed in hand; hand pressure with burnishers.</td>
<td>Mixed in mortar with considerable mer.; heavy force in packing; wrung in napkin; filling excess removed with cotton.</td>
<td>Cn. 4%</td>
<td>Very badly overlapped;</td>
</tr>
<tr>
<td>20</td>
<td>“</td>
<td>Dr. W. F. Green</td>
<td>In hand.</td>
<td>Soft as possible in filling tooth without dam; careful to rub to margin; finishing margin of tooth was rough.</td>
<td>Cn. 4%</td>
<td>Made over; fair;</td>
</tr>
<tr>
<td>21</td>
<td>“</td>
<td>Dr. P. H. McIntosh</td>
<td></td>
<td>Hand mixed and packed with ordinary steel instrnts.</td>
<td>Cn. 4%</td>
<td>Very slightly lifted;</td>
</tr>
<tr>
<td>22</td>
<td>“</td>
<td>Dr. Munroe</td>
<td></td>
<td>in palm of hand; not wrung out.</td>
<td>Cn. 4%</td>
<td>Rough but fair;</td>
</tr>
<tr>
<td>23</td>
<td>“</td>
<td>Dr. W. R. Hunn</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>No movement;</td>
</tr>
<tr>
<td>24</td>
<td>“</td>
<td>Dr. G. D. Sitherwood</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>25</td>
<td>“</td>
<td>Dr. F. H. McIntosh</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>26</td>
<td>“</td>
<td>Dr. P. J. Cigrand</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>27</td>
<td>“</td>
<td>Dr. C. B. Sawyer</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>28</td>
<td>“</td>
<td>Dr. E. M. Robbins</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>29</td>
<td>“</td>
<td>Dr. H. B. Bull</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>30</td>
<td>“</td>
<td>Dr. R. G. Hunn</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>31</td>
<td>“</td>
<td>Dr. McMillen</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>32</td>
<td>“</td>
<td>Dr. Robert Goebel</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>33</td>
<td>“</td>
<td>Dr. J. H. Kennerly</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
<tr>
<td>34</td>
<td>“</td>
<td>St. Louis, Mo.</td>
<td></td>
<td></td>
<td>Cn. 4%</td>
<td>“</td>
</tr>
</tbody>
</table>

**TABLE I.**
<table>
<thead>
<tr>
<th>Number</th>
<th>Name of Alloy</th>
<th>Condition</th>
<th>Weight of Alloy in grs.</th>
<th>Weight of Mercury in grs.</th>
<th>Weight of Mercury expressed in packing in ft.</th>
<th>Movement as shown by Micrometer, in ten thousandths of an inch.</th>
<th>Movement as shown by the Microscope</th>
<th>Crushing Stress, in lbs.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr. Hall.</td>
<td>Annealed 20 m., 212</td>
<td>60</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>Cn. 1</td>
<td>(Slight crack at some points)</td>
<td>315</td>
</tr>
<tr>
<td>2</td>
<td>Dr. Kester, Frost White</td>
<td>As sent in.</td>
<td>60</td>
<td>70</td>
<td>12.5</td>
<td>9.5</td>
<td>Ex. 1/2, Cn. 1/2</td>
<td>Very good.</td>
<td>346.6</td>
</tr>
<tr>
<td>3</td>
<td>H. D. Justi, Superior Gold and Platinum Alloy</td>
<td>As on the market.</td>
<td>60</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>Cn. 1</td>
<td>No movement seen.</td>
<td>316.6</td>
</tr>
<tr>
<td>4</td>
<td>S. W. Alba</td>
<td>As on the market.</td>
<td>60</td>
<td>60</td>
<td>14.5</td>
<td>8</td>
<td>Cn. 6, Ex. 3</td>
<td>Wide crack all around.</td>
<td>195.5</td>
</tr>
<tr>
<td>5</td>
<td>&quot; &quot;</td>
<td>As on the market.</td>
<td>65</td>
<td>65</td>
<td>20</td>
<td>6</td>
<td>Cn. 5/8, Ex. 3</td>
<td>Wide open.</td>
<td>225</td>
</tr>
<tr>
<td>6</td>
<td>&quot; &quot;</td>
<td>As on the market.</td>
<td>60</td>
<td>62</td>
<td>22</td>
<td>6.6</td>
<td>Cn. 6, Ex. 3</td>
<td>Wide open.</td>
<td>226.5</td>
</tr>
<tr>
<td>7</td>
<td>&quot; &quot;</td>
<td>As on the market.</td>
<td>60</td>
<td>62</td>
<td>22</td>
<td>3.5</td>
<td>Cn. 5/8, Ex. 1</td>
<td>Wide crack wider on one side than the other.</td>
<td>227</td>
</tr>
<tr>
<td>8</td>
<td>&quot; &quot;</td>
<td>As on the market.</td>
<td>60</td>
<td>68</td>
<td>18</td>
<td>8</td>
<td>Cn. 5/8, Ex. 1.</td>
<td>Well down below level but crack not very wide.</td>
<td>228</td>
</tr>
<tr>
<td>9</td>
<td>&quot; &quot;</td>
<td>As on the market.</td>
<td>60</td>
<td>68</td>
<td>16</td>
<td>10</td>
<td>Cn. 6, Ex. 1/2</td>
<td>Only fair.</td>
<td>224</td>
</tr>
<tr>
<td>10</td>
<td>&quot; &quot;</td>
<td>As on the market.</td>
<td>60</td>
<td>68</td>
<td>10</td>
<td>9</td>
<td>Cn. 8, Ex. 3</td>
<td>Crack all around.</td>
<td>198</td>
</tr>
<tr>
<td>11</td>
<td>Gold Star Alloy, R. Frank</td>
<td>As on market.</td>
<td>60</td>
<td>68</td>
<td>16.5</td>
<td>5.5</td>
<td>Cn. 5/8, Ex. 1/2</td>
<td>Fairly good.</td>
<td>224</td>
</tr>
<tr>
<td>12</td>
<td>Smith, Rochester, N. Y.</td>
<td>As on market.</td>
<td>60</td>
<td>68</td>
<td>10</td>
<td>9</td>
<td>Cn. 8, Ex. 3</td>
<td>Fairly good.</td>
<td>227</td>
</tr>
<tr>
<td>13</td>
<td>Dr. W. E. Harper's Alloy</td>
<td>As from market.</td>
<td>60</td>
<td>68</td>
<td>7.8</td>
<td>5</td>
<td>Ex. 1</td>
<td>Very good.</td>
<td>211</td>
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<tr>
<td>14</td>
<td>Sent in by Sibley.</td>
<td>Annealed 17 m., 212</td>
<td>60</td>
<td>68</td>
<td>5</td>
<td>3</td>
<td>Ex. 1</td>
<td>Very good.</td>
<td>175</td>
</tr>
<tr>
<td>15</td>
<td>Dr. W. E. Harper's Alloy</td>
<td>As on market.</td>
<td>60</td>
<td>68</td>
<td>8</td>
<td>12</td>
<td>Cn. 1/2, Ex. 5/8</td>
<td>No movement.</td>
<td>228</td>
</tr>
<tr>
<td>16</td>
<td>Sent in by Sibley.</td>
<td>Annealed 18 m., 212</td>
<td>60</td>
<td>68</td>
<td>8.5</td>
<td>9.5</td>
<td>Cn. 1, Ex. 3/8</td>
<td>Only fair.</td>
<td>148</td>
</tr>
<tr>
<td>17</td>
<td>White Alloy, Sibley</td>
<td>As sent in sample.</td>
<td>60</td>
<td>68</td>
<td>11</td>
<td>7</td>
<td>Cn. 1, Ex. 2</td>
<td>Very good.</td>
<td>204</td>
</tr>
<tr>
<td>18</td>
<td>W. S. Hodgson's Alloy</td>
<td>Annealed 17 m., 212</td>
<td>60</td>
<td>68</td>
<td>11</td>
<td>9.5</td>
<td>Cn. 1/2, Ex. 2</td>
<td>Very good.</td>
<td>281.83</td>
</tr>
<tr>
<td>19</td>
<td>As on market.</td>
<td>Annealed 17 m., 212</td>
<td>70</td>
<td>70</td>
<td>20.5</td>
<td>4</td>
<td>Cn. 5/8, Ex. 2</td>
<td>Fairly good.</td>
<td>284</td>
</tr>
<tr>
<td>20</td>
<td>Dr. B. F. Arrington's S. S. W.</td>
<td>As on market.</td>
<td>80</td>
<td>80</td>
<td>20.5</td>
<td>4</td>
<td>Cn. 5/8, Ex. 2</td>
<td>Fairly good.</td>
<td>284</td>
</tr>
<tr>
<td>21</td>
<td>Dr. W. E. Harper's Frost White</td>
<td>As sent in.</td>
<td>70</td>
<td>70</td>
<td>16</td>
<td>4</td>
<td>Ex. 1/2</td>
<td>Very good.</td>
<td>228</td>
</tr>
<tr>
<td>22</td>
<td>Dr. W. E. Harper's Frost White</td>
<td>Annealed 17 m., 212</td>
<td>60</td>
<td>60</td>
<td>12</td>
<td>3</td>
<td>Cn. 0, Ex. 0</td>
<td>Very good.</td>
<td>204</td>
</tr>
<tr>
<td>23</td>
<td>Standard, Frink &amp; Young</td>
<td>As sold.</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>Ex. 4</td>
<td>Very good.</td>
<td>204</td>
</tr>
<tr>
<td>24</td>
<td>&quot; &quot;</td>
<td>Annealed 18 m., 212</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>Ex. 4</td>
<td>Very good.</td>
<td>204</td>
</tr>
<tr>
<td>Number</td>
<td>Name of Alloy</td>
<td>Packed by</td>
<td>Percent of Alloy</td>
<td>Percent of Mercury</td>
<td>Movement as recorded by Micrometer</td>
<td>Movement as seen with Microscope</td>
<td>Remarks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>--------------</td>
<td>-----------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>-----------------------------------</td>
<td>---------------------------------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Columbian, Goldsmith Bros.</td>
<td>Noyes.</td>
<td>48.06</td>
<td>51.94</td>
<td>Cn. 4, Ex. 1, Cn. 1.</td>
<td>Open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>58.93</td>
<td>41.07</td>
<td>Cn. 8.</td>
<td>Open.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>59.65</td>
<td>40.95</td>
<td>Ex. 3 1/2, Cn. 1.</td>
<td>Good.</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Aluminum Alloy, Dr. Carroll</td>
<td>Noyes.</td>
<td>52.42</td>
<td>47.58</td>
<td>Ex. 2, Cn. 1/2.</td>
<td>Fairly good.</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>59.36</td>
<td>44.44</td>
<td>Cn. 1, Ex. 2 1/2.</td>
<td>Fairly good.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>58.26</td>
<td>41.74</td>
<td>Cn. 1 1/2, Ex. 1 1/2.</td>
<td>Open.</td>
<td></td>
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</tr>
<tr>
<td>7</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>59.41</td>
<td>40.59</td>
<td>Cn. 4 1/2, Ex. 1 1/2.</td>
<td>Open.</td>
<td></td>
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<tr>
<td>8</td>
<td>Dr. Kester’s 65-35</td>
<td>Noyes.</td>
<td>65.36</td>
<td>44.44</td>
<td>Cn. 3, Ex. 2 1/2.</td>
<td>Good.</td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>53.1</td>
<td>46.9</td>
<td>Ex. 1 1/2, Cn. 1 1/2.</td>
<td>Good.</td>
<td></td>
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<td>11</td>
<td>Frost White</td>
<td>Noyes.</td>
<td>63.3</td>
<td>46.1</td>
<td>Ex. 0, Cn. 0.</td>
<td>Good.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.22</td>
<td>48.78</td>
<td>Cn. 3, Ex. 3.</td>
<td>Margins very good.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>58.71</td>
<td>41.26</td>
<td>Cn. 6, Ex. 3.</td>
<td>Margins overfull, movement cannot be seen.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>59.41</td>
<td>40.59</td>
<td>Cn. 6, Ex. 1/2.</td>
<td>Wide crack, wider on one side than other.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Dr. Kester’s Specially Tempered</td>
<td>Noyes.</td>
<td>68.28</td>
<td>44.44</td>
<td>Cn. 1, Ex. 2.</td>
<td>Wide crack all around.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Alba, S. S. White</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 3, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>65.36</td>
<td>44.44</td>
<td>Cn. 4 1/2, Ex. 1 1/2.</td>
<td>Fairly good.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>58.93</td>
<td>41.07</td>
<td>Cn. 1, Ex. 1/2.</td>
<td>Fairly good.</td>
<td></td>
<td></td>
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<tr>
<td>19</td>
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<td>Noyes.</td>
<td>51.22</td>
<td>48.78</td>
<td>Cn. 3, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>20</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>68.71</td>
<td>41.26</td>
<td>Cn. 4 1/2, Ex. 1/2.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>21</td>
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<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 4 1/2, Ex. 1 1/2.</td>
<td>Fairly good.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>65.36</td>
<td>44.44</td>
<td>Cn. 5, Ex. 3.</td>
<td>Fairly good.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 6, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
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<tr>
<td>24</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>68.71</td>
<td>41.26</td>
<td>Cn. 7, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 8, Ex. 2.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>65.36</td>
<td>44.44</td>
<td>Cn. 1, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 5, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>68.71</td>
<td>41.26</td>
<td>Cn. 6, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 7, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
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<td>Noyes.</td>
<td>65.36</td>
<td>44.44</td>
<td>Cn. 8, Ex. 2.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 4 1/2, Ex. 1 1/2.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>68.71</td>
<td>41.26</td>
<td>Cn. 1, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
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<tr>
<td>33</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 6, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
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<tr>
<td>34</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>65.36</td>
<td>44.44</td>
<td>Cn. 7, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
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<tr>
<td>35</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 8, Ex. 2.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>68.71</td>
<td>41.26</td>
<td>Cn. 1, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 5, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>65.36</td>
<td>44.44</td>
<td>Cn. 6, Ex. 3.</td>
<td>Wide open.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>39</td>
<td>&quot; &quot; &quot; &quot;</td>
<td>Noyes.</td>
<td>51.72</td>
<td>48.28</td>
<td>Cn. 4 1/2, Ex. 1 1/2.</td>
<td>Wide open.</td>
<td></td>
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</tbody>
</table>

**The Dental Review.**
<table>
<thead>
<tr>
<th>Number</th>
<th>Name of Alloy</th>
<th>Packed by</th>
<th>Percent of Alloy</th>
<th>Percent of Mercury</th>
<th>Movement as recorded by Micrometer</th>
<th>Movement as seen with Microscope</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>40</td>
<td>Dental Protect. Snp. Co., Fellowship</td>
<td>Noyes.</td>
<td>42.8</td>
<td>57.1</td>
<td>Ex. 1½.</td>
<td>Good.</td>
<td></td>
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<tr>
<td>41</td>
<td></td>
<td>Garrett Newkirk.</td>
<td></td>
<td></td>
<td>Ex. 1½.</td>
<td>Fair, margins over full, no movement</td>
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<tr>
<td>46</td>
<td></td>
<td>A. S. Waltz.</td>
<td></td>
<td></td>
<td>Ex. 3.</td>
<td>Close margins.</td>
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<tr>
<td>48</td>
<td></td>
<td>Chas. P. Pruyne.</td>
<td></td>
<td></td>
<td>Cn. 1½.</td>
<td>Lifted.</td>
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<tr>
<td>50</td>
<td></td>
<td>Noyes.</td>
<td>41.38</td>
<td>58.62</td>
<td>Ex. 2½.</td>
<td>Very good.</td>
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</tr>
<tr>
<td>51</td>
<td></td>
<td>Noyes.</td>
<td>45</td>
<td>56</td>
<td>Ex. 0. Cn. 0.</td>
<td>Wide open.</td>
<td></td>
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<tr>
<td>55</td>
<td>White Alloy, Fox &amp; Garhart</td>
<td>Noyes.</td>
<td>60</td>
<td>40</td>
<td>Ex. 1½.</td>
<td>Open.</td>
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<tr>
<td>56</td>
<td></td>
<td>Noyes.</td>
<td>53.29</td>
<td>46.72</td>
<td>Cn. 3.</td>
<td>Wide open.</td>
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<tr>
<td>57</td>
<td></td>
<td>Noyes.</td>
<td>53.04</td>
<td>47.36</td>
<td>Cn. 4½, Ex. 1½.</td>
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<td>58</td>
<td></td>
<td>Noyes.</td>
<td>55.56</td>
<td>44.51</td>
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<tr>
<td>59</td>
<td></td>
<td>Noyes.</td>
<td>56</td>
<td>44</td>
<td>Cn. 6, Ex. 1½.</td>
<td>Wide open.</td>
<td></td>
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<tr>
<td>60</td>
<td></td>
<td>Noyes.</td>
<td>54.6</td>
<td>45.4</td>
<td>Cn. 2½, Ex. 1½.</td>
<td>Open.</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td></td>
<td>Noyes.</td>
<td>53.18</td>
<td>47.82</td>
<td>Cn. 3.</td>
<td>Open.</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Dr. Thomas Dee</td>
<td>Noyes.</td>
<td>55.77</td>
<td>48.23</td>
<td>Cn. 1, Ex. 7.</td>
<td>Wide open.</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Dr. Chase's</td>
<td>Noyes.</td>
<td>54.6</td>
<td>45.4</td>
<td>Cn. 6.</td>
<td>Crack on one side.</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>Noyes.</td>
<td></td>
<td></td>
<td>Cn. 6, Ex. 2.</td>
<td>Open.</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td></td>
<td>Noyes.</td>
<td></td>
<td></td>
<td></td>
<td>Very good.</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Gold Bullion Alloy, J. B. Z. Roberts</td>
<td>Noyes.</td>
<td>53.28</td>
<td>46.72</td>
<td>Ex. 1.</td>
<td>Very good.</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>{ Silver, 68½; Copper, 4; Zinc, 1; Tin, 25½.</td>
<td>Noyes.</td>
<td>51.64</td>
<td>44.0</td>
<td>Cn. 5</td>
<td>Good.</td>
<td>Effective.</td>
</tr>
<tr>
<td>70</td>
<td>Dr. W. E. Harper, Harper's Alloy</td>
<td>Noyes.</td>
<td>52.18</td>
<td>47.82</td>
<td>Cn. 1, Ex. 7.</td>
<td>Wide open.</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td></td>
<td>Noyes.</td>
<td>55.77</td>
<td>48.23</td>
<td>Cn. 3, Ex. 3, Cn. 1.</td>
<td>Wide open.</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td></td>
<td>Noyes.</td>
<td>56</td>
<td>44</td>
<td>Cn. 6.</td>
<td>Very good.</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td></td>
<td>Noyes.</td>
<td></td>
<td></td>
<td>Cn. 6, Ex. 2.</td>
<td>Good.</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>Dr. A. C. Hewett, Aluminum</td>
<td>Noyes.</td>
<td>50.88</td>
<td>49.15</td>
<td>Ex. 4, Cn. 2.</td>
<td>Slightly open.</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>No. 2 Aluminum</td>
<td>Noyes.</td>
<td>52.55</td>
<td>49.45</td>
<td>Ex. 2½, Cn. 4, Ex. 1½.</td>
<td>Margins broken.</td>
<td></td>
</tr>
</tbody>
</table>

This is one filling.
This is evidently not Fellowship from its action.
Fluctuating.
Fluctuating slightly.
<table>
<thead>
<tr>
<th>Number</th>
<th>Name of Alloy</th>
<th>Packed by</th>
<th>Per cent of Alloy</th>
<th>Movement as recorded by Micrometer</th>
<th>Movement as seen with Microscope</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>76</td>
<td>Dr. A. C. Hewett, No. 2 Aluminum</td>
<td>Noyes</td>
<td>50</td>
<td>Ex. 5, Cn. 1½ Ex. 2½</td>
<td>Above—slight crack.</td>
<td>Very good. Very good.</td>
</tr>
<tr>
<td>77</td>
<td>&quot; White Alloy No. 2.</td>
<td>Noyes</td>
<td>50</td>
<td>Ex. 2½</td>
<td>Very good.</td>
<td>Very good.</td>
</tr>
<tr>
<td>78</td>
<td>&quot;</td>
<td>Noyes</td>
<td>50</td>
<td>Cn. 3½</td>
<td>Open.</td>
<td>Open.</td>
</tr>
<tr>
<td>79</td>
<td>Dr. Fletcher, Warrington, Eng.</td>
<td>J. D. Patterson</td>
<td>64.90</td>
<td>Cn. 2, Ex. 1½</td>
<td>Margins open.</td>
<td>Margins opened.</td>
</tr>
<tr>
<td>80</td>
<td>&quot;</td>
<td>Kansas City, Mo.</td>
<td>63.90</td>
<td>Cn. 2½ Ex. 2.</td>
<td>Margin slightly lifted.</td>
<td>Margin lifted.</td>
</tr>
<tr>
<td>81</td>
<td>Dr. Townsend's.</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 3.</td>
<td>Irregular and fallen.</td>
<td>Margins lifted.</td>
</tr>
<tr>
<td>82</td>
<td>&quot;</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 4.</td>
<td>Open.</td>
<td>Open.</td>
</tr>
<tr>
<td>83</td>
<td>&quot;</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 5.</td>
<td>Open.</td>
<td>Open.</td>
</tr>
<tr>
<td>84</td>
<td>&quot;</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 6.</td>
<td>Open.</td>
<td>Open.</td>
</tr>
<tr>
<td>85</td>
<td>&quot;</td>
<td>C. B. Sawyer</td>
<td>63.73</td>
<td>Cn. 7.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>86</td>
<td>&quot;</td>
<td>E. M. Robbins</td>
<td>63.73</td>
<td>Cn. 8½ Ex. 1½</td>
<td>Wide open.</td>
<td>Wide open.</td>
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<tr>
<td>87</td>
<td>&quot; Improved</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 9.</td>
<td>Wide open.</td>
<td>Wide open.</td>
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<tr>
<td>88</td>
<td>&quot; Par excellence Alloy, Gold 1/10 and Platina.</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 10.</td>
<td>Wide open.</td>
<td>Wide open.</td>
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<td>89</td>
<td>&quot; Par excellence Alloy</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 11.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>90</td>
<td>&quot;</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 12.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>93</td>
<td>&quot;</td>
<td>T. W. Fritchett</td>
<td>63.73</td>
<td>Cn. 15.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>94</td>
<td>Johnson &amp; Lund</td>
<td>C. P. Pruyn</td>
<td>63.73</td>
<td>Cn. 16.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>95</td>
<td>&quot;</td>
<td>E. M. Robbins</td>
<td>63.73</td>
<td>Cn. 17.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>96</td>
<td>Dr. Frink's Standard</td>
<td>G. D. Satherwood</td>
<td>63.73</td>
<td>Cn. 18.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>97</td>
<td>&quot;</td>
<td>Dr. Dicus</td>
<td>63.73</td>
<td>Cn. 19.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>98</td>
<td>Standard, Frink &amp; Young</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 20.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>99</td>
<td>&quot;</td>
<td>Dr. McMillen</td>
<td>63.73</td>
<td>Cn. 21.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>100</td>
<td>McMillen</td>
<td>J. H. Kenney</td>
<td>63.73</td>
<td>Cn. 22.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>101</td>
<td>F. F. Fletcher, St. Louis</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 23.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>102</td>
<td>Flagg</td>
<td>G. M. Binrose</td>
<td>63.73</td>
<td>Cn. 24.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>103</td>
<td>Dr. G. V. Black, 65-35. just cut</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 25.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>104</td>
<td>annealed 212° F. 17 minutes</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 26.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>105</td>
<td>Dr. G. V. Black, 65-35. fresh cut</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 27.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>106</td>
<td>&quot; 1½ yrs. old</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 28.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>107</td>
<td>&quot; Frost White</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 29.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>108</td>
<td>&quot; 2½-lb. fresh cut</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 30.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>109</td>
<td>&quot; 72.0g-78.5g. fresh cut</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 31.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>110</td>
<td>&quot; Alloy, 45 silver, 60 tin</td>
<td>Noyes</td>
<td>63.73</td>
<td>Cn. 32.</td>
<td>Wide open.</td>
<td>Wide open.</td>
</tr>
<tr>
<td>Number</td>
<td>Name of Alloy</td>
<td>Packed by</td>
<td>Per cent of Alloy</td>
<td>Movement as recorded by Micrometer</td>
<td>Movement as seen with Microscope</td>
<td>Remarks</td>
</tr>
<tr>
<td>--------</td>
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<td>-------------------</td>
<td>-----------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>Dr. G. V. Black, 72.5-27.5, annealed 16 years ago</td>
<td>Noyes</td>
<td></td>
<td>Ex. 1.</td>
<td>Fairly good.</td>
<td>No excess.</td>
</tr>
<tr>
<td>12</td>
<td>Robertson's</td>
<td>Dr. J. B. Willmott</td>
<td></td>
<td>Ex. 21/8, Cn. 21/8</td>
<td>Very perfect.</td>
<td>Bottom packed dry; top moist.</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Dr. J. B. Willmott</td>
<td></td>
<td>Cn. 1, Ex. 21/8, Cn. 1</td>
<td></td>
<td>Pack with square, smooth end; left soft.</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Dr. H. Clark</td>
<td></td>
<td>Cn. 4/4, Ex. 5/4</td>
<td>Slight crack.</td>
<td>Pack with rotary motion; dry.</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Dr. H. Clark</td>
<td></td>
<td>Cn. 11.</td>
<td>Wide crack all around.</td>
<td>Pack rather dry.</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Dr. H. Clark</td>
<td></td>
<td>Cn. 2.</td>
<td>Wide crack all around.</td>
<td>Fresh; not annealed.</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Dr. H. Clark</td>
<td></td>
<td>Ex. 16.</td>
<td>Very good.</td>
<td>Same as above; surplus removed with dry filings.</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>Black</td>
<td></td>
<td>Ex. 4.</td>
<td>Lifted.</td>
<td>Same as above; washed in alcohol.</td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 6.</td>
<td>Slight crack all around.</td>
<td>Washed in alcohol.</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 1112, Ex. 21/8</td>
<td>Slight crack all around.</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 21/8, Ex. 21/8</td>
<td>Slight crack all around.</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 6.</td>
<td>Wide crack all around.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 8, Ex. 3.</td>
<td>Crack all around.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 51/8, Ex. 11/8</td>
<td>Margin open.</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 1112, Ex. 51/8</td>
<td>Movement not shown.</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>Dr. C. H. Waldron</td>
<td></td>
<td>Cn. 1, Ex. 51/8</td>
<td>Slightly open.</td>
<td>Very soft at first; movement lost.</td>
</tr>
<tr>
<td>27</td>
<td></td>
<td>R. G. Hunn</td>
<td></td>
<td>Cn. 2.</td>
<td>Shows more than 2 pts. movmt.</td>
<td>Margins open.</td>
</tr>
<tr>
<td>28</td>
<td></td>
<td>G. D. Sitherwood</td>
<td></td>
<td>Cn. 4, Ex. 2.</td>
<td>Wide open and below the level.</td>
<td>Very slight crack.</td>
</tr>
<tr>
<td>29</td>
<td></td>
<td>T. H. McIntosh</td>
<td></td>
<td>Cn. 71/2, Ex. 1</td>
<td>Cracks in few places.</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 1, Ex. 2.</td>
<td>Tube bad but shrinkage visible.</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 1, Ex. 2.</td>
<td>Very good.</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Welch’s Amalgam</td>
<td>Noyes</td>
<td></td>
<td>Cn. 4.</td>
<td>Margins open.</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 61/8, Ex. 1</td>
<td>Margin wide open.</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 7, Ex. 1.</td>
<td>Margin wide open.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 10.</td>
<td>Distinct crack.</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 10, Ex. 3.</td>
<td>Wide crack all around.</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 9, Ex. 2.</td>
<td>Slight crack.</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 31/2, Ex. 11/2</td>
<td>Distinct crack.</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 61/2, Ex. 11/2</td>
<td>Wide crack all around.</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 2, Ex. 3.</td>
<td>Margin wide open.</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 41/2, Ex. 1</td>
<td>Margin wide open.</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 8, Ex. 11/2</td>
<td>Margins broken.</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Cn. 3.</td>
<td>Pack with rotary motion; dry.</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td></td>
<td>Noyes</td>
<td></td>
<td>Ex. 61/2</td>
<td>Mortar; medium dry; rotary.</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td></td>
<td>Noyes</td>
<td></td>
<td></td>
<td>Mortar; packed vertically; no excess.</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td></td>
<td>Noyes</td>
<td></td>
<td></td>
<td>Mortar; dry as possible; surplus removed with dry alloy.</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td></td>
<td>Noyes</td>
<td></td>
<td></td>
<td>Eight months old; in hand; dry packed, by rotary motion.</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td></td>
<td>Noyes</td>
<td></td>
<td></td>
<td>Mortar and hand; rotary; slight excess.</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td></td>
<td>Noyes</td>
<td></td>
<td></td>
<td>Mortar; packed vertically.</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td>Noyes</td>
<td></td>
<td></td>
<td>Pack dry; rubbed in.</td>
<td></td>
</tr>
</tbody>
</table>
PROCEEDINGS OF SOCIETIES.

ILINOIS STATE DENTAL SOCIETY.

DISCUSSION ON "WHERE SHALL I LOCATE, OR THE BEAUTIES OF A COUNTRY PRACTICE." SEE PAGE 500.

Dr. C. N. Johnson, of Chicago: I think I can detect in this paper evidences that the essayist has taken the first move toward locating in the city. Somebody who heard that paper even made the charge that he was thereby advertising his practice for sale.

Now, there are two sides to this picture; we have had one of them, and I agree with a great many of the things that the essayist has said, but he has only brought the one side to the front. It so happens that I have had some experience in a country practice as well as in the city, and I want to report some of my experience in the country. I admit all of the glories that he has advanced, every one of them, but there were some annoyances about a country practice that he has not touched upon. He has not said one word about a certain individual that we all know; he has loyally and manfully kept that individual in the rear. I refer to "Mrs. Grundy." My experience in a country practice was this—that Mrs. Grundy knew more about my affairs than I did myself, and she took the pains to advertise them. And I do want to say, in all seriousness, that this one little thing of gossip must be recognized as an element of discomfort, at least, in a country practice. You do not encounter that same degree of irritating, petty gossip in the city that you do in the country. Now, there is one thing that the essayist said, however, with which I want to agree, and I believe it to be the impression that it is not true, but I want to say that the average country practitioner has a better means of informing himself on general topics than does the city practitioner. It is his province to come in contact with literary societies. He meets thinking men and women, and it is the tendency in the country towns of to-day to encourage that kind of advancement and investigation, and I say that, other things being equal, the country practitioner should be better informed than the city practitioner. In the city there is the one eternal grind from one month to another, and from year to year, with little opportunity for personal cultivation.

There was one thing he spoke about in regard to health, and
cited himself as a good example. Now, that does not count for anything. A man of the marked individuality of Cormanuy, no matter where he practiced, would advance in honor and adipose, and I have not the slightest doubt but what if he had lived in Chicago he would weigh 290 instead of 190 pounds.

There is another thing in regard to municipal honor that is true. A man in the country may be a representative man, and I wish here to take this occasion to refer to the fact that we have the honor to have in our own society a gentleman who is a country practitioner and who has also served his State in an honored position in the legislature. I refer to Dr. E. K. Blair.

Personally I am a great lover of nature, and I must confess that it is a recreation for me to leave the city and get out into the country, to get away from the humdrum of city life. It is a recreation to be out some place where you are awakened in the morning by the song of birds, and where the sunlight peeps behind the shutters. And when you start down town in the morning every person you meet knows you, and you have a close interest in each other which inhabitants in the city cannot possibly have. I do not mean that the city practitioner loses his individuality entirely, but it is a fact that we see so many strange faces in the city that we do not have such a close community of feeling with our fellow men as in the country. And then it seems to me to be ideal to put in a day of that kind and go home in the evening and sit out on the veranda (and I would not think of having a country home without a veranda), and then go up to your chamber and be sung to sleep by the lullaby of the winds through the branches waving at the window.

Dr. E. H. Allen, of Freeport: I live in the country also; I am not going to say anything about my health, but Dr. Cormanuy told me a story about a firm of Jews who were bankers, and they failed; the creditors assembled to see what there was left in the wreck and to divide up the property, and one of them, having first choice said that he wanted the gall. I think that Dr. Cormanuy has gotten somebody's gall to get up and hold himself up as an example of health. Why, he is all bleached out. I sat beside him several times at meals and he always called for a cup of hot water. Only a couple of years ago he was in Chicago and he got sick there, and, good gracious, he had an awful time, and he was
always taking out a little bottle of sugar coated pills and taking a few—

Dr. Cormany: Stick to the truth.

Dr. Allen: The rest of the country part is all right. I have had the city fever myself, and I think I like the country. I have my chickens, and we used to have a cow and we had cream to give to the birds—laughter—and as Dr. Johnson said, I feel that social part of the country town; we have our personal friends and we pretty nearly know all that is going on in the town; there is not anything that turns up in Freeport in the morning but what it is all over town in the evening. And another thing, I would a great deal rather be a big toad in the Freeport puddle than a little toad in the Chicago puddle.

Dr. Cormany: I do not care to say anything more about it. The object of the paper has been accomplished, and I thank you all for your kind consideration of it.


Dr. W. V-B. Ames, of Chicago: I do not propose to occupy more than a minute on the discussion of this paper. Dr. Custer has given all the details of the operation, and there is practically nothing to say. I had, since his first presentation of this method, tried it, and found, naturally, the difficulty he mentions, hardening of the platinum, so I appreciate the advantage of using this calcium block; and all that I have to say is that in my own experience with it the difficulty that I would want to overcome would be to have some fixed apparatus by which I could overcome the tendency of breaking the arc from my own unsteady hand. In having to make the connection so often I would not progress so rapidly as if I had a fixed apparatus to hold it right where it belonged. It seems to me the ideal apparatus would be a calcium block into which the negative pole was molded. Take a cupel mold into which bone ash cupels are molded and fix a platinum point which would come to about the surface of the concavity and mold into this either bone ash or calcium oxide; then if the pencil was in a frame which was adjustable, by which it could be brought down to a certain distance from the platinum mass, and arranged with a spring by which the pencil could be brought into contact with it and there held at just a given distance,
you would then not only have that rigid, but you would have both hands to handle your work.

Mr. Lob, of Chicago: With reference to Dr. Custer's paper and the remarks Dr. Ames made, I will say that I have constructed some time ago an apparatus such as Dr. Ames described. The carbon pencil forming the negative pole is fastened to a rack and pinion movement, which allows a gradual sliding up and down. This arrangement works very nicely, and allows a perfect regulation of the arc just as it may be required and leaves the other hand free for manipulation.

I have my doubts that in fusing platinum under an arc the contact of the metal with carbon will make the platinum hard. I have spent a good deal of study in metallurgy, and I do not know if the addition of carbon to platinum during the fusing process will alone be the reason for making the platinum hard. I think there are other elements which are the cause of this. I am not prepared at present to give any details on this matter, but I think if Dr. Custer is willing to investigate it a little further he will find that the presence of very small amounts of other metals, such as wolfram, may have something to do with it.

Dr. Custer: I have just a word to say. The suggestions as to detail as made by Dr. Ames are all very good, but what are you going to do with your hands when you have arranged it in that way? That which I have presented is the simpler way, and you will find in the practical working of it that it is necessary to manipulate that arc in order that you may melt the metal in the shape that you want it. That is the advantage of manipulating one terminal with the hand.

I am pretty well satisfied in my own mind that it is the taking up of carbon that produces the hardening. I was some time ago in correspondence with Baker & Co., and they said that in all of their refining they were careful to keep carbon away from platinum. We have nothing present in the old method but carbon, the carbon block and the carbon pencil, and it seems that nothing else could be taken into the platinum but carbon.

DISCUSSION ON "SOME NEW THINGS IN ORTHODONTIA." SEE PAGE 573.

Dr. H. J. Goslee, of Chicago: While not at all unmindful of the honor and pleasure of opening the discussion upon the subject
so ably presented by the essayist last evening, I do so, at the same time, with more or less hesitancy; because, I fancy that but few of us are capable of appreciating to the fullest extent the grand work that is being done by the essayist in the line of orthodontia. We are enabled in a minute way to glean from the presentation of his charts and diagrams an idea of the work that he is doing. Everything he does is done in the most artistic manner, and yet I fear that I might even be skeptical as to the possibility of the marvelous results that he obtains, but for the fact that I have often seen their practical application. The work that he gave you last night is but a brief outline of the work that he gives the students of our college during his course every winter. I know that all of you will agree with me in saying that but few of the ordinary practitioners of dentistry are capable of appreciating the great amount of labor that he has put in this line of study. Were I to presume to criticise the various acknowledged authorities on this subject, I think that my criticism would be that most of them give entirely too much space to the details of application and not enough to the discussion of principles. Principles are never changing, always the same; but detail is always changing, changing with every individual case that we have, and it has remained for Dr. Case, of our society and of our State, to present to the profession the truths in orthodontia in a scientific way by a study of the application of force and of principles. I feel, gentlemen, that I cannot do this subject any more justice than to simply say that we owe him a very deep debt of gratitude for the grand work that he has done in this line.

Dr. Case: In answer to Dr. Ottofy's question relative to the cause of the opening of the bite in the case mentioned, I would say that I do not know. The possibility of the eruption of the third molar teeth may have produced that condition. I advised the removal of these molars and the grinding of the occlusal surfaces of the teeth sufficient to permit him to masticate his food more perfectly than at present; and then to take accurate measurements of the distance between the upper and lower incisors with some instrument that he might make, and watch for any change in the opening. At any time the teeth could be extruded and a more perfect articulation brought about.

I am very much obliged to you, gentlemen, for the manner in
which you received my paper last evening and the attention which
you gave to it.

EXPLANATION FOLLOWING READING OF PAPER AND DISCUSSION ON
"ORAL SURGERY."

Dr. Brophy: Those of you who witnessed the operation I
performed this morning observed that an external incision was
made. I might have made an incision at the distal surface of the
ramus of the jaw in the region of the inferior dental foramen and
removed the nerve in that manner, but I would not have obtained
the perfect access to the nerve that I did by making an external
incision and removing a portion of the ramus of the jaw. In this
case I found that the nerve was enlarged to an enormous extent.
Had it been a younger patient, I would have proceeded and
reamed out the inferior dental canal in the usual way. Conditions
necessarily modify our treatment. The case which I had this
morning was by no means a promising one—a man aged seventy-
five years, with a feeble heart with now and then cessation of
pulsation. The result up to date, which has been but a few hours,
is even more successful than I expected. He has had no pain
since. He declares it is the first time for fifteen years that he has
had immunity from pain for so long a time. I feel that he will
make a good recovery and hope he will live many years in ease
and comfort.

Dr. R. N. Lawrence, of Lincoln, (opening discussion):
The paper offers no room whatever for criticism, only the
highest possible commendation. It presents to our view an-
other link in the chain of progress, presented by one of our
own number of whose achievements we are justly proud. Any
dentist who has been in practice for twenty-five years
will have no trouble in remembering that but little atten-
tion was paid to diseased conditions, abnormal developments and
malformations of the jaws and teeth prior to that time. That fact
was brought vividly to my mind during that grand meeting held in
Chicago in February last. As I sat in the presence of the writer,
witnessing most remarkable operations in oral surgery, I said to
myself, "The progress made by such men as Brophy, Gilmer and
Marshall in this department is simply wonderful." And if you will
permit me here in my remarks to include the progress made in
other departments by men like the essayist, who, while following
general practice, take up a specialty to which they devote especial study, cultivating their powers to a high degree. Such men, in my opinion, have done more to lift us out of the murky atmosphere of the past than the so-called general practitioner, and as a consequence, a new era of public usefulness has dawned for our profession. The knowledge and skill attained by these men and so freely presented to us, enables us to step outside the bounds of ordinary routine work and with greater skill restore to health, mouths diseased, and organs shorn of their functions. But this is not all; in addition to this, Drs. Brophy and Black and their coworkers have succeeded in building up within our borders the finest dental schools on earth. The fact that we possess a Brophy and a Black and a Harlan and a Duke of York, and that we can be Cased and all our Angles reduced and be made Younger by implantation and artistic treatment, shows how progressive we are.

Dr. T. L. Gilmer, of Chicago: After the eloquent address I have just listened to I fear what I may say may seem common place. I can only second and emphasize what Dr. Brophy has said. Certainly there has been a great gain since surgery of the face and mouth has been, in a measure, relegated to oral surgeons. This reminds me of what was said to me by one of the best surgeons in Chicago not long ago. I called him in to see a case of caries of the superior maxilla. I had removed the entire right half of the superior maxilla, which had been destroyed by caries. After removing it I packed the part with gauze, and to retain it brought the two edges of the gum together and sutured them. I opened up the stitches and removed the dressing, and he examined the case and found the immense cavity from which the bone had been removed. "Well," he said "oral surgeons are certainly making progress; cosmetic effects are not thought so much of by the general surgeon, he probably would have cut through the soft parts and removed the bone through an external opening." Regarding the external incisions, there are some cases that demand them, but, of course, we should not make external incisions if it is possible to avoid them, but conditions alter the cases. In the first place, it is more difficult to operate in the mouth; then we cannot make an aseptic operation in the mouth; besides, the presence of the blood, saliva and mucus add to the difficulties. Then there are difficulties in controlling the anesthesia. There are conditions where it is desirable for the cure of neuralgia to remove a larger portion of the nerve from the lower
jaw than can be done conveniently from the inside of the mouth, especially in such a case as the one Dr. Brophy operated on this morning. I have done this in several different ways. I have made the Garretson operation. It is made by making an incision in the soft parts at the base of the jaw in the shadow line. The soft parts are turned up and two parallel incisions are made in the bone about three-sixteenths of an inch apart, extending from the mental foramen back. This is an easy method of removing a section of the nerve, and with our present means of suturing, using only a few of the larger and stronger sutures, and quite a number of horsehair sutures, and by the present means of thorough aseptic surgery, I have been able to get results which leave practically no scar whatever, only a very slight line under the base of the jaw which is ordinarily observable even on a woman’s face for whom I performed it. A better operation, perhaps, and one less difficult than the one which was very skillfully employed by Dr. Brophy this morning, which I have performed, is made as follows: An incision is made just underneath the angle of the jaw, the parts are reflected from the bone until the posterior dental foramen is reached. The only difficulty that we have in securing the nerve is that we are not able to see quite so well, with this sort of an incision, but I have found that by using a mouth mirror, after the parts are retracted, we can see the nerve perfectly with it as it passes out from the posterior dental foramen, and then by having a properly shaped tenaculum we can slip it underneath, and pick up the nerve and draw it out of the bone, and then proceed up in the direction of the Gasserian ganglion, removing it as far up as we desire. I think we can get it out as far up that way, and with perhaps less labor, than we can if the cut is made through the ramus, and it leaves a very trifling scar, if we have done the operation under aseptic conditions. This is the operation of a German surgeon whose name has slipped my memory.

Dr. J. E. Nyman, of Chicago: I think that it is very seldom that due credit is given to oral surgeons for the difficulties under which they work, and I think that, on the whole, to be a good oral surgeon requires more skill than it does to be a good general surgeon. I once heard a very prominent general surgeon admit that very point. He had just gotten through a cleft palate operation on a young child, and wiping the perspiration from his brow, he
said, "Talk about a herniotomy in a fat man; it is not in it with a staphylorrhaphy in a fat baby."

Dr. Brophy: The hour is late, and I have nothing to say except to express to the ladies and gentlemen present my appreciation of the attention which they have given me, and to thank the gentlemen who have so highly complimented my methods of operating.

DISCUSSION ON "ESSENTIAL OILS."

Dr. G. V. Black, of Chicago, (opening discussion): It is pretty difficult to discuss a paper like this. It is rather a paper for us to take home and study at our leisure, to read and read again and draw from it guidance in the selection of drugs to use. It has dealt with drugs with which we have been familiar for years, and yet has presented phases of these drugs that will be new to many of you, perhaps; over and over again I have been surprised at the choice persons have made of the essential oils for certain specific purposes. I have studied these oils pretty closely myself, their antiseptic properties and their therapeutic properties, but never in such a manner as they have been presented to you this evening. I have known well that oil of cassia was poisonous when retained in contact with animal tissue. I have seen these blisters time and again, and have often warned dentists not to use it in the pulp chambers of teeth, and yet they have persisted in using it. The lesson to learn from this is that we should choose our antiseptics, not with relation to their power as a poison to microbes entirely, but should have especial reference to their action upon the animal tissue to which they are applied. Arsenic might be said to be an antiseptic. Why is it not used? Because it is more poisonous to the animal cell than to the vegetable cell. What we want, if we want simply and purely an antiseptic, is an agent that is poisonous to the vegetable and not to the animal cell. Now in cassia we have one of the most powerful poisons to the vegetable cell, but we have also a poison to the animal cell, and should have a care how we use cassia. Then the wonderful agent formalin, the new antiseptic, the great antiseptic; we find it is certainly as poisonous to the animal as it is to the vegetable cell, hence, of no account as an antiseptic in connection with animal tissue. It will do to destroy germs in cloth, clothing, and such substances, but is utterly unfit to use as an antiseptic upon the animal tissue.

Now, if this paper will induce men to think along these lines
and choose their agents along the lines dictated by the experiments produced, Prof. Peck will be repaid for the loss of time and the physical suffering he has endured, and the tissue he has lost in the making of these experiments, for I know personally that it has been a sore piece of work, and I believe the terrific sore made by formalin is not yet healed.

Now, that is about all I have to say, gentlemen. Take the paper home and read it carefully and learn this lesson, that you should use your antiseptics not only as antiseptics—that is only one part the drug plays—but use them also with reference to their therapeutic properties. If you need an anaesthetic agent to allay pain you may be justified in using carbolic acid, possibly, but in most instances you will do better to use oil of cloves. If you want, at the same time, a stimulant, you will use one of the stimulating agents, one that has the power of irritating a little and stimulating tissue; reduce oil of cassia and use that, or reduce oil of cinnamon and use that, or several others along the line, and so on throughout the piece. You may use a sedative and at the same time an antiseptic, or a stimulant and at the same time an antiseptic. You see the wonderful power we derive from these agents. Do not continue to use as antiseptics substances that are not proven to be antiseptics. Take bichloride of mercury, the great antiseptic; it is utterly useless in fighting pus formation, because of the albumen present destroying the power of the agent, as is shown in the treatment of the sores by Dr. Peck, and has been shown over and over again. To fight pus formation it is utterly useless; to disinfect the skin, an excellent agent. We need to learn to use these agents in the right place. Also carbolic acid is almost entirely useless in fighting pus formation because of the same difficulty. It coagulates albumen and the effect of the carbolic acid is destroyed. It is only transient, at any rate, in its use as an antiseptic. Whereas we have in the old, worn-out creosote still one of our best agents, and I remember well how we used to try to get the carbolic acid instead of creosote that the dealer would poke off on us, rejecting the better agent because we knew no better. I hope that hereafter not one of you will use an antiseptic without asking the question—What is the effect of this drug upon the animal tissue to which I apply it? Suppose you know that it will destroy bacteria; what is its effect upon the animal tissue; is it desirable?
Now another little point which I must speak of is this: Suppose you open an alveolar abscess; we know how quickly the tissues will heal and will cover in the abscess again, in very many instances, and prevent a free, full discharge. A little bit of cotton moistened with carbolic acid and placed in that cut will keep it open, that will perfectly prevent the healing. Now, suppose you make a little mistake in your choice there and use "1-2-3" in the same way, what will be the result? The granulations will grow right in through and through that cotton, and when you take it out, instead of having a ropy, pusy wisp of cotton, you will have your cotton filled with blood and tissue; the one stimulating the growth of the tissue, the other destroying it. It is greatly to be regretted that oil of cassia is being so greatly adulterated, and probably, from what I can learn of it, by the men who make it in the field. It is greatly to be regretted. I noticed it first three years ago. I found specimens of the oil of cassia that were adulterated with fixed oils and I had to make trial to get the pure oil; but to-day we cannot find in Chicago, nor from the dealers to whom we have sent in other cities, a pure oil of cassia. Since its introduction as an antiseptic, ten or eleven years ago, the demand for the oil has been so much greater than the supply that the price has run up, and the adulteration has been resorted to to increase the amount and keep the price down, until to-day it is impossible to get a pure article. My son, who is practicing surgery largely and using the oil, buying it fifty pounds at a time, finds it now impossible any longer to get a pure article, and when I was home last he showed me his oil of cassia and complained of it; he would take a solution of it and wash his hands and it would leave his hands greasy and sticky. It is wretched that so valuable an agent should be adulterated in this way.

I think I have talked long enough, Mr. President. I only wanted to call attention especially to the class of work done, and especially to this testing of the poisonous properties of antiseptics upon the animal tissue as well as on the vegetable tissue, or microorganisms. The one is just as important for us to consider as the other. See that we do not use irritating agents where we need sedative agents, and that we may use stimulating agents where we need them and may use sedative agents where we need them.

Dr. C. P. Pruyn, of Chicago: Along the line of formalin, it may
not be known to many that this agent is a wonderful preservative agent. I know of a certain undertaker in Chicago who has used it for embalming purposes with wonderful effects. He had in his basement the body of a young woman injected with formalin. He had kept it for two years laid out on a board, and at the end of that time the body was just as beautifully preserved as it was the day after death, and when a candle was held under the outstretched hand there was an opacity where the bones were, and a beautiful clear translucency through the soft tissue. I saw another case of a young woman that he had preserved for a year. He had her dressed and standing erect and she looked so natural that I almost thought she was alive. He had another case of a baby that he had embalmed in the same way for six months, and the body was beautifully preserved.

Dr. E. Lawley York, of Chicago: I have listened to the paper with pleasure, and I am afraid with a little envy. It is a magnificent paper. Having done some experimental work myself I know the amount of time, energy and money a man has to put in to produce the results that Dr. Peck has. At the same time I take issue with him in a few things. I may be wrong, if so, I want him to put me right. He states that he diluted the drop of oil with alcohol. I would like him to tell me whether it was ninety-three per cent, ninety-five per cent or absolute alcohol. He also stated that he took ten drops of the alcohol and one drop of oil; that would make eleven drops. Would one drop of that be one-tenth or one-eleventh of a drop? His figures are very exact and they will go out and be published and some fellow might figure it out and prove that they were not accurate. The alcohol I believe is an antiseptic in about one to ten itself; therefore, it has something to do with the restraining power, and might alter the figures somewhat. I would like to ask Dr. Peck if he could not use something like carbolene. I have experimented with it but slightly and would not say for certain whether it has any antiseptic properties or not, but I believe that we would get absolute results if we use something of that kind. I would like to ask him why he infected his tubes with saliva. A number of these experiments had to be carried out which extended over so many days; he would not get the same organisms every time, even though he took it from the same man's mouth, because the very fact of drinking a glass of beer will alter the character of the secretions in his
mouth materially. I would like to ask him for information, whether if he had taken a known organism and used that all the way through, whether it would not have been just as well; he would have known then with every oil or drug that he used he had precisely the same conditions to deal with. Now, for instance, saphrophites are a little more difficult to destroy than parasites, and the micrococi than the bacilli. Now, in the mouth you do not know what you get; you may get them all or you may get one or two or ten or twelve of them. Now, had he employed a spore producing organism, say the anthrax, it would have been better. I think he would find the vegetating organisms are much more easily destroyed than the spores. In the mouth he would not find spores. An organism only takes on the spore stage when it has exhausted the medium in which it is growing. It is never going to exhaust it in the mouth.

I do not think I have any further questions to ask.

Dr. Black: I would like to say just one word in regard to the source of infection, and it is a very important point, as I regard it and a reason why we have a considerable number of disinfectants forced upon us through error. It is entirely unsafe to use a micro-organism from cultures for testing antiseptics, because of the weakening effect of the artificial cultivation. If we are to test antiseptics we must take micro-organisms from their natural habitat, from the original source where they grow in all their glory, and not take micro-organisms that we have weakened by cultivation. By taking micro-organisms from the saliva, we as dentists have the best possible source of obtaining them in their full vigor, and to get them in that variety in which we are most likely to find them in fighting micro-organisms.

Dr. C. N. Johnson: Would not it be better if we could get them from the pulp canals of the teeth instead of from the saliva?

Dr. Black: We will get the same micro-organisms from the saliva that we would if we took them from the pulp canals, and we get a variety in almost every instance.

Dr. Peck: In regard to the alcohol used, it was commercial alcohol, ninety-five per cent, and of this alcohol, which was carried to its limit as an antiseptic, eighty drops are required to prevent development of bacteria in ten c. c. of broth, hence the small quantity used in the division of a drop of an essential oil can have no appreciable influence in connection with the antiseptic action of
the latter. This is the method used in times past by such men as Pasteur, Miller and Black, and it is a safe proposition that had there been a better method they would have discovered it.

In regard to the ten drops of alcohol and one drop of oil. This has been said just as I intended it should be. And one drop of this solution represents one-tenth of a drop of the oil as nearly as it can be represented from the standpoint of a scientific mathematical problem.

When using the same dropper it will be observed that a drop of alcohol is slightly smaller in bulk than a drop of an essential oil, and because of this difference in the size of the drops, ten drops of alcohol and one drop of an oil, forms as nearly as it can be figured a ten per cent solution, hence one drop of this solution represents one-tenth of the drop of oil. Also the dissemination of the drop of oil throughout the ten drops of alcohol renders the solution slightly thicker than the alcohol itself, so only ten solid drops can be dropped from the solution instead of eleven, as one would naturally suppose.

Dr. Black has anticipated me in what I was about to say regarding the use of saliva for infecting the broth. It is a well-known fact among scientific men of experience that bacteria produced by continued cultivation become greatly attenuated after a few generations. Their virulent nature is largely diminished. They would be destroyed or their development prevented by less potent agents than when experimented with while in the full vigor of their existence. Also germs that require the most potent germicides to effect their destruction are prevented from developing nearly as easily as are those germs that are destroyed by the less potent germicides. Such a method as the one suggested, in my judgment, would be unscientific, to say nothing of its inaccuracy. As we find in the saliva all classes of germs with which we have to deal in the treatment of diseased conditions about the mouth and teeth, I used this method as the accurate, scientific one. You will not lose sight of the statement that a control tube was used in connection with each set of plants—a tube the broth of which was infected but into which no antiseptic was placed. It was impossible to note any difference in the amount of development of bacteria in these control tubes—which fact alone is sufficient to satisfy me that the conditions, after the broth was infected, were as nearly uniform as could be.
One other point to which I wish especially to direct the questioner's attention, that the results of this work are not presented to represent the germicidal power of these agents, only their antiseptic power, which means their ability to retard, restrain, prevent the development of germs—not to destroy them. Hence all this talk about the destruction, annihilation of germs has no place in this discussion.

Dr. Garrett Newkirk, of Chicago: I cannot let this matter pass without saying that I think we all appreciate very much the amount of labor and the careful work of experimentation and the self-sacrifice that Dr. Peck has undergone in the preparation of this paper. Why, it is quite soldierly, to my mind, the amount of suffering that he has been willing to undergo to give us the results of these experiments. It seems to me he might go to Cuba with the soldiers, and be considered an "immune."

I was particularly gratified to find that my good old friend, oil of cloves, was supported and endorsed, and that the experiments bore out what I had been led to believe by the clinical experience of many years. It simply establishes my confidence in the oil of cloves. A few such drugs as this are about all we need in ordinary practice. I heard an old physician say once that he could practice medicine successfully with three or four drugs; he wanted ipecac, calomel, quinine and one or two others. We can almost practice dentistry, it seems to me, with the oil of cloves, arsenic and cocain.

Dr. Peck (closing discussion): I will occupy just a few minutes. The first point is regarding the meaning of these expressions—antiseptics, disinfectants and germicides. So many of us use these terms interchangeably, as if each one means just exactly what the other one means, which is entirely wrong. The two terms, antiseptic and disinfectant, were used by the medical profession years before any knowledge was had regarding pathogenic microorganisms and their influence in the production of disease. The term, antiseptics, as used at that time, simply meant those agents which prevented or restrained or inhibited the growth or development of pathogenic microorganisms, not agents which actually destroyed or killed the germs. The word disinfectant was used to give expression to those agents which prevented further decomposition of septic matter and the formation of gases, mephitic odors, etc., also to destroy the latter, but not necessarily agents which
destroyed the life of the germs. After knowledge was had regarding pathogenic microorganisms and their influence in producing diseases, the expression, germicide, was coined, and used to give expression to those agents which actually destroyed the life and potency of the germs themselves.

As I said last night, this experimental work which I have done is simply for the purpose of presenting to you the antiseptic properties of these agents, nothing more. The experiments which have been conducted with the spray of these various oils on pathogenic microorganisms, pus, etc., on animal tissue, do prove quite conclusively that many of them are also germicides as well as antiseptics, but there is other experimental work that will be done (the result of which, possibly, I may have the pleasure of presenting to you some time in the future), to determine exactly which ones of these agents are germicides and their relative value as such.

I thank you very much indeed for the manner in which you received the paper. The continued hand clapping at the close of its reading meant a great deal more to me than anything that any of you might have said regarding the work. I thank you very much.
Cocaine Poisoning.

Recently while getting ready to set a crown on the root of a central incisor, we placed a mat of paper about the size of a copper cent on the gum, saturated with a four per cent solution of hydrochlorate of cocaine, and in about five minutes the patient was poisoned. She became limp and was not conscious of anything for four hours. It was with difficulty that she was made to walk, and she talked incessantly and incoherently.

She was given one nitrite of amyl pearl and was made to inhale stronger ammonia and was given five cups of strong black coffee. The quantity of the solution used was about four minims, some of which was undoubtedly swallowed. The recovery was sudden and complete after four hours of incessant labor. No after effects except some distress in the stomach on account of the large quantity of coffee. The next day she did not remember anything that occurred from the time she sat down in the chair until she was taken to the train to go home. There was no perceptible action on the pupils of the eyes, no perspiration, some drowsiness and considerable difficulty in locomotion. Speech constant and pronunciation correct. No action on the bowels or kidneys; respiration and pulse accelerated. Female, age about fifty.

The National Dental Association.

The first annual meeting will be held in Omaha, Nebraska, Tuesday, August 30. The Association of Faculties and the Association of Dental Examiners will hold meetings at the same place a day or two in advance of the meeting. We hope nothing will
prevent a large attendance, especially from the West, as it is desir-able to gain a large membership. Something will have to be done at this meeting to advance the interest in section work. We note with regret that the last three meetings have failed to introduce many new men or workers into this sort of exercise. What is wanted is some new blood and enthusiasm. This is especially true in the executive committee where old, dilatory methods are still in vogue. The meeting this year should have been boomed from the start instead of covering it with the numerous wet blankets that have nearly smothered it.

Much good missionary work may be done by the members of an association like this, in educating its own members to good or better methods of practice, in stimulating individual research, and in the inculcation of professional pride. We trust that the new blood which will enter the ranks of the national workers will be vigorous and lasting, and that Omaha and her dentists will be glad to have held such a meeting west of the Mississippi.

Alveolar Abscess.

It is very evident to the careful reader that the great mass of the profession in this and other countries are at sea about the successful treatment of abscess.

In looking over the current periodicals we frequently see that Dr.—— has the only sure method of treating a cold, blind, sleeping, dormant or acute abscess or chronic with a fistule or without. The methods and remedies are as numerous as blackbirds in summer or mosquitoes in the Klondike.

One or more gentlemen use boiled water, others pin their faith to peroxide of hydrogen or pyrozone; still others to creosote or creosote and iodine or zinc chloride or even carbolic acid (?), feeling sure that they have the only panacea. Recently Dr. Barrett has published an article on the diffusion of carbolic acid in the tissues including the root itself (clear through the cementum). We have been told that while carbolic acid will pass through the dentine it will not traverse the cementum. At once diametrics meet, now what are you going to do? Use water, creosote, carbolic acid, alcohol, zinc, eucalyptol or some agent ending in ol. We are inclined to take issue with Dr. Barrett on the diffusion of carbolic acid through dentine and cementum. The experiments of
Dr. York (see Illinois transactions for 1897) seem to show that carbolic acid always stops when it gets to the cementum, and recently (Dental Review, page 496) he gives the reasons why carbolic acid passes through fresh and infected dentine. If these experiments stand the test of time and other workers, the practice of Dr. Barrett will have to be modified to suit them. Alveolar abscess is not cured by medicines alone—the root filling plays an important part just after the disinfection and the healing of the fistula.

For our part we cling to the idea that coagulants are not the best remedies for canal medication, even if they do pass through dentine. The danger of leaving a small coagulum in a fine root canal (even though it will dissolve in an excess of the agent) is always present and no amount of manipulation will infallibly remove such coagula without too much careful, painstaking labor. Such agents as acidified peroxide and the oils will not leave these seekers of mischief in fine canals. They also possess a greater penetrating power, and are better disinfectants in the hands of all practitioners. (See a paper by Dr. Peck in this issue.)

The successful treatment of abscess is growing in consequence of the wider use of noncoagulation, and will continue to grow until something better is discovered.

DOMESTIC CORRESPONDENCE.

Letter from New York.

Borough of Manhattan, August 1, 1898.

To the Editor of the Dental Review.

Dear Sir: The twenty-eighth annual meeting of the New Jersey State Dental Society at the Auditorium, Asbury Park, New Jersey, opened on Wednesday morning, July 20, almost at 10 o'clock sharp, with prayer, then reading of the president's address, which was simple in form, consisting mainly of a welcome to the members and guests, immediately after which there was a motion to adjourn until the afternoon session.

The committee appointed to take into consideration such recommendations as were made by the president, advised at the opening of the afternoon session, stimulation of endeavor for furthering the welfare of the society in the future as has been the plan in the
past. The waning of enthusiasm has been apparent during the past year, but all sincerely hope that the president's mild optimistic references will stimulate the hornets to sharpen up their business end again.

It must be said that rarely has the order of business and essays been followed as per program as was that of the Jersey society this year. Each paper was presented in its proper place.

The first, by Allison R. Lawshe, D. D. S., of Trenton, N. J., recommended "A New Sectional Block Tooth," in a very short, concise, pointed paper, the substance of which was the gum blocking of the regular countersunk tooth (such as the S. S. White's) a character of tooth little used but which should be used more extensively. The doctor had no baked models with him, but showed skillful manipulation at the lathe of the porcelain gums from some sectional blocks from which he had ground all of the teeth, leaving only the porcelain gum festoon. Into these festoons he had ground the countersunk plain teeth to adjust perfectly, then cemented in place to show the effect. Could we but procure such effects at the dental depots it would lend marvelously to the prosthetic possibilities in regular practice.

Dr. Register, of Philadelphia, claimed in his remarks to be the originator of the countersunk tooth, having submitted the first models to the S. S. W. Co. for manufacture, and he also experimented with the gum sections.

Dr. Osmun rather sounded the keynote to the porcelain tooth situation when he said that the aim of the manufacturers has been to produce a cheap tooth but not an artistic one, with which the dental profession cannot give good results, which is but too true.

Dr. Wm. J. Wallace, an M. D., who contributed "Practical Experience with a few Homœopathic Remedies in Dental Practice," was not present.

Dr. Iredell read the paper, in which it set forth that teeth are as amenable to homœopathic remedies as any other tissues of the body, especially, in neuralgias and pericemental troubles.

Aconite, belladonna, creosote, calomel of mild potencies, were recommended, of course, to be administered internally.

The first he said would abort peridental trouble. The second will prevent suppuration. The third will cause a discontinuance of caries.

Dr. Sutphen cited a case where silica (third potency) had
cured a chronic alveolar abscess which resisted all other treatment. Most of the following speakers to this paper raised a tirade against the administration of drugs by the dentist. They did not think it prudent to transgress upon the domain of the physician, etc., etc.

The few who upheld the recommendations of Dr. Wallace, such as Dr. Osmun, Dr. Flagg, Dr. Chase, put forth some very common sense arguments in favor of systemic medication in dental lesions and recorded instances where the absolute propriety was in evidence. One instance which seemed to weigh well was the recognition of the dentist’s ability to administer the most dangerous of drugs—anesthetics.

Dr. Frank G. Gregory’s paper on “Effective Method of Treating Chronic Alveolar Abscess and Molars having Exposed Pulps Difficult to Extirpate,” was to extract the tooth, ream out the pulp canals from either end, fill them and the main cavity, then replace in socket, in which he makes the assurance that teeth that are not amenable to treatment otherwise are thus treated and saved.

Dr. Watkins recorded his performance of the somewhat unpopular method of replantation or implantation of twenty-six years ago.

Dr. Osmun says there is always a “reckoning day” when nature’s work is interfered with by extraction and replacement, and believes that we should not resort to this character of practice.

Dr. I. P. Wilson, of Burlington, Iowa, was not present, either, to read his paper, so Dr. Faught, of Philadelphia, delivered same. The subject was “A Study of the Physiological and Pathological Conditions of the Apical Portions of the Cementum.”

Quite a nice picture of the physiological distribution of muscular supply was drawn.

The assertion was made that pericemental vascular supply was increased by devitalization of the pulp.

Arsenic was most generally used, but never or rarely apply a second time, because of the liability to cause death of apical cementum, which means disease no matter how thoroughly the root canals may be filled subsequently. Dentists often produce disease unwittingly.

Dr. Flagg knew that when he began to talk about arsenic he would not know when to stop. He expressed some surprise that
Dr. I. P. (as he called him) should bring it down to the apical point of the cementum. Arsenic he knew was not good for rats but they do not use it right.

His admonishment was never, do not forget, never apply arsenic twice in a lower tooth, once in a great while you may in an upper tooth. He does not know why this should be adhered to, but does not do it. Arsenic has never been found to be present at the apical end of the pulp by any known test (chemical), except, it has been said, with the spectroscope.

Reinsch's test for one two hundred and fifty thousandths of a grain will not show it in a devitalized pulp, yet one ten millionths of a grain will destroy the pulp. The pulp will subsequently putresce, which proves that no As remains. The doctor resorts very frequently to the puncturing of pulps with finest broach and carrying acetate of morphia for rapid pulp extirpation.

Drs. Bogue, J. Morgan Howe, Luckey and others believed that the essayist has taken the most reasonable course.

Dr. J. A. Wass, of Hammonton, N. J., another essayist, gave "My Experience with Nerve Mummification," which was the use of alum, zinc oxide, etc., as published in the Cosmos of November, 1895. The emphasized point of his paper was the little time and expense involved in capping an exposed pulp with this treatment. Sixty-one cases have been treated in three years, and not a failure. All who spoke to this paper showed skepticism, and others thought it too unprofessional.

Dr. Bogue said that Dr. Magitot used arsenic to benumb sensibility of dentine, then filled with anything, but may be there have not been so many abscesses in any other practice as he knows there were in his. The doctor's experience in Dr. Herbst's office were to see him treat teeth with cobalt; subsequently he went with that gentleman to houses of his patients treating abscesses which he did not know what to do with.

Dr. LeRoy made a statement upon which the positive treatment of pulp canals seems to depend. First he deplored the use of any mummifying agent and said that all previous speakers seemed to lose sight of the fact that there was another end to the tooth other than the coronal wherein was a minute orifice through which percolation of fluid (serumnal) would positively establish inflammation unless given attention.

"Alveolar Abscess or Caries of the Maxilla" was the title of
one of the most scientific papers of the meeting, by W. G. Chase, of Philadelphia.

Mechanics ceases, science commences in the treatment of these conditions.

Heroic treatment was recommended to establish artificial fistulae when necessary; then immediate pulp canal filling in cases of abscess, then the administration of systemic treatment, quinine, or, etc.

If caries of maxilla is an involvent, remove diseased bone, then treat with sulphuric acid one to ten for dissolving necrosed bone, subsequently the surrounding tissue is treated by painting with iodine.

J. Morgan Howe sustained the use of systemic remedies and believed the dentist of the future must be a medically educated man. The subject as to which maxilla was the most frequently affected with necrosis occupied some little time.

Chicago's contribution by Henry H. Merrell, Ph. D., M. D., on "A Plea for the More Careful Study of Materia Medica as a Branch of Dental Education," was read by Dr. Fish, of the Jersey society.

The subject was treated tersely, but to no length, and consisted mainly of definitions, principles, and classification of dental medicines.

Dr. Watkins, upon motion, was given the floor to make a report on dental prophylaxis.

After the point of order was carried there was much dissen- sion that he should be allowed to break in on regular business of essays.

This "out of regular order" business always will create poor sentiment in any society.

All should have been interested in the subject, for there is possibly none more neglected.

The report contained instructions to the patient as to the proper food, proper mastication of same after cleansing of the teeth with picks, silk, brush, etc., and just here is where the doctor presented to the profession the "Watkins toothbrush."

If it had not the name on the handle one would feel positive it was the "prophylactic." By the way, this reminds us that the patent on the "prophylactic" is on the hole in the handle only, so it is said.
The "Watkins brush" has not the hole.

Powders, pastes, etc., received the attention of the committee. He finally recommended that parts of his paper be dissected and parts thought best incorporated in pamphlet form, printed, distributed and paid for by the society.

Dr. Wm. H. Trueman's paper on the "Evolution of Dental Materia Medica" was purely historical but unfortunately heard less of than most of the others.

The clinics were held in the same building on Thursday afternoon, and were fairly well attended. Most all clinicians were in evidence except the lady whose name appeared on the program. She was present, but for some reason refused to grant us the exhibition of her dexterity.

Methods of performing crown and bridge work were in profusion, and cataphoresis of course was tampered with. Very little of old time dexterity in inserting fillings was demonstrated. What was, was all with gold. How handsome it would be to see some really elegant amalgam fillings manipulated once in a while at these instructive gatherings, or the usual cases of removal of calculus handled by some one who professed to know how. Much might be taught that way instead of how to place a bridge piece that will more than probably have—to use Dr. Osmun's words—a day of reckoning.

And the exhibitors—well, they are good fellows—when off duty. A few of them have the knack of appearing not to be soliciting your business, but trying to please you otherwise. I do not believe Dr. Greene allowed many of his friends (and all dentists know him) to pass his attractive spot without having a "boutonnière" attached to him and not a word about his wares, unless you asked for the information.

On Friday everybody seemed anxious to get away from clinics and essays, as though their capacities had been more than satisfied. Some papers were passed, committee reports formally dispensed with and the general air of uneasy expedition held sway. Previous to that time the large—Columbia Hotel—dental headquarters could not find accommodations for late arrivals, but on Friday afternoon there was quite a choice of apartments open.

This symposium would not be complete without reference to the Thursday evening lunch and good cheer tendered to all the society's guests and friends of members, at the Columbia, at which fully
one hundred and fifty covers were served, after which the knowing ones who so desired “pulled the latch string that was always out,” and which remained so until the last guest had departed.

Fraternally,

The Bouroughs.

Comparisons are Odious.

To the Editor of the Dental Review:

In the advertising leaves of a late journal appeared the following report on some alloys tested by F. B. Noyes for the Illinois State Dental Society May 10-14, 1898:

Fellowship tube No. 1, expansion, one point; fellowship tube No. 2, expansion none; shrinkage none; K & S. tube No. 1, shrank three; Dr. Kester's special, No. 2, shrank four and one-half. Other samples of Kester's alloys, tested at this meeting, showing as perfect results as those of the fellowship, were ignored in the report as published above.

Let us make a comparison from another set of experiments made by the same gentleman before another society a few days prior to the one quoted:

No. 10, Kester's frost white, expansion none; contraction none; good; perfect. No. 11, Kester's special, expansion three-fourths; contraction, none; good; perfect. No. 17, Dental Protective Supply Co. No 2, shrank six and one-half; wide open. No. 21, Dental Protective Supply Co. fellowship, expansion two and one-half, slight lifting.

Other alloys of our own and others were included in the experiments, but for the purposes of this letter those quoted will suffice. We have never felt justified in publishing the results of any alloy tests other than our own heretofore, and would not do so now except to show how easy it is to get evidences of superiority when you are looking for them. While the above comparisons are manifestly unfair they have the merit of being absolutely true, and may be verified by any one taking the trouble to examine the reports. Neither of the two reports as given above are complete as both are garbled. We do not believe that any manufacturer has a moral right to use the reports on a rival’s commodity at all, but if he does he is bound by all sorts of laws, ethical and civil, to publish true ones. We are met with the remark that "business is
business," as though when a professional gentleman engages in other than professional pursuits he may lay off his honor, and ordinary gentlemanly instincts, as he would his coat, to engage in business.

We have given several years to the study of the amalgam question, and have just finished the prescribed course at the N. W. U. Dental College under the leadership of Dr. Black. We have access to the very best appliances for testing and examining alloys, and we feel justified in claiming that we can prepare as good an alloy as any one.

That other manufacturers are making and still others will make good alloys is true, as no one man or set of men may monopolize the wisdom of the whole. Yours truly,

P. J. Kester.

1006 Champlain Building, Chicago.

REVIEWS AND ABSTRACTS.


This is a book for students and it is devoid of illustrations, which is a good thing. Most of the cuts running through recent text-books have done duty in nearly all catalogues and journals for years, and it is refreshing to find a book without them.

There are sixty-five chapters, and nearly every subject under the domain of oral pathology is considered carefully and concisely, except actinomycosis, ulitis and phosphor necrosis and a few other pathological conditions which perhaps would be better considered in a work on general pathology. The author is vigorous and laborious in some portions of the work and nerveless in others. The chapter on discolored teeth is nerveless and the ones on the maxillary sinus and frontal ditto are vigorous, but not very satisfactory for reasons which the reader can supply. The book is a pet of the author, as may be seen by the discriminating reader. We like it. With its peculiar therapeutics we find no fault, but we do not prescribe compounds; we use drugs in definite quantity, and "not all the king's horses" can shake our belief in the ultimate pulling away from proprietary medicines until the
manufacturers give ingredients and proportions. The chapters being short and terse will commend them to students and practitioners. This work is so far superior to most of those published in recent years that we believe it will be useful to the student. We look for a rapid sale of it, and the dropping of the chapter on fractures and replantation, transplantation and plantation of the teeth in a second edition. These are surgical subjects. The book is nicely gotten up and is easy to handle.

MEMORANDA.

Dr. G. Q. Cotton is dead.
Dr. G. B. Richmond, of Lansing, Mich., is dead.
Dr. J. W. Clark, of Louisville, visited Chicago in July.
Dr. H. A. Fynn, of Denver, Colo., visited Chicago in July.
Dr. J. H. Spaulding, of Paris, is visiting friends in Minneapolis and Chicago.
The next Illinois meeting will be held in Chicago second Tuesday in May, 1899.

A physician in Toronto died from the effects of chloroform administered in extracting six teeth.

Dr. Haskell and Dr. Yant will be absent in Germany, until November, instructing classes in their specialty.

In going to Omaha to attend any or all of the dental meetings you will find the "Burlington" about the pleasantest and shortest way of getting there.

Wm. Ernest Walker, D. D. S., of Pass Christian, Miss., has been elected Professor of Operative Dentistry and Orthodontia in the Dental Department of the University College of Medicine, Richmond, Va.

THE MINNESOTA STATE DENTAL ASSOCIATION.
The next meeting will be held in St. Paul, Tuesday, September 6, and will continue three days. An excellent program has been prepared.

H. L. CRUTTENDEN,
Secretary.

TO OMAHA.

A rate of one fare, plus $2, has been arranged from Chicago, St. Louis and Denver. The dentists from further east and south get rate of one and one third to Chicago and St. Louis; from there on, one fare, plus $2.
WISCONSIN STATE DENTAL SOCIETY.

The following officers were elected for 1898: Dr. C. W. Bennett, Monroe, President; Dr. J. H. Reed, Lancaster, First Vice President; Dr. L. R. Esau, Milwaukee, Second Vice President; Dr. W. H. Mueller, Madison, Secretary; Dr. Byron Douglass, Appleton, Treasurer.

BI-STATE DENTAL MEETING.

The Bi-State Dental Meeting of the Northern Indiana and Southwestern Michigan Dental Societies will be held at Elkhart, Ind., September 21–22, 1898. This meeting promises to be one of unusual interest and profit. All members of the profession are cordially invited to attend.

F. P. Adams,
Secretary,
Northern Indiana Dental Association, Elkhart, Ind.

NATIONAL DENTAL ASSOCIATION.

The first annual meeting of the National Dental Association will be held at Omaha, Neb., commencing at 10 A. M. Tuesday, August 30, 1898.

GEO. H. CUSHING,
Recording Secretary.

N. B.—I wish to state, owing to the conflicting stories in circulation regarding lack of accommodations at Omaha, that I recently visited there to make a personal inspection of the hotels, and found the accommodations ample and rates reasonable.

J. N. CROUSE,
Chairman Executive Committee.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the National Association of Dental Faculties will be held in the Mercer Hotel, at Omaha, beginning Friday, August, 26, at 2 P. M.

It is to be hoped that all members of the association will be present at that time.

The executive committee will meet on the preceding Thursday at 2 P. M. Colleges are notified to present their business at the first session of the committee. By order of

JONATHAN TAFT,
Secretary.
Chairman Executive Committee.

MEMBERSHIP AT NATIONAL DENTAL ASSOCIATION.

Pass Christian, Miss., August 2, 1898.

Editor Dental Review: Please call the attention of your readers to the fact that all permanent members of the National Dental Association, which, of course, includes all members of the Southern Branch, are entitled to all the privileges of membership regardless of the delegate feature. It is evident, from several letters received, that the erroneous impression prevails to some extent that the meeting at Omaha is to be composed exclusively of "elected delegates," and that even permanent members must attend as delegates elected by their State Societies. Several of the State societies have made the mistake of 'electing as
MEMORANDA.

651

delegates men who are already members of the National Association, thus defeating the principal object of the delegate feature—that is the increase of membership.

One and a third railroad rate has been secured for all obtaining railroad certificates.

Yours fraternally,

WM. ERNEST WALKER,
Assistant Secretary National Dental Ass'n.

THE SCHLEICH METHOD OF GENERAL ANÆSTHESIA.

Time and experience are confirming the value of the method of general narcosis proposed by C. L. Schleich, of Berlin, at the German Congress of Surgery in 1895, which is based on the logical principle that a narcotic substance inhaled is taken up more readily into the circulation and is then eliminated in the exhaled breath more rapidly and completely in proportion as the point at which it boils or vaporizes approaches or coincides with the body temperature of the inhaler. A nonvaporized narcotic, such as chloroform, whose boiling point is at 65 degrees C., is absorbed less readily, requiring a larger amount, is retained in the system more, and the task of eliminating it does not devolve upon the proper organ, the lungs, but upon the other parenchymatous organs, especially the liver, which explains the alterations in these organs after death from chloroform. If, on the other hand, a narcotic with a very low boiling point is administered, such as ether (boiling point at 34 degrees C.) the vaporization is so intense at the temperature of the body that it interferes with the respiration, hinders or prevents the disassociation of the respiratory gases, producing cyanosis, retention of the carbon dioxid, which is under less pressure than the super-vaporized ether, and also stretching and tearing the epithelium of the alveoles, leading to secondary pulmonary infiltration. He therefore proposed a triple combination whose boiling or "vaporizing maximum" is identical with the temperature of the body: petroleum, ether or benzin (with an established point at 60 to 65 degrees C.), sulphuric ether and chloroform, varying the amount of each in proportion to the rapidity of elimination desired, to secure a higher or lower boiling point.

Formula 1. For brief operations. The boiling point, 38 degrees C., coincides with the internal temperature of the body: Chloroform, 15 parts; petroleum ether, 5; sulphuric acid, 60. Formula 2. For operations requiring a little more time. Boiling point 40 degrees C.: Chloroform, 15; petroleum ether, 5; sulphuric ether, 50. Formula 3. For major operations. Boiling point 42 degrees C.: Chloroform, 30; petroleum ether, 5; sulphuric ether, 80. It is administered with a mask. The sleep induced is prompt and tranquil, resembling more the hypnotic sleep than ether or chloroform narcosis. There is no cyanosis, salivation nor accumulation of mucus nor consecutive pneumonia. There are no counter indications if the lungs are working normally. It has been said, "He has deprived anaesthesia of all its dangers." Meyer and Weidig consider even the small proportion of free ether in his formula a slight menace, and prefer a solution with the chloroform and ether in molecular combination, which requires petroleum ether with a little lower boiling point.
LIST OF COMMITTEES FOR THE JOINT MEETING OF THE SOUTHERN BRANCH OF THE NATIONAL DENTAL ASSOCIATION AND THE LOUISIANA STATE DENTAL SOCIETY.


Hotel and Quarters Committee: Dr. J. Rollo Knapp (S. B. N. D. A.), Chairman, New Orleans, La.; Dr. Joseph Bauer (S. B. N. D. A.), New Orleans, La.; Dr. Wallace Wood, Jr. (L. S. D. S.), New Orleans, La.; Dr. L. D. Auchinard (L. S. D. S.), New Orleans, La.

Hall, Exhibits and Arrangement Committee: Dr. L. D. Auchinard (L. S. D. S.), Chairman, New Orleans, La.; Dr. Joseph Bauer (S. B. N. D. A.), New Orleans, La.; Dr. Phil. Friedrichs (L. S. D. S.), New Orleans, La.; Dr. Chas. Mermilliod (L. S. D. S.), New Orleans, La.; Dr. A. J. Foret (L. S. D. S.), New Orleans, La.

No. 2. Committee on Clinics: Dr. T. P. Hinman (S. B. N. D. A.), Chairman, Atlanta, Ga.; Dr. J. Rollo Knapp (S. B. N. D. A.), New Orleans, La.; Dr. R. K. Luckie (S. B. N. D. A.), Holly Springs, Miss.

Committee on Clinics—Louisiana State Dental Society: Dr. And. G. Friedrichs (L. S. D. S.), Chairman, New Orleans, La.; Dr. J. F. Johnston (L. S. D. S.), Ruston, La.; Dr. L. D. Auchinard (L. S. D. S.), New Orleans, La.

No. 3. Committee on Publication: Dr. Shep. W. Foster (S. B. N. D. A.), Chairman, ex officio, Atlanta, Ga.; Dr. E. P. Beadles (S. B. N. D. A.), Danville, Va.; Dr. C. L. Alexander (S. B. N. D. A.), Charlotte, N. C.

No. 4. Committee on Oral Hygiene: Dr. L. M. Cowardin, Chairman, Richmond, Va.; Dr. S. W. Foster, Atlanta, Ga.; Dr. J. Percy Corley, Greensboro, Ala.; Dr. I. Simpson, Rock Hill, S. C.; Dr. B. F. Arrington, Goldsboro, N. C.; Dr. J. N. Crouse, Chicago, Ill.; Dr. W. T. Arrington, Memphis, Tenn.; Dr. L. Augspath, Little Rock, Ark.; Dr. S. Dickson, Bolivar, Tenn.; Dr. E. F. Adair, Harmony Grove, Ga.; Dr. F. G. S. Gorgas, Baltimore, Md.

No. 5. Committee on Prosthetic Dentistry: Dr. J. A. Dale, Chairman, Nashville, Tenn.; Dr. Geo. Evans, New York, N. Y.; Dr. Ed. Eggleston, Richmond, Va.; Dr. Albert B. King, Baltimore, Md.; Dr. W. H. Morgan, Nashville, Tenn.; Dr. J. G. Fife, Dallas, Texas; Dr. L. D. Carpenter, Atlanta, Ga.; Dr. W. H. Cook, Denton, Texas; Dr. J. L. Wolf, Washington, D. C.; Dr. Jas S. Knapp, New Orleans, La.

No. 6. Committee on Orthodontia and Oral Surgery: Dr. Geo. Hardy, Chairman, Baltimore, Md.; Dr. L. M. Cowardin, Richmond, Va.; Dr. A. R. Melendy, Knoxville, Tenn.; Dr. J. E. Orrison, Baltimore, Md.; Dr. W. W. Corley, Talladega, Ala.; Dr. H. Marshall, Atlanta, Ga.; Dr. Jules J. Sarrazin, New Orleans, La., Dr. E. P. Keerans, Charlotte, N. C.; Dr. R C. Young, Anniston, Ala.; Dr. F. L. Wood, Roanoke, Va.; Dr. Wm. J. Younger, Chicago, Ill.

No. 7. Committee on Operative Dentistry: Dr. J. G. Fife, Chairman, Dallas, Texas; Dr. A. P. Johnston, Anderson, S. C.; Dr. J. Edwin Boozer, Baltimore, Md.; Dr. J. E. Orrison, Baltimore, Md.; Dr. B. Holly Smith, Baltimore, Md.;
Dr. H. D. Boyd, Troy, Ala.; Dr. E. L. Hunter, Fayetteville, N. C.; Dr. L. A. Smith, Port Gibson, Miss.; Dr. Sam. Rambo, Montgomery, Ala.; Dr. C. Sill, New York, N. Y.; Dr. J. M. Quattlebaum, Columbia, S. C.; Dr. W. H. Burr, Madison, Ga.


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No. 10. Committee on Microscopy, Histology and Bacteriology: Dr. W. T. Martin, Chairman, Yazoo City, Miss.; Dr. H. A. Lowrance, Athens, Ga.; Dr. S. J. Cockrell, Washington, D. C.; Dr. S. G. Holland, Atlanta, Ga.; Dr. F. C. Wilson, Savannah, Ga.; Dr. V. E. Turner, Raleigh, N. C.; Dr. W. R. Clifton, Waco, Texas; Dr. B. Rutledge, Florence, S. C.; Dr. C. T. Brockett, Atlanta, Ga.; Dr. T. P. Hinman, Atlanta, Ga.; Dr. W. H. Ewald, Portsmouth, Va.; Dr. J. A. Tigner, Rome, Ga.

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Carnival Balls Invitation Committee: Dr. J. Rollo Knapp (S. B. N. D. A.), Chairman, New Orleans, La.; Dr. Joseph Bauer (S. B. N. D. A), New Orleans, La.; Dr. Wallace Wood, Jr. (L. S. D. S.), New Orleans, La.; Dr. L. D. Archinard (L. S. D. S.), New Orleans, La.; Dr. E. Telle (L. S. D. S.), New Orleans, La.; Dr. V. K. Irion (L. S. D. S.), New Orleans, La.

C. L. Alexander, Corresponding Secretary.

Southern Branch National Dental Association, Charlotte, N. C., July 12, 1898.
THE RELATIONS BETWEEN THE NOSE AND THE GENITALS.

Prof. John N. Mackenzie, *Johns Hopkins Hospital Bulletin*, states that the nose is a not insignificant index of the state of sexual affairs in the human family.

1. In a fair proportion of women suffering from nasal affections, the disease is greatly aggravated during the menstrual epoch or when under the influence of sexual excitement.

2. Cases are also met with in which congestion or inflammatory conditions of the nasal passages make their appearance only at the menstrual period, or at least, are only sufficiently annoying at that time to call for medical attention.

3. Occasionally the discharge from a nasal catarrh will become offensive at the menstrual epoch, losing its disagreeable odor during the decline of ovarian disturbance. In many cases of ozena the fetor is much more pronounced at times corresponding to those of the menstrual flow.

4. Excessive indulgence in venery sometimes seems to have a tendency to initiate inflammation of the nasal mucous membrane, or to aggravate existing disease of that structure. There are those, for example, who suffer from coryza after a night’s indulgence in venereal excesses, and the common catarrhal affections of the nose are undoubtedly exaggerated by repeated and unnatural coition.

5. The same is true in regard to the habit of masturbation. The victims of this vice in its later stages are constantly subject to nosebleed, watery or mucous discharge from the nostrils and perversion of the olfactory sense.

6. The existence of uterine or ovarian disease exerts an important influence on the clinical history of nasal disease. This fact has been shown in practice in cases in which the nasal affection has resisted stubbornly all treatment, and in which it has only been relieved upon the recognition and appropriate treatment of the disease of the generative apparatus.
ORIGINAL COMMUNICATIONS.

THE CERAMIC ART IN DENTISTRY.*

By John Egbert Nyman, D. D. S., Chicago, Ill.

Modern as is the application of this art in our profession, in itself it is one of the most ancient of arts, a mute witness testifying to the existence of man upon this earth in that dim, mysterious age known as the prehistoric.

The vast number of specimens that have been found in the barrows, as these ancient burying places are called, of England, Scotland, France and Scandinavia, have led scientific men to believe that it was practiced by the prehistoric races from the Neolithic age down; the specimens are vessels, most of them formed of coarse clay, the color varying from brown to gray and red, some of them of fine texture and with glazed surface, varying in size from those eighteen inches in height and twelve inches in diameter, to those of a four inch height and proportionate diameter. On some occasions prehistoric man cremated his dead and these larger vessels are usually found filled with burned bones, consequently they have been designated cinerary urns, while the smaller vessels are supposed to have been used in the religious rites, and then buried with the ashes of the dead, although some have been found which it is thought were used for domestic purposes.

And no mean artisan was this ancient inhabitant of the earth; these urns and cups are quite graceful in shape, ingeniously and sometimes lavishly decorated with carvings, all the work of his hands alone, for this was before the time of the potters' wheel. He baked them with fire, as the experts who have examined the

*Read before the Illinois State Dental Society.
numerous specimens in the British Museum have agreed; and, taking them all in all, surprising, indeed, was his skill, considering the age in which he lived and the circumstances amid which he worked.

Verily! Verily! Some things are not as new as we thought they were.

The art was practiced by the ancient Egyptians, who are also supposed to have invented glass, and about 4,000 years B.C., one of them invented the potters' wheel. The Assyrians practiced it, utilizing it in making imperishable literary and historic records; also the Phœnicians, Greeks and Romans and Chinese, each country giving some distinguishing characteristic to the porcelain of its manufacture.

The last of these, the Chinese, were probably the first to make porcelain which resembles the porcelain of to-day.

It may interest you to know that the name given to finest potters' clay, kaolin, was derived from the name of a mountain in China, called Kao Ling, which contained large deposits of clay of a very fine quality, by the use of which they were able to manufacture such beautiful porcelain. Other deposits of clay of equal excellence have been found in various parts of the world, but the Chinese name remains to-day the accepted one. All the modern peoples, the Italians, Persians, French, German, English and Americans are engaged in the art; their productions are something marvelous from a mechanical point of view; and from an artistic, beautiful beyond description.

HISTORY OF THE CERAMIC ART IN DENTISTRY.

Porcelain was introduced into our profession by the French about the year 1815, being utilized in the manufacture of artificial teeth. The result of their labors, however, was most unsatisfactory, the teeth having such low structural strength that they could not stand the force of mastication, almost invariably cracked upon being submitted to the high temperature necessary for soldering them to the metal plates, the coloring on them was crude, was solvent in the fluids of the mouth, and they were imperfect in size and shape.

For about twenty years little or no progress was made in the matter until Dr. Elias Wildman, of Philadelphia, made such improvements in the art that he was able to eliminate the hitherto
objectionable features and produce teeth of the most natural appearance and shape, which are said to compare favorably with those of to-day. According to Dr. Essig, Dr. Wildman should be given the honor of having first placed the manufacture of teeth upon a scientific basis.

Various methods were tried to obtain a porcelain compound which would fuse at a lower point than that of the teeth, so that gum restoration could be obtained, but little or no success attended the efforts until in 1846, Dr. John Allen, of New York, succeeded in compounding the long desired article, which, slightly modified, is even to-day probably the best porcelain compound that we have.

He demonstrated the possibility of gum contour and revived and firmly established the continuous gum denture.

**THE COMPOSITION OF PORCELAINS.**

The basic element of all porcelains is silicon; all the essential ingredients are chemical compositions of it.

Silica is a binoxide of silicon.

Feldspar is a double silicate of potassium and aluminium.

Kaolin, or potters' clay, is a hydrated silicate of alumina.

Silica is about the most infusible substance known, especially in the form of agate or flint. It is incorporated in porcelain body to maintain the molded or carved shape of the mass during the fusion, at the high temperature necessary, and to give structural strength to the porcelain mass after it has been fused.

Kaolin, or clay, is a necessary ingredient, because, by means of it, compounds containing it may be molded and carved in any desired shape; by itself it is quite infusible, but when mixed with feldspar it fuses with it at a high temperature; it is also an element of strength in the porcelain, but not to the extent that silica is.

Feldspar is necessary to give translucency, an enameled surface, and a uniform heat-conducting property to the mass so that the fused porcelain will not crack when subjected to the heat required for soldering metals.

The compounds when mixed together in certain proportions, which vary according to the opinions of the different manufacturers, is technically known as "body."

The colors used in tinting porcelain, technically known as "frits," are metals or metallic oxides as follows:
Gold for reddish browns.
Platinum for blue grays.
Titanium oxide for yellows.
Iron in combination with gold and oxide of titanium for neutral gray.

Silver and tin in combination with gold to form what is known as "purple of Cassius," giving the pink tint seen in gum enamel.

The process of preparing these "frits" is both chemical and mechanical, too elaborate to be given here and varying according to different manufacturers.

To insure a uniform tinting of the porcelain mass by the frits, and a perfectly glazed surface of the porcelain when fused, it is necessary to have what is known as "flux," which is a glass usually composed of silica, borax and oxide or carb. of potassium.

The various ingredients of the "body" are each finely ground, with the exception of the feldspar (which it is said loses some of its translucency if too finely ground at first), in a wedgwood or porcelain mortar. They are then mixed together in certain proportions, fused, and then reground, labeled "body," and placed aside for further use.

The coloring compounds are likewise ground, mixed together, fused, reground, and labeled "frits," yellow, gray, pink, etc., as the case may be.

The ingredients of the flux undergo a similar treatment.

Then body, frits and flux are mixed together according to the tint desired and in the proportions the manufacturer thinks best, and the porcelain compound is ready for use.

**EXAMPLE.**

\[
\begin{align*}
\text{Feldspar} & \quad \ldots \quad \ldots \quad 8 \text{ oz.} \\
\text{Silica} & \quad \ldots \quad \ldots \quad 6 \text{ oz.} \\
\text{Kaolin} & \quad \ldots \quad \ldots \quad 2 \text{ oz.} \\
\text{Silica} & \quad \ldots \quad \ldots \quad 8 \text{ ozs.} \\
\text{Borax} & \quad \ldots \quad \ldots \quad 4 \text{ ozs.} \\
\text{Carb. pot} & \quad \ldots \quad \ldots \quad 1 \text{ oz.} \\
\text{Oxide titanium} & \quad 40 \text{ grs.} \\
\text{Frit} & \quad \ldots \quad \ldots \quad 40 \text{ grs.}
\end{align*}
\]

The quantity of starch, about ten grains to the oz., is added to most of the compounds to increase the cohesion, so that when the molded mass is dry it may be handled and carved without danger of crumbling.
The fusing point of a porcelain compound may be lowered by: First, decreasing the amount of silica and increasing the amount of borax and carb. of potassium in the "flux."

And second, by decreasing the amount of "body" and increasing the amount of "flux" in the compound; but this lowers the structural strength and the mass is apt to lose its molded, carved shape, and assume a spheroidal form in fusion. This will be demonstrated when we come to review certain experiments.

As has been said before, the various processes, chemical and mechanical; the proportions, primary and secondary, vary according to the different manufacturers, each jealously guarding his secret, accounting for the variations, slight though they may be, of color and general appearance among teeth and porcelain compounds from different manufactories.

EXPERIMENTS.

In view of the absence of accurate data in regard to the fusing points, crushing points and shrinkage of the different porcelains, and of the widely varying opinions of different members of our profession, based upon their clinical observations, I undertook some experiments to settle, if possible, these much mooted points. At present I will but give you the results of the experiments, wishing for the time being to keep the methods by which I obtained them to myself, assuring you that later on they will be made public and submitted to whatever criticism you may see fit to make.

Here I beg to digress a moment to express my gratitude to the following gentlemen, without whose aid I should not have been able to have successfully concluded my experiments. To Drs. F. B. Noyes and G. A. Thomas; and in an especial manner to Drs. G. V. Black, W. V-B. Ames, G. W. Schwartz, L. K. Stewart and Mr. C. F. Bryant; Dr. Black having, upon hearing of my work, placed his magnificent scientific apparatus at my disposal, and Dr. Ames having thrown open to me his splendidly appointed laboratory.

The following porcelain compounds were tested: Ash's, Brewster's, Closes', Downies', Consolidated, Johnson & Lund's, Moffat's, Rose's and Wyatt's, with these results:
After completion of the experiments the writer concluded that the above results were not a true indication of the relative structural strength of the different compounds from the fact that the cubes tested were so small (3x3x2.5 mm., this size being the largest that would fit into the points of the crushing machine used) although he believes it to demonstrate that the high fusing compounds are of greater structural strength than the low fusing.

In order to ascertain about what strain the average bicuspid and molar porcelain crown would withstand, the writer constructed what he thought was an average size crown of each of these, identical in every way with a crown that would be constructed for practical purposes. They were ground off flat on both top and bottom; the dimensions were as follows:

<table>
<thead>
<tr>
<th></th>
<th>BICUSPID.</th>
<th>MOLAR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top to bottom</td>
<td>7 mm.</td>
<td>7 mm.</td>
</tr>
<tr>
<td>Mesio-distally</td>
<td>4 mm.</td>
<td>8 mm.</td>
</tr>
<tr>
<td>Bucco-lingually</td>
<td>6 mm.</td>
<td>6 mm.</td>
</tr>
</tbody>
</table>

Justi teeth and Close's porcelain body were used. These were then tested at the Armour Institute of Technology in a standard testing machine (made by Riehle Bros., of Philadelphia) by Mr. E. C. Kerr, the professor of mechanical engineering, with the following results:

<table>
<thead>
<tr>
<th></th>
<th>BICUSPID.</th>
<th>MOLAR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cracked</td>
<td>1,740 lbs.</td>
<td>2,230 lbs.</td>
</tr>
<tr>
<td>Crushed</td>
<td>2,240 lbs.</td>
<td>4,020 lbs.</td>
</tr>
</tbody>
</table>

These results seemed astonishing, and as the average crushing force of the human jaw is about 175 lbs., the writer believes that this demonstrates beyond doubt that the average porcelain crowns have strength sufficient to withstand any pressure that may be brought to bear upon them in mastication.

*The piece of Consolidated porcelain body upon examination was found to be a very faulty one, full of air bubbles, and the result noted should not be taken as the true crushing point of the body. It is without doubt much higher than the figure given.*
I might also say in passing, that, from clinical experience I prefer Close's body, although I find it necessary to grind it finer than it is as prepared for the market.

It is very strong, carves nicely, adheres firmly to the metal structures, and cracks so little when properly manipulated that I am frequently able to complete a crown with but one fusing.

**METAL STRUCTURES FOR PORCELAIN WORK.**

Pure platinum for bands and caps.

Iridio-platinum for posts, beams, and braces. These are the only metals, suitable for use in the mouth, whose melting point is higher than that necessary for the fusing of the porcelain compound. The statement that pure platinum is as soft as pure gold is incorrect.

Platinum is harder than gold, unannealed eight to five; annealed six and one-half to five. Judging from a clinical standpoint it seems to be about as pliable as twenty-two k. gold.

**SOLDERs.**

Pure gold may be used if the different parts of the metal structure are in actual contact. The gold then seems to act as a flux, welding the parts together, so that they will not separate even when exposed to a temperature higher than the fusing point of gold. No attempt, however, must be made to jump joints or fill in crevices with gold in soldering; if this is done the parts of the metal structure will separate, when the fusing point of gold is passed, in the fusing of the porcelain compound, and the shrinkage of the porcelain in fusing is extremely likely (especially if it is a bridge) to pull the parts of the metal structure out of their relative positions to one another, ruining the work beyond repair, just as it was about to be completed.

And even if, by some inexplicable good fortune, this warping does not occur, there will be an unsoldered joint, held only by the porcelain compound; a weak point which will almost certainly give way when the bridge is subjected to the force of mastication.

The writer feels positive that this is the cause of failure in a large percentage of the failures met with in porcelain bridge work.

Open joints must be filled in by packing in platinum foil, or more preferably, forcing in slightly wedge shaped pieces of iridio-platinum plate, if gold is to be used in soldering the structure.
PLATINUM SOLDERS.

During the past year we have had brought to our notice the best one thing that has been given to porcelain workers in a number of years, viz., a solder by means of which joints can be jumped when necessary, and the use of which dissipates all danger of unsoldering the parts of the metal structure in the fusing of the porcelain compound. It has been designated platinum solder by the man who invented it, Dr. W. V-B. Ames, of Chicago, to whom, by the way, our profession is indebted for many things it has never given him credit for.

It is an alloy of gold and platinum in certain percentages, ten, twenty, thirty, forty and fifty per cent.

If thirty per cent platinum solder is used, there need be no fear of open or unsoldered joints after the case has been completed, that is if any of the porcelain compounds, except Johnson & Lund's have been used; if joints are to be jumped and that body be used afterward, you must jump them with fifty per cent platinum solder.

METHOD OF MAKING PLATINUM SOLDER.

The proper proportion by weight of platinum or gold is obtained, for example, if twenty per cent solder is desired it will be, platinum six grs., gold twenty-four grs.; thirty per cent, platinum nine grs., gold twenty-one grs., etc. The platinum should be rolled out in a thin ribbon, as thin as possible, and about one-eighth inch in width. The pure gold is melted in a globule and the platinum ribbon fed into it; after that has been done the mass resulting should be rolled out as thin as possible, cut into ribbons, and remelted as before; this repetition of the first melting process insures an even distribution of the platinum through the mass; it is then rolled down to about ga. thirty-four, properly marked and it is ready for use.

A Knapp blowpipe will be necessary for the manufacture and use of the platinum solders, the gas blowpipe being insufficient for anything above ten per cent.

INVESTMENTS.

Investments may be of the following materials:
Plaster, silex, asbestos (fine), equal parts.
Plaster and asbestos (fine), equal parts.
Fine asbestos and water.
Plaster investments, with potassium sulphate added, stand high temperature with less cracking than investments without it.

Investments should never come in contact with water after they have hardened. Do not boil out the wax. Soften with dry heat, pick out with instruments, and dissolve out the residue with chloroform. There will be less shrinkage and cracking under high heat when treated in this manner.

Teeth should be coated with shellac, which, under high temperature, forms a protecting film of carbon upon the facings, preventing etching by the silex in the investment, and lessening the danger of cracking.

It is not my intention to rehearse and reiterate that which is common knowledge with most of us, so I shall omit the usual description of the continuous gum set and its method of manufacture, considering only the elimination of that universal objection to it, its weight; this may be reduced by using very thin platinum (thirty-two ga.) for a base, reinforced by iridio-platinum wire across the heel and a double thickness of plate in the anterior portion.

Dr. Thomas has tested plates constructed after this method by putting one upon the floor and allowing Dr. York to walk upon it; he broke the cusps off several teeth but failed to crack the plate.

These plates have no greater weight than the average gold plate, and have sufficient strength to stand the masticatory force of the jaws; unfortunately, however, this method is not applicable in partial sets.

A framework of iridio-platinum wire should be made to support continuous gum sets while fusing them.

CROWNS.

Close, short bites should be avoided; cases should be selected with rare judgment as to articulation and probable stress.

Bands should be of twenty-eight or twenty-nine ga. pure platinum; caps of thirty ga.; posts of iridio-platinum, sixteen ga. for molars, centrals, and cuspids; eighteen ga. for laterals and bicuspids.

Roots should be cut off at gum margin, so as to allow of as large a mass of porcelain in the crown as possible.
Roots canals should be enlarged and posts fitted, however, before root is completely cut down; a crooked or thin root may prevent your enlarging the canal to sufficient depth to admit of a post long and strong enough to support the crown, in which case a portion of the root should be left above the gum margin to assist in the retention of it.

Countersunk holes may be drilled in caps from the lower side with a cone bur to assist in the adhesion of porcelain compound to cap.

All sharp edges and angles in the metal structure should be rounded off, the porcelain body fusing on it with less cracking if this is done; the facing should be so ground as to allow it to come down on the band as indicated in Fig. 1; this will give a more artistic effect than can be secured if the facing is ground even with the band, allowed to project a little and then body fused in between it and the band (see Fig. 2 point A).

The difficulty of securing artistic results in crowns will depend largely on the contour of the gum margin. If the margin is as indicated by the solid line in Fig. 3 then it is comparatively easy, but if it is as indicated by the dotted lines in this figure you have a difficult case to deal with.

To start with, the buccal side of that root cannot be beveled with a wheel without mutilating the gum margin at that point beyond repair; it should be beveled with a flat faced chisel.

After trimming and beveling the root proceed as follows: Fit the band as indicated in Fig. 4, then mark the gum margin carefully and mark out a V shaped section on the buccal side (see
Fig. 5); cut this out with a pair of fine scissors, being careful not to cut clear through the band, replace it on the root and burnish this part from which the section has been cut back against the beveled surface as indicated in Figs. 6 and 7.

The top is now ground even with the flat surface of the root, the cap soldered on, and the worst is over.

There will be no harm done if the edges of the band at point A Fig. 7 are not in actual contact and soldered, as the joint will be covered by the porcelain body afterward.

NECESSITY FOR PROXIMAL AND GINGIVAL CONTOUR.

The necessity for proximal contour in crown bridge work is just as great as it is in compound fillings. The interproximate spaces adjacent to a crown must be protected or soon the gum tissue there will show signs of irritation and inflammation, the first stages of a pathological condition which will mean a short period of usefulness of the crown, with continued discomfort for the individual wearing it.

The writer also wishes to call attention to a new point, viz., the necessity for gingival contour.

He believes that the many instances of inflammatory and congested conditions of the gum margin around the crown, particularly on the buccal side, are due to the fact that the crown has not been contoured so as to resemble the natural tooth crown at that point.

A cross section of a tooth cut off at the gum margin will be represented by Fig. 8, the shaded sections representing the enamel; as a rule, after the crown has been constructed and attached to the root, a cross section at the gum margin will appear as in Fig. 9. It will be readily seen that at the gum margin a space has been left, represented by the dotted lines, that was formerly filled by the enamel; as a result the gum does not hug the crown as closely
as it did the natural tooth, and débris of food will gradually work in under and cause trouble.

The crown should be contoured by fusing body over the band so that a cross section at the gum margin would appear as in Fig. 10. There is no danger of the porcelain flaking off the band if the gauges of band, cap and post are of the size advised in the first part of the paper.

As to whether this is a matter important enough to be made a principle of practice, I need only say that my views in the matter are fully endorsed by no less authority than Dr. C. N. Johnson, of Chicago, who, after listening to what I had to say about it and examining some practical cases in the mouth, fully appreciates the necessity for gingival contour.

LENGTH OF POSTS.

If the length of the post from the cap to the end of the post is equal to the distance between the cap and the tip of the highest cusp of the crown, the post is of sufficient length to withstand any strain, as there will be no chance for a leverage to be exerted in stress upon it. (See Fig. 11.)

A post of the length from B to D will be of sufficient length to securely maintain the crown, the length from B to D being equal to that from A to B; a post extending only from B to C would be too short for security and one from B to E longer than is necessary.
ORIGINAL METHOD FOR CLOSE BITE ON ANTERIOR TEETH.

It so happens that often in the very place where we most desire to make use of porcelain crowns, viz., in the region of the anterior teeth, the articulation is such that the edge of the lower incisors strikes just about at the point where the pins in the porcelain facing would be; and if the crown were made in the usual manner there would be but a thin veneering of porcelain over those pins, which would give way as surely as twice two are four. After considering many methods to avoid this danger the writer finally hit upon the following:

In the construction of the crown as large a post as is possible is used. This is adjusted so that the lower incisor almost touches it in occlusion; it is then ground down on a bevel, as indicated in Fig. 12; the facing is ground in place, waxed up, and invested; the pins are bent down as far as possible and ground flat; then a piece of fourteen ga. square iridio-platinum wire is rolled down to sixteen ga. and adjusted and soldered on top of the post and pins and the incisor is allowed to strike on that; the porcelain is afterward baked on about the crown as usual, leaving this piece of iridio-platinum exposed; this takes the entire brunt of the bite and removes the danger of fracture of the crown at its weakest point. The appearance of the finished crown from the lingual surface is shown in Fig. 13.

BRIDGE WORK.

If rare judgment is to be used in selecting cases for porcelain crown work, still rarer judgment must be used in the selection of
cases for porcelain bridge work. The bite should be long enough to admit, on an average, a minimum thickness of porcelain of at least four mm.; there should be at least half as many abutments (favorably placed in regard to stress) as the total number of teeth in the bridge, and there should be a normal articulation.

Avoid arranging the metal structure so that any one point exposed to the force of mastication will be covered with only a veneer of porcelain.

The different parts of the metal structure of the bridge, bands, caps, posts, beams, cross-beams and saddle, should be assembled, soldered together, and then tried in the mouth; for if there is any little alteration to be made, such as burnishing the saddle a little tighter to the gum at any one point or bending the structure at any place to secure a perfect fit, it can be done then much better than after the facings have been soldered on.

**Advisability of Using Saddles.**

This is quite a mooted point in porcelain bridge work, but the fact that porcelain facings on the ordinary gold bridges are frequently imbedded in the gum in a haphazard manner, without any pathological condition arising therefrom, has led the writer to believe that the proper kind of saddle, accurately fitted, is no more apt to cause such a condition; but, on the other hand, will strengthen the bridge (by making it a two beam bridge, which any civil engineer or bridge builder will tell you is stronger than a single beam one), and is a much more comfortable denture for a patient than an open bridge, under which food is constantly crowding, seldom to be completely removed and frequently imparting a very unpleasant odor to the breath.

A saddle should never be used if the missing teeth have been but recently removed and complete absorption has not taken place.

But there are saddles and saddles, and one as indicated in Figs. 14 and 15 will almost always give trouble and should never be used; and from conversations with men for whose opinion I have great respect and whose condemnation of saddles was pronounced, I found that they based their opinions on the observations of just such saddles as Figs. 14 and 15 illustrate.

There is so much motion in the tissues around the edge of such a saddle in mastication and swallowing that a tight joint can-
not be secured without imbedding the saddle so deeply in the tissue as to cause either hypertrophy of gum, or atrophy, which will leave a crevice that will be a perfect catch-all for débris of food.

But a saddle as indicated by Fig. 16, if carefully adjusted, as it may be by a method I will refer to later on, and the edges carefully rounded and polished, when completed is perfectly advisable and may be used without danger of unpleasant results.

**METHOD OF OBTAINING ACCURATE FITTING SADDLE.**

Upon obtaining the impression, with the abutments, caps and posts in position, before pouring the model trace the outlines of the saddle, as you wish it to be when completed, with a fine pointed instrument; take a piece of sheet lead, rolled to thirty-two gauge, and burnish it down on the impression, trimming it to the outline traced; then pour the model, and upon removing it from the impression the sheet lead is removed and the model will be found more accurately deepened than could have been done by scraping by hand; and a saddle fitted to that model will, when finished and placed in the mouth, imbed itself in the gum just the thickness of thirty-two gauge plate and no more. It may occasionally be necessary to do a little burnishing when it is tried in, but in the majority of cases a saddle fitted according to this method will not require any alteration whatever.

**BRIDGE WORK WITHOUT SADDLE.**

Still, if you cannot be induced to believe in saddles, you can obtain the strength, but not the opportunity for restoration of lost parts, by adopting the method devised by Dr. G. W. Schwartz, of
Chicago, of, in addition to the horizontal cross beam, inserting a second beam bent so as just to clear the gum. When the bridge is completed the lower edge of this second beam is exposed its entire length, although it does not come in contact with the tissues at any point. This method, however, requires a comparatively long bite to obtain satisfactory results.

METHOD OF ATTACHING BAR TO SHELL PLATINUM CROWN.

It may be that owing to the peculiarity of the articulation at the posterior abutment of a porcelain bridge it is deemed necessary to construct a shell platinum crown. If the bar used as a cross beam is soldered to the shell crown with thirty per cent platinum solder, it will be securely attached beyond all possible danger.

Numerous failures, however, have been experienced by a number of very skillful men when the soldering was done with gold, although the contact was as perfect as they could make it. The weight of the bridge causing a tendency to sag in the middle when under high heat and either draw the bar away from the shell crown entirely, or enough so as to weaken the joint, with the result that sooner or later, under the force of mastication, the bridge breaks at that point.

The writer has devised the following method of attaching that bar so that there is no danger of its giving way, either during fusion of the porcelain or when in use in the mouth, even if it has been soldered with gold:

The band having been adjusted, a flat cap is soldered to it; a square bar is selected for a cross beam; place it upon the cap and mark its outlines; ascertain its thickness, add to this the thickness of the plate in the cap and mark it upon the mesial side of the band. (See Figs. 17 and 18.)

The cap is ground through at point A, then with a Gordon-White separating saw, saw into the cap along the two dotted lines to point B and at the same time into the band along the two dotted lines to point C. Then turn up the flap A B and turn out the flap A C.

Slip the bar into the opening letting it extend under the cap past the point B, then clamp both flaps upon it tightly, there will then be an attachment that when soldered with pure gold will never give away under any circumstances, the following figure will illustrate a cross section of the completed joint.
METHOD OF MAKING SOLID PLATINUM CUSPS.

Even the best of us are forced at times to do a little grinding of the cusps to relieve some little peculiarity of articulation which could not be foreseen.

For a number of years the writer has used solid cusps, so that this might be done without danger of cutting through the metal cusps and exposing the cement, as would be the case if a shell cusp were used.

There is the same good reason for using solid platinum cusps, if platinum shell crowns are made use of.

They may be constructed by first swaging a platinum shell cusp, and then swaging platinum sponge or foil into it until it is filled, then soldering it together with gold or platinum solder, ten per cent, carrying it to a high heat.

CAUTIONS IN REGARD TO ARTICULATIONS.

The usefulness of a bridge is frequently impaired and cusps are broken off of them because the articulation has not been properly devised.

The jaws have a lateral motion in articulation, and if the cusps are closely dovetailed, as in Fig. 20, that motion is prevented; the articulating surface should be formed as indicated by the dotted lines.
Sometimes regulation is necessary before the construction of a bridge should be attempted.

Suppose, for instance, that the inferior first molar and second bicuspid have been lost, the chances are that the second molar has tilted forward and the first bicuspid tilted backward, as indicated in Fig. 21; it will be readily seen that the roots are at such an angle one to the other that when the bridge is completed it will be almost impossible to get it on, especially if the posts are of the length they should be; and many a bridge is constantly loosening and being reset simply because the posts had to be cut off so short to get the bridge on, that they are of no use for retention.

But there is another feature to be considered: Suppose a bridge is constructed according to the dotted lines in Fig. 21. The pressure upon the roots is doubled, and, because of the tilting, it is concentrated upon the mesial half of the molar roots, at points A A, and the distal half of the bicuspid root, at point B, consequently the pressure will be four times greater than normal upon these surfaces, and an attempt at mastication will probably result in such pain that it will be abandoned, and the bridge will be of no service to speak of; even if pain, by some miracle, should not result, the concentrated pressure will induce a pathological condition resulting in the loosening and the eventual loss of the roots, bridge and all. I trust that this feature will be so manifest to you that you will always bear it in mind. I recall two cases now of beautifully constructed bridges that were of no use whatever owing to just this condition of affairs.

Correction of these irregularities will render the construction and insertion of the bridge an easier matter and will insure a longer period of usefulness of it to the patient.

METHOD OF ATTACHING CROWN AND BRIDGE WORK WITH CEMENT WITH THE POSSIBILITY OF REMOVAL WITHOUT MUTILATION.

Many the time have many of us wished that we could remove a crown and bridge without mutilating it, and welcome, indeed, will be an ideal method of attachment which will permit of it.

Attachment with gutta-percha does, it is true; but it is so difficult of manipulation I have never been able to operate it to my own
satisfaction, and it is too yielding to be a secure means of attachment when subject to more than the average strain in mastication.

Attachment with cement is the most secure from all points of view; the cement in itself is firm and unyielding, and it is adhesive to a remarkable degree.

The writer of late has been using the following method to set crowns and bridges with cement, and yet enabling him to remove them without mutilation. It is very simple:

The post (which should be unnotched and tapered) and the underside of the cap is coated with a film of thin sandarac varnish; this is allowed to thoroughly harden and the crown is then set with cement as usual.

This thin film of varnish while in no wise lessening the security of attachment, upon heating, softens and breaks the adhesion of the post and cap with the cement, allowing the crown or bridge to be readily removed.

PORCELAIN INLAYS.

Porcelain inlays, when made and used in the usual manner, are so seldom a success that I do not believe in them at all, except when used to fill buccal cavities in the incisors and bicuspids, and even then when made by burnishing thin platinum into the cavity as a matrix and fusing the porcelain compound into it, afterward stripping off the platinum, the result is usually an artistic failure, as the porcelain compound when fused in such small quantities seldom comes out exactly the same color twice.

My method is to select a tooth facing the proper color, grind a section of it to fit the margins of the cavity as closely as possible, then burnish in the thin platinum matrix, place this section in the matrix, fill in the crevices between the matrix and the section with Downie body of the nearest color, and fuse; stripping off the platinum afterward, then setting with cement.

The fusing of the Downie body in no wise affects the color of the section and the result is the most artistic that may be obtained.

It has been my experience and my observation that porcelain inlays in compound or grinding surface cavities last but a very short time, and the percentage of failure is so high that the use of them in such places should be abandoned.

The only opportunity for permanency that I can imagine would be in large cavities, which would permit of a large mass of porce-
lain in the inlay, but this would mean such an immense loss of tooth structure that the frail walls would probably fail at some point, so that is would be better to cut off what was left of the tooth at the gum margin and crown the root.

CAUTIONS IN REGARD TO DISCOLORATIONS.

A discolored portion of porcelain will spoil the appearance of what might otherwise be a most artistic piece of work, and the causes are likely to be so unsuspected that one may be at loss what to ascribe it to.

If there is a dust of gold or platinum filings on the table at which you work while putting on and carving the porcelain, there is mixed with them probably some particles of iron from the file, and if the compound comes in contact with this dust there will be a discolored portion at that point when the porcelain has been fused.

If there are metals in solution in the water that you use there will be discoloration.

If you grind the porcelain after the first baking with a carborundum wheel or point, there will be a discoloration at that point after a second fusing. So, to avoid these, dust off your table carefully before commencing your work; if you must lay it down and leave it a while, cover it with a glass cover. That known among jewelers as a "movement cover" is the best for the purpose.

Use distilled water in mixing and applying the compound. If any grinding is done with carborundum, dress down the surface left with sandpaper disks.

Observance of these precautions will avoid the danger of discolorations.

METHODS OF HIDING SLIGHT CRACKS IN PORCELAIN FACINGS.

By some misfortune a slight crack may occur in a porcelain facing, and, while causing no weakness in the case, may be extremely unsightly; this can be perfectly and permanently hidden by simply immersing the case for fifteen minutes in liquid albolene. Upon taking it out, washing and drying it, the crack cannot be detected, and, under the moist condition of the mouth, it will never make its reappearance.
RESTORING ENAMEL SURFACE TO PORCELAIN FACINGS AFTER GRINDING.

It is sometimes necessary, to obtain artistic effects, to grind the buccal surface of a porcelain facing. The enamel surface may be restored to a facing so ground by painting the surface with a thick solution of borax and water, and then heating the facing to the melting point of gold, or by painting the surface with liquid silex, letting it dry and then heating it to a point half way between the fusing point of gold and that of Close's body.

CARVING OF PORCELAIN.

An idea of what can be done in the carving of porcelain can be readily formed by those who have seen the beautiful work exhibited by Dr. Schwartz here at this clinic. There is no easy method by which it may be accomplished.

Close steady of natural teeth, with practice in carving modeling compound, continued with perseverance, will finally enable one to obtain the most artistic results.

Further, artistic results may be obtained by tinting surfaces and staining sulci with the Dresden porcelain paints.

Gold fillings may be imitated by grinding a slight concavity in the facing and fusing into it Marsching's Roman gold for china decorating, afterward burnishing it with a glass burnisher.

Your success in this work will depend entirely upon your skill, together with the patient, persevering endeavor with which you attempt to carry it out.

METHODS OF FUSING PORCELAIN.

Most of the methods of fusing porcelain are familiar to you. The coke, oil and gasoline furnaces are quite out of date; the gas furnace almost so since the advent of the electric furnace.

The old time methods were so laborious and the furnaces so cumbersome that many shunned the work. The results were uncertain; scarcely two pieces ever fused to the same degree of nicety; more cases overfused or underbaked than were fused just right.

Of the gas furnaces the only effective one I know of is the one invented by Dr. G. W. Schwartz. With it Close's body can be fused in three to four minutes. Unfortunately he has, up to the present, applied his principle only to smaller furnaces for crown and short bridges, not having as yet constructed any large enough for continuous sets.
The most ideal method of fusing porcelain is by electricity. The heat can be increased so gradually, can be so perfectly controlled, and the results are so uniform that this method excels all others.

Still the ideal furnace remains to be devised. They are most capricious things at present. Without any warning there may be at any time a splutter and a flash and the furnace is "burned out."

The electric furnaces of the muffle type are the simplest and the most easily repaired. They are very good for fusing crowns and short bridges, but the center of the muffle attains a higher degree of heat than either end, so that a case which fills the entire muffle will be overfused in the middle by the time the ends are fused.

The Custer furnace, owing to its shape and construction, attains a uniform degree of heat in all portions of it, consequently from a crown to a full upper set can be perfectly fused in it.

The intricacy of the wiring, however, makes it very difficult of repair, and the imbedding of the wires in the fire clay increases the liability of its "burning out." Dr. Custer, however, has improved his furnace greatly, by bringing his wiring to the surface of fire-clay instead of completely imbedding, thereby doing away with disagreeable flaking of the clay, and lessening, to some extent, the danger of burning out; and by so shaping the two halves of the furnace that when open a case may be put in or taken out much more easily than formerly.

POSSIBILITIES AND PROBABILITIES OF PORCELAIN WORK.

Porcelain prosthesis offers the highest possibilities to be found in prosthetic dentistry.

It is strong, clean and accurate.

There is difficult detail about it, to be sure; but, on the other hand, there is no "backing" of facings, and better still, no tedious polishing to be done as in gold work; it comes from the furnace finished, with every surface most beautifully enameled.

There is no harrowing fear that facings will chip off.

Cusps may be built up and depressions formed to perfectly accommodate the most unique articulation.

It permits of the most beautiful carving and tinting and of such perfect restoration of lost parts that the expert is really able to "hold a mirror up to nature."

Is it to become a permanent method of practice, or is it to
suffer the fate of fads? If the steady increase in the practice of
the work that has been seen in the last few years is any criterion,
and if the results of experimental investigations and practical tests
of time count for anything with the profession, then surely its
future is fair and certain. But, alas! alas! in the very places
where it should be encouraged and taught, it is being neglected
and ignored.

In all the world there are at present but two dental colleges
that give scientific, systematic instruction in this work. There is
surely enough merit in it that the student should go forth fully
instructed and competent to practice it.

Still, he who undertakes the work must be prepared to calmly
face a few failures until he has become an expert.

In the past years when the work was in an experimental state,
the writer had enough of them to sicken one’s soul. They stag-
gered, but did not stop him; and looking back now he feels that
each taught him some needed lesson. He is now firmly convinced
of its mechanical and artistic merits, and urges its adoption and
practice by the whole profession, for it is the very acme of pro-
thetic art.

THE PREPARATION OF CAVITIES.*


No house was ever built but it might have been a little better.
No watch ever made by the hand of man so perfect but it might be
a more accurate timer or more beautiful in finish. No cavity in a
tooth was ever so well prepared and filled but a master might crit-
icise it adversely, and a more skillful mechanic might have per-
formed the work better.

Hence, “line upon line” from various individuals and differ-
ent standpoints; of discussion and demonstration, which will
literally never end, until the last caries inducing microbe shall have
been killed or perpetually enjoined.

Permit me then to ask your attention for a little while to the
preparation of cavities in teeth from a mechanical standpoint.

I have on former occasions in dental societies raised a doubt
as to the mechanical ability of the average dentist, and the dental

* Read before the Illinois State Dental Society.
mechanic has in each instance been valiently defended by his brethren, as was to be expected. Nevertheless I have no hesitation in expressing my conviction before this body, that not only is the average dentist a poor mechanic, but that the expert is a rara avis in the dental profession.

Humiliating it is, indeed, to see evidences of inadequate skill or to find in our own case, as I often do, that we are not equal to the mechanical requirements of a case. Let us learn to do the work before us at least as well as other mechanics do their work in their specialties. I know workmen in other lines who might well laugh to scorn the bungling efforts of the average maker of artificial dentures; jewelers who put us to shame in handling and working the precious metals.

I know the custom of lauding the fine finger craft (?) of dentists; but I prefer to take the unpopular side, and direct your attention to the filling which might have been beautiful and substantial, but was a miserable failure from the lack of knowing what to do and how to do it.

The preparation of a cavity has been likened to the foundation for a house; but the analogy is wanting for the reason that a good house (superstructure) may be built on a poor foundation, while it is mechanically impossible to build a good filling into an incorrectly prepared cavity. Indeed, after an experience of twenty years, I am strongly of the opinion that the preparation of the cavity is, mechanically and scientifically, very nearly seven-eighths of the entire filling operation.

The formation of cavities has been taught in various ways—by drawings, diagrams, models and by actual cases in the clinic.

Drawings are almost never true—they need to be "allowed for," as the ladies say, which is almost equivalent to using one's own judgment; models may be said to represent ideal rather than actual cases; the clinic at the chair is of course the best of all, giving all the circumstances and difficulties as they would be met in one's own practice.

While we cannot use the clinic in this discussion I propose by utilizing the science of photography to approach nearer to it than would be possible to me in any other way.

Before coming to the illustrations, may we briefly consider some of the requirements of the different classes of cavities?
First, there is the filling which is designed merely to stop a hole, called by our professional forefathers “plugs.” These include cavities in occlusal surfaces, buccal cavities not involving the occlusal surface, labial cavities and a few approximal cavities.

The requisites are, carious dentine removed with the possible exception of a small portion nearest the pulp, fissures followed to their termination, strong walls very slightly divergent from without inward, and smoothly beveled margins.

Second, approximal cavities in incisors. Here we need beauty and grace of outline; conservation of the labial wall when possible; plenty of room in which to operate, obtained by wedging and free sacrifice of the lingual wall; ample retention against force of the opposing jaw which is directed both outwardly and laterally, to be obtained by general shape, and broad, shallow opposing grooves, together with retaining pits or corners only sufficient to fix the first pieces of gold.

Third, approximal cavities in bicuspid and molars.

Here in addition to the requirements of class two, we must have a formation of cavity calculated to sustain sufficient bulk of filling material to withstand the enormous stress of the forces of mastication, restore contour and preserve the interproximate space.

These latter qualifications have been especially emphasized during the last few years, but that has only been necessary because the profession failed twenty years ago to recognize the genius and heed the teaching of the immortal Webb, a man whose words and work were well nigh a generation in advance of his time. It was my fortune to enter the dental profession during the period when the Arthur theory of treatment and prevention of decay was exerting its greatest influence. “Contact is dangerous” was the doctrine, and the dental profession bowed down before it. So-called permanent separations were the accepted practice and forthwith disks, chisels and files of various diabolical shapes were devised and used with zeal, for the dental mechanic is nothing if not enthusiastic.

During the ascendency of this theory, namely in the year 1873, I well remember hearing, in the city of Philadelphia, a paper by a pale young man from the country town of Lancaster, describing several extensive contour operations, in which he said, “The teeth operated upon, when completed, touched each other as in
nature." And the most of the wise men there present shook their heads deprecatingly, but one said, "Gentlemen, we must look to our laurels, the young men are coming to the front." Prophetic words, as we now know.

Gradually the essential truth of the new theory made its way and now behold—after twenty-five years, the opposite end of the seesaw is up and your enthusiastic operator, who has been told that teeth should be restored to full contour with all that it implies, is diligently at work cutting away the approximal surfaces of all teeth operated upon—in other words, "extending for prevention," and using as it seems to me as little discrimination as did the permanent separationist of twenty-five years ago.

What conclusion are we to draw from the foregoing facts? Surely none other than that the dental profession as a class is a great company of hobby riders. Dr. Robert Arthur was not a fool. Although an extremist, he was a great teacher. All great teachers of the world have been extremists. There was good in the Arthur theory, and is to-day, if rightly put in practice; likewise there is good in the teaching of the present, respecting contour and "extension for prevention," but if carried to the extreme often advocated, it becomes reckless audacity. For myself, I would rather, in many cases, take the chance of a second or third operation which may never be necessary, than to practice universally the extensive cutting one hears so much about nowadays.

Let us not blindly follow a dogma for the same reason that we change the cut of our trousers, namely, because it is the fashion.

I recognize here the danger of being misunderstood, but shall hope to make my meaning unmistakable by means of the illustrations to follow.

In undertaking to illustrate by photographic lantern slides the preparation of cavities for filling, I am perfectly aware that I am accepting a large contract. It is said that "fools rush in where angels fear to tread." The "angels" have, so far as I know, feared to enter this particular field, leaving it to me, the other fellow, to rush in.

However, as I wish to show you actual teeth and not models or drawings, I choose this as the most feasible way to show and talk about the same thing to all at the same time. If I pass around the specimens for your inspection, you may be looking at a molar while I am talking about an incisor, or vice versa. I therefore invite
your attention, first, to cavities in incisors and show you four typical forms. First, a cavity in an incisor as shown here on the screen, where decay has been of slight extent. Access is gained by cutting away the lingual plate of enamel, enlarging sufficiently to render manipulation direct and positive, but no more. With margins clear and strong and the cavity only a little larger inside than at the orifice, I would proceed to fill. He who would cut away the entire approximate surface in such a case to restore with gold, is, in my judgment, a meddler—a dental jeweler—nothing more. If the patient is less than twenty-five years of age, this cavity will probably need refilling in five or ten years, but it will be just as likely to need refilling if a more radical operation is made at this time.

As the second type of cavity in incisors, I show you this one in which caries has been more extensive. The object here is to conceal the gold and leave a filling when completed, that will be largely self-cleansing. To this end the labial plate of enamel, or dentine and enamel, is retained in all but a very small minority of cases. As in the first type, the lingual wall is freely sacrificed and the work performed entirely from the inner (palatal) aspect. The cervical margin is carried far enough rootwise to be clear of contact with the adjoining tooth, and made reasonably straight and slightly countersunk. The labial margin will usually come somewhat further toward the labial face of the tooth than in this instance. It is to be made true and smoothly beveled with chisels and just perceptibly grooved, if thick enough to admit of it. The point of the cavity toward the incisive edge is deepened to form a retaining corner.

The lingual wall is brought well into the body of the tooth, which facilitates access and gives a broad overlap of gold to receive the stress of occlusion. Many fillings of this type, if not planned and constructed with great care, are driven out laterally by the force of the opposing tooth.

The third type of cases includes those cavities in which caries has progressed so far toward the incisive edge as to render unsafe any undercutting for retention at this point but where, for æsthetic reasons, it is desirable to retain the labial plate of enamel. In such a case the lingual plate is removed for a sufficient distance from the incisive edge rootwise, and extending into the body of the tooth far enough to make possible a step. This is to be deepened at its
extremity, squared and made retentive. The remaining labial wall is beveled and so protected by the gold as to present the smallest area to forces tending to break it down. I believe Dr. C. N. Johnson, of Chicago, was the first to publicly describe this form of cavity, although it has been practiced by myself and perhaps others for a dozen years or more.

In the fourth type we simply go a little further—cut away the weakened labial wall and incisive edge, make our step longer and broader and proceed with our wholesale restoration. I show you this tooth before and after the preparation.

Cavities in cuspids have ever been regarded as among the most difficult to properly prepare and fill, especially upon the distal surface. The bicuspid adjoining is always in the way. It has been my custom for many years to prepare those cavities in such a way that the introduction of the filling may be done mostly in line with the long axis of the tooth, very little lateral work being necessary. The lingual wall is freely removed and a dovetailed step cut into the body of the tooth, of sufficient depth and breadth to give ample retention, and bear the stress of the opposing tooth (an exceedingly difficult case to photograph and I fear but indifferently shown).

Owing to the difficulty in securing bicuspid teeth suitable for illustration, my remaining slides are all made from molars, but for the most part the principles are the same in both classes. The first case is that of an upper molar in which is seen an amalgam filling, a rough, illy condensed mass, placed in a badly planned, poorly prepared cavity. The margins, as you see, are irregular in the extreme, and in two places badly chipped, and yet, although this filling has been in use many years, and the tooth was finally lost from other reasons, there is not a particle of decay anywhere about it.

I show you another similar case in which caries has extended slightly at one of the cervical angles. The point I raise is this: Did not the dentist who made these fillings do his patient a good service and, given better mechanical execution, would it not have been a better and altogether a more acceptable service than a more heroic operation would have given?

Before answering this query, we will assume that this cavity is to be refilled, and proceed to prepare the cavity scientifically as nearly as we are able.
Here we have a direct lateral view. The cervical margin is carried almost to the cementum and the lateral walls widely extended and beveled. This one shows the occlusal surface and the extent to which the coronal fissures have been cut. We have now consumed approximately an hour of valuable time, besides inflicting a good deal of pain, and to what end? Renewing the question of a moment ago, "Which of the two operations is the better for the case?" I mean as to the extent of cutting presuming the first operation to have been well done. I would answer for myself, "that depends." If the patient is past middle life and the destructive agencies which produce caries are losing, or have evidently lost, their activity, I should say by all means the more conservative operation is indicated; because, even though a lapse of years may show some slight extension of caries, the chances are altogether that it will progress so slowly that the patient will have good use of the tooth as long as needed. Then in the small number of cases where it may prove necessary, a second operation or a slight repair is entirely practicable. On the other hand, if the patient be between twenty and thirty-five years of age and caries still active, no radical extender for prevention would be more insistent than I upon the importance of heroic measures.

I have here another molar which I present for your consideration. Two methods of preparation suggest themselves again—the conservative and the heroic. I show you the former as my answer to the question "Which?" Strong walls remain after thorough excavation, which in the absence of special reasons, it would be in my judgment, a sin to cut away. Here we have a direct view of the occlusal surfaces. In most cases of this kind the two cavities here shown would better be joined together, not because there is any particular danger of failure at that point, but the finished filling will present a more acceptable appearance if so joined.

Lastly, I show you this extensive approximal cavity, and ask you what we shall do with it. Here the enamel is undermined in every direction and hangs over, thin and jagged. Evidently none but the most heroic measures will avail.

This is a lateral view giving the general outline. The articulating face of the buccal cusp is removed and the remaining pillar beveled to an obtuse angle—the cervical wall is carried to the cementum through its entire length—the extreme edge
beveled and the floor slightly countersunk. The lateral walls are grooved at a little distance from the edge, and a second floor or step cut into the body of the tooth, obliterating the anterior sulcus and grooves; more clearly shown in the next slide, as is also the beveling of the buccal cusp.

I have thus endeavored to indicate to you some of my ideas on the preparation of cavities. They are based upon a somewhat varied experience covering a period of twenty-five years, and I give them in no spirit of dogmatism, but for just what they are worth. My plea is, first, for better mechanical work in our great calling; second, for a reasonable conservatism in the planning of operations, together with sufficient knowledge and so-called "nerve," not to hesitate at the most heroic measures when clearly demanded of us.

Note.—The illustrations used by Dr. Hanaford showed very nicely on the screen. It is to be regretted they could not be used to good advantage for printed cuts.—[Ed.]

THE INTRODUCTION OF GOLD IN LARGE CAVITIES.*

By Edward A. Royce, D. D. S. Chicago, Ill.

Several years ago while discussing a paper read by me before this society the remark was made: "If some way could be found to relieve the dentist of the great physical strain attendant upon the insertion of large gold fillings it would be fully appreciated by the profession." This suggestion stimulated me to work out the practical application of certain ideas which I had entertained for years, first, that of procuring a mallet with an easily controlled, rapid, positive blow; second, proper forms of plugger points, and the easiest and most effective manner of using them.

From the different mallets which I have used I selected for alteration the Bonwill mechanical No. 2, as the one capable of giving the most positive and rapid blow but which required so much manual dexterity in its manipulation that it is not as extensively used by the profession at large as it merits, so the first thing considered was the simplification of this instrument so that the man with ordinary skill could use it. The principal difficulty seemed to be that in attempting to control the instrument by the finger or

*Read before the Odontological Society of Chicago.
thumb through the opening in the side of the mallet, the free movement of the plunger point was prevented. To avoid this the finger ring and small projection at the side of the brass tube were removed and the opening in the side of the rubber tube closed. By this arrangement the control of the point was lost and to regain this the sides of the instrument were shaped so that the retaining springs held the point from turning in the tube and when necessary to turn the instrument the tube was rotated in the hand. The screws holding the small springs which retain the instrument in the mallet were replaced by others with slightly larger heads.

Another portion of the mallet which received my attention was the plunger which conveys the blow to the instrument. This plunger is of steel, and in order to give a dead blow a piece of wood is set into the end that comes in contact with the instrument. This is all right in theory, but so far I have failed to find wood hard enough to stand the work I demand of a mallet without battering down so as to spoil the adjustment; therefore, to make this part more durable, I cut the wood off even with the steel and cut off the shaft of a large wheel bur to one-fourth of an inch and set the bur in the wood, grinding the head to the proper adjustment. I now had a mallet whose action and instrument I could easily control, and I find that a mallet thus constructed and properly adjusted, with the instrument nicely fitted so as to take the full impetus each time is extremely easy to manipulate, and will give as rapid, positive blow as any mallet in the world. If at any time greater speed is required than can be obtained from the engine, an extra lug can be put in the wheel which delivers the blows, thereby giving two blows for each revolution of the engine. This makes the mallet more practical for the foot engine. The limit of speed is controlled by the rapidity with which the springs throw the instrument back against the plunger; as high as 12,000 blows a minute have been obtained, but probably 8,000 blows are more practical.

The principal advantage I get from a rapid mallet is the great saving of time by wiping the gold to its place, and this can be done in two ways, both of which require the same points. The first requires a slow speed of from 700 to 1,200 blows, with slight pressure upon the instrument. The second requires a speed of 3,000 to 8,000 blows, and the instrument is carried just clear of the filling, allowing the point as it is projected by each blow to
strike the surface and thus condense the gold. When the conditions are favorable this method is much more rapid than the other, but with either of these methods you can sweep the instrument over the gold in the same manner, and as rapidly as you can seal an envelope with a single sweep of your thumb—but to do this your plugger points must be the right shape and have the right kind of serrations.

At first I used in the rapid mallet flat, serrated points, but found them unsatisfactory for general use because of their liability to catch the gold, dent the fillings and the constant care required to keep the face of the point parallel with the surface of the gold. In the oval serrated points the difficulties were less marked but not entirely removed. The smooth points are ideal for wiping gold, and there are some operators skillful enough to always strike the fine line between thorough condensation and burnishing—just as there are operators who can successfully use the most complicated mallets—but unfortunately they are the few, so it was necessary for me to find something new which would combine the good qualities of all these points without their disadvantages. As you all know, I am thoroughly impressed with the fact that physical law controls completely and absolutely the action of gold under the plugger point. This being the case, I have been able to construct points which I believe will meet the requirements of the profession at large. These points have oval faces and sides, and all sides are serrated in a manner as to leave the surface in the proper condition to receive the next piece of gold, and still the serrations offer the least possible resistance to the movement of the plugger over the gold, thus enabling one to rapidly wipe the gold into its place. For years the introduction of gold was, to me, the most difficult and trying part of the insertion of large gold fillings, but with the appliances which I have tried to describe at hand, the operation is so easy and the time consumed so shortened, that the physical strain of gold work has been greatly reduced. Of course, impossibilities cannot be performed and care must be taken to fill all inaccessible portions of the cavities will this, just as with any other method of condensing gold, but with the force that can be obtained from the mallet, properly delivered, the gold can be worked at the will of the operator. The sides of the filling should be carried up ahead of the center and the gold wiped from the center toward the sides, and when the margins (which should be nicely beveled) are reached the gold can be carried over them in much the same manner that
the cook carries the crust over the edge of the pie plate, and almost as easily.

It is, as you know, quite impossible to convey any adequate knowledge of an operation by description, but if any of you will investigate this method of filling large cavities with gold, you will find that while the operation is so simplified as to appear to the casual observer like a reckless or careless operation, it is in reality thoroughly scientific and based upon positive laws.

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By Dr. C. P. Pruyn, Chicago.

Clinic No. 1. Patient, Dr. W. A. Johnston, Peoria, Illinois. Applied the dam to the L. L. second and third molars, using one hole in the dam for both teeth, driving an orange wood wedge between the teeth. The result was good separation and thorough dryness. A disto-occlusal cavity in the second molar and a mesio-occlusal cavity were beautifully prepared and thoroughly filled with Fellowship alloy. These fillings bore a good polish, and will be of interest to the society one year hence.

By Dr. G. W. Schwartz, Chicago.

No. 2. Patient, Dr. G. A. Miller, Chicago. Porcelain crown. Tooth, right lower first molar. Carved and baked from Close's body, no facing being used. The reason for not using facing is that a better anatomical reproduction can be made by modeling from body entirely. The advantages are:

1. The ability to properly contour for both contacts, mesially and distally, and proper occlusion as well.
2. The absolute cleanliness and natural appearance.
3. The ability to properly prepare root and restoration of interproximate space.

This was a very perfect piece of work.

By Dr. Levitt E. Custer, Dayton, Ohio.

No. 3. Successfully demonstrated new process of fusing platinum, using Edison 110-volt current, a process quite valuable as an adjunct to our present laboratory methods. All scrap platinum is readily utilized by this method.
No. 4. Patient, Dr. Moorehead, Aledo. Gold filling. Cavity, mesio-occlusal right upper first bicuspid. The seat of the cavity might have been a little more square and all fissures cut out complete. The manipulation in making the filling was excellent and the finish good.

No. 5. Gave a clinic on making and tempering instruments, making various forms of chisels, excavators and pyorrhoea instruments, giving in detail instructions in the successful working of steel.

No. 6. Exhibited new methods and appliances for regulating and retaining the teeth, all of which are entirely new and original. Dr. Case's paper read before the society gives a very clear idea of the uses of these valuable appliances.

No. 7. Patient, Mr. McCogan, Chicago. Gold filling, disto-occlusal cavity. First superior bicuspid. Separation was made with Perry separators. The preparation of the cavity was thorough; filling made of Kearsing's pellets; pneumatic mallet used; good contact point made; good finish and excellent result.

No. 8. Engine exhibit. The peculiarities and benefits claimed by the inventor of this engine are, the combination for all operating attachments, viz., right angle, without the necessity of slip joint combination—foot power, water power and electricity, with a mechanism for shutting off, turning on at will any power used in the engine itself; also, pneumatic mallet attachment. This was an interesting clinic.

No. 9. Removal of plug, cataphoresis. Present. No patient found, though a strenuous effort was made by both supervisor and local committee.

No. 10. Absent and excused.
No. 11. Solida gold filling. Patient, Dr. W. F. Lawrence, St. Louis, occlusal cavity left lower third molar. The use of this gold is inclined to lead to hurried operations with untoward results. The preparation of cavity would have been better had more of the distal wall been removed. The manipulation of the gold was good and finished satisfactorily.

BY DR. A. W. M'CANDLESS, CHICAGO.

No. 12. Demonstrated by models the preparation of roots for porcelain crowns, showing the use of carborundum wheels and Starr root instruments. This work was excellent.

BY DR. R. C. BROPHY, CHICAGO, ILL.

No. 13. Demonstrated a method of casting aluminum. A full upper denture was cast, using the Whitley Dental Furnace and laboratory gas system. The plate was cast by a new method, neither pneumatic pressure nor suction being employed. By this method either full or partial plates with teeth attached may be cast with assurance of good results.

The Whitley Dental Furnace and laboratory gas system used in this work may be employed for porcelain work, fusing metals, refining gold, vulcanizing, etc. A blowpipe is attached with which all kinds of soldering can be done successfully in any office, as gasoline is used. This was a very excellent clinic.

BY DR. THOS. L. GILMER, CHICAGO.

No. 14. Will give surgical clinic if suitable case can be procured. Present. Only one patient available, and that for implantation, and for this case there could be procured no tooth desirable.

BY DR. A. W. HARLAN, CHICAGO.

No. 15. Pyorrhoea. Absent. Satisfactory excuse given.

BY DR. GEORGE A. THOMAS, CHICAGO.

No. 16. Platinum band fitted on left superior lateral incisor, using pure gold for solder. A platinum pin was attached to the cap, allowing the pin to extend downward an eighth of an inch. A plate tooth was then selected and ground to fit into position. The pins of tooth were then pressed around the pin of cap closely
to hold while putting on porcelain preparatory to baking, after which the crown was baked in Custer's furnace. Under favorable conditions this work can be performed in forty minutes. The result was a very substantial and artistic piece of work.

BY DR. L. W. SKIDMORE, MOLINE, ILL.

No. 17. Dr. Skidmore’s method of preserving what natural teeth a patient may have, to serve as a guide, in setting up artificial teeth, was clearly demonstrated by use of models, etc. This procedure will often serve a good purpose both in aiding the operator in reproducing natural facial expressions and showing the patient at later sittings the exact position occupied by the natural teeth prior to extraction.

BY DR. JOHN G. HARPER, ST. LOUIS, MO.


BY DR. W. H. TAGGART, CHICAGO.

No. 20. Carving porcelain. Absent.

BY DR. J. W. WASSALL, CHICAGO.

No. 21. Bridge attachments to teeth with living pulps. Dr. Wassall’s method is as follows:

The bicuspid, cuspid, lateral or central, is prepared with double compound cavities having parallel and perpendicular walls; a flat base and no undercuts. Sufficient of the lingual cusp of the bicuspid and the nodules of the anterior teeth is removed to allow the gold covering to intervene in occlusion. Mesial and distal surfaces are ground as nearly perpendicular as is consistent with good looks and a perfect impression.

Impressions in gutta-percha are obtained and dies made of Mellotte's metal. On this die 120 rolled gold foil is burnished over the lingual proximal or cutting edge as the case demands. The edges proximally extend no further buccally or labially than can be thoroughly cleansed by brushing. When adaptation is perfect the foil is waxed, removed and invested in plaster and silex. Thirty gauge clasp metal is sweated bit by bit until the whole surface of the foil is covered. Where the edges do not perfectly unite twenty carat solder may be used to advantage.
Bridges constructed in this manner are assembled in usual way. For this method it is claimed great strength, perfect adaptation, cleanliness and the exhibition of but little gold. Much skill was manifested in the entire work.

BY DR. J. E. NYMAN, OF CHICAGO.

No. 22. Patient, negro, name unknown. After the removal of the pulp of a right superior lateral by Dr. Windhorst, of St. Louis, Dr. Nyman removed the enamel, trimmed the root for a band and enlarged the root canal for a post. Subsequently Dr. Thomas made and mounted a porcelain crown as shown in clinic No. 16. Suitable cases for porcelain crown work were hard to obtain and the work in this case was divided with happy results.

BY DR. GEO. M'MILLAN, ALTON.

No. 23. Bleaching. Patient, Mr. Thos. Hayes, Springfield. Teeth bleached, left upper central and lateral. The dam was applied, cavities thoroughly excavated, root canals filled with gutta-percha and about one-third of the root canal fillings removed and twenty-five per cent sol. pyrozone applied and dried out with hot air. This was repeated until a very perfect result was obtained. The enamel surfaces of the tooth were bathed with the twenty-five per cent solution repeatedly. Cavities filled with Dr. Ames' cement.

BY DR. GEORGE D. SITHERWOOD, BLOOMINGTON, ILL.

No. 24. A practical case in orthodontia, using the Angle method. Patient, Ralph Shickle, Bloomington, Ill., twelve years old. Had been under treatment ten months; most promising results. Patient was wearing stay plates pending the eruption of superior cuspids. Good progress and very instructive clinic.

BY DR. C. B. SAWYER, JACKSONVILLE, ILL.

No. 25. Demonstrated by models method of making gold crown and producing occlusion, as follows: After preparing the root two measurements are taken, wire with dentimeter and thin strip of copper. The wire loop is placed on the end of a piece of hard wood, after which strike it with hammer. Then trim the wood to mark and shape the band on the wood. Place the band on the root, fill with soft modeling compound; obtain bite of
antagonizing teeth. The band is then removed, and cusps carved up in the impression material; then make an impression of crown in moldine and make a die of fusible metal.

Dr. Sawyer usually swages the cap on the end of the block of pine instead of making a metallic counterdie. Cusps are always reinforced, using small bits of plate scrap cut very fine.

Much care was given to produce perfect occlusion and to preserve the interproximate spaces by properly contouring the crown. This was an excellent clinic.

BY DR. H. J. GOSLEE, CHICAGO.

No. 26. Exhibited extensively prepared models carved in plaster, preserving in a remarkable degree the occlusion of opposing teeth.

All crowns and crown cusps were shown in gold, producing a most interesting and instructive clinic.

The completeness of the clinic enabled the doctor to show the various steps and the accuracy resulting therefrom in the construction of crowns and bridges. His methods were as follows:

After the band is fitted a bite is taken, followed by an impression. The model is procured, the bite adjusted to same and placed upon an articulator.

After separating, the surfaces of the occluding teeth are varnished; the band is then filled with soft plaster and articulator closed.

After hardening, this plaster outline is trimmed into form of typical tooth, without interfering to any extent with the various points of occlusion.

The imprint of the cusps is then procured in moldine and die and counterdie run. Either a swaged or solid cusp can be used.

In bridge work the same procedure applies. The abutments are made first and models with same in position are placed upon articulator. The facings for articulating "dummies" are selected, ground and backed, one pin of each being allowed to remain projecting in a crooked position. The facings are then held in position on model from buccal side, leaving backings exposed, against which soft plaster is now poured to receive imprint of occluding teeth. This plaster is held firmly in contact with facings owing to pins being left as described and is trimmed into desired forms of
teeth represented. Dies are secured and cusps reproduced in metal (gold) with this desirable prerogative. They can be swaged separately or collectively (two, three or four in one piece). The time consumed is but little greater than required in the selection of suitable cusps from any other system, and the results more accurate.

BY DR. H. I. POTTS, BLOOMINGTON.

No. 27. Patient, office boy of Dr. Grafton Munroe. Tooth, left upper central incisor; cavity, mesio-occlusal. (Step cavity.) Gold filling. Rowan's dec. gold rolls and platinum gold folds used. Preparation of cavity good, contour properly restored, result excellent.

BY DR. J. N. CROUSE, CHICAGO.

No. 28. Use of oxychloride of zinc instead of clamps in the application of the rubber dam. Excused from clinic because of his duties with the Dental Protective Association. Lack of time.

BY DR. ELLIOT R. CARPENTER, CHICAGO.

No. 29. Use of cocaine in applying clamps in gingival cavities. No patient found by supervisor of clinics.

BY DR. C. N. JOHNSON, CHICAGO.

No. 30. Preparation of cavities in natural tooth forms. Exhibited a number of typical cavities prepared in ivory tooth forms. This exhibit was most interesting and instructive. Of the many excellent clinics Dr. Johnson has given our society, this is one of the best so far produced.

BY DR. E. MAWHINNEY, CHICAGO.

No. 31. Bleaching. Absent.

BY DR. E. J. PERRY, CHICAGO.

No. 32. Pyorrhoea. Absent.

BY DR. TRUMAN W. BROPHY, CHICAGO.

No. 33. No. 1.—Hypertrophy of the third division of the fifth pair of nerves. Male, aged seventy-five years. The patient had been suffering with facial neuralgia extending over a period of fifty years. During the past fifteen years the paroxysms of pain occurring at frequent intervals on an average of once in every fifteen minutes, or upon the slightest irritation, such as touching the ends of the beard, would at any time bring on a spasm of pain.
The patient's condition was rather feeble, pulse intermittent; his circulation, however, seemed to improve under the influence of the ether, the heart beats becoming quite regular.

The operation consisted in making an external incision over the ramus of the jaw, exposing the bone from the sigmoid notch downward; a strong bur was then employed to remove a portion of the bone from the sigmoid notch downward, to a point corresponding to the position of the inferior dental foramen, the piece of bone was then removed, nerve exposed, seized by a tenaculum, drawn downward and separated from the ganglia, after which traction was made in the opposite direction and the nerve was removed entire from the inferior dental canal.

The wound was closed, surface dusted with boracic acid, dry gauze applied, and the patient left in charge of Dr. Prince, to whom we express thanks for the courtesy he extended to the society, and Dr. Brophy in placing at their disposal his thoroughly equipped operating room in his sanitarium.

No. 2.—Cyst. Patient, male about thirty five. The cyst was situated nearly opposite the left second bicuspid, buccally, caused by the irritation set up from a chronic abscess. It was opened, contents evacuated, curetted, irrigated and packed with borated gauze. After treatment to keep thoroughly clean and allowed to granulate from the bottom, keeping lips of wound open.

BY DR. F. H. STAFFORD, CHICAGO, ILL.

No. 34. To reproduce gutta-percha carved cusps in fusible metal, the same to be used as dies for solid gold reproduction. The methods are as follows:

Take great care that the band is fitted properly to the root and cut the correct length, with due allowance for the cusps, and contour to fill the space in an artistic and accurate way. Now take warm gutta-percha, much in excess of the amount to make the cusps, place this in the band and have the patient close the jaws, thereby giving the exact occlusion. When this is done and the gutta-percha well hardened, the teeth are opened, band removed, and the surplus gutta-percha is trimmed off with a warm instrument sufficient to expose the edge of the band, in order to allow for the thickness of the gold used for the cusps and to be enabled after swaging and trimming to evenly approximate its edges with the band, otherwise it would be too large.
To make a solid or cast cusp the same procedure applies, with the exception that in outlining gutta-percha cusps it is permitted to remain continuous and flush with the outside edge of the band; now remove the gutta-percha, fill the band with wax, take impression, place on articulator, remove wax and adjust the gutta-percha. This serves also to prove the bite; now make imprint in plaster or moldine; if plaster is used wait a few minutes till it hardens, now place an ordinary sandpaper disk on the mold, making sure that the small hole comes over the deepest part of the cusp; now take a small piece of rubber tubing one inch long, having small bore and thick walls, place this on top of the disk seeing that it fits down accurately, allowing none of the fusible metal that you now pour into the tube to escape around the disk. Waiting a few seconds you withdraw the tube, metal and disk, break the disk off and you will have a button or die to make a solid gold cusp. Tightly draw some rubber dam over the cusp, and press same into cuttlefish bone. Now with a nugget of gold into a carbon block, while in a molten state, pour gold into the cuttlefish bone impression and flatten instantly with a case knife, remove, place in acid and you will find an exact reproduction in gold of the carved gutta-percha cusp.

To make one of these cusps with a stem on it, make imprint in plaster or moldine as before stated, but instead of a disk take a piece of vulcanite or plate rubber the size of your mold, in the center cut a hole a little smaller than the button you want to cast, placing the tubing on it, and pour fusible metal into the tube; the sheet rubber will serve to keep the metal from escaping; when cool remove the tube and rubber disk and a cusp with a stem will be accurately made.

BY DR. JOSEPHINE D. PFEIFER, CHICAGO.

No. 35. Frosted aluminum plates by first applying a saturated solution of caustic soda slightly warmed, then nitric acid.

This leaves the surface clear and slightly granular. Plates so treated remain cleaner in the mouth and present a very attractive appearance.

BY DR. R. GOOD, CHICAGO.

No. 36. Pyorrhœa. Patient, Dr. York. Dr. York was so busy assisting Dr. Brophy with surgical case that no time was found for this work.
No. 37. Amalgam demonstration. The demonstration was so exhaustive and the results have not all been submitted, but the work showed considerable thought and labor; it is of much value to the profession inasmuch as it clearly demonstrates the shrinkage and expansion of amalgams.

No. 38. Demonstrated a method of producing an intra-dental band. This clinic was excellent. By this process it becomes possible to save teeth that would otherwise be lost. Full description with copious illustrations were exhibited by the operator.

No. 39. Gave an interesting exhibit consisting of a combination clamp and press to be used in both metallic and vulcanite work in laboratory.

No. 40. Exhibited a new separating varnish consisting of an aqueous solution of shellac. Its advantages were that it flows readily, easily diluted, clean, stains model thoroughly, at the same time obviating the necessity of using oil, thus avoiding bubbles.

No. 41. Exhibited a detachable spring for retaining artificial dentures in place, consisting of a wire extending from a pin about the base of the second bicuspid back to the "heel" of the plate, with a small coil at this point, thence to the "heel" of the opposite plate with another small coil, thence to the pin at the base of the second bicuspid, in said opposite place, making a spring, which, from its shape, does not interfere with mastication or any movement of the jaw. A practical case exhibited.

No. 42. Patient, Dr. E. Lambert, of Springfield, Ill. A continuous gum plate demonstrating the methods of placing a half round wire back of the teeth, soldering the wire pins of teeth together, thus greatly reinforcing the plate on the ridge where the strength is essential. This work was done before the society, from the impression to placing the plate in the mouth.
Dr. Edmonds swaged this aluminum plate without "annealing or battering" by first having the counterdie cover only the palate portion of the die and using a ball of wet paper between counter-die and aluminum plate, striking the die lightly until the plate is drawn down, then using a counterdie covering the whole of the die to turn the rim of the plate, still using a small quantity of wet paper.

The plate was swaged without removing the polish. Good clinic.

The growth of interest in our annual clinics, the diversified fields of labor found in so progressive a profession as ours, and the constantly increasing number of operators capable of giving valuable demonstrations in all branches of our chosen work, combine to produce a difficult task for supervisor of clinics and assistants. We need more space and better facilities than could be procured at this session. Many clinicians were crowded, and more clinics could have been given had space been available. Your committee would suggest not a curtailment of this valuable work, but a renewed effort to meet the demands of the hour. This report in detail, it is hoped, is just, and so written as to help those who failed to attend our meeting.

Respectfully submitted.

E. K. Blair, Supervisor.
G. V. Black, Assistants.
E. Lawley York, Assistants.

Report of Committee on Art and Invention.*


Since our last meeting eighty-five patents have been issued on instruments and appliances pertaining to dentistry.

Of this number but few can boast of being entirely new and original, the greater number being improvements on old devices.

Your committee respectfully submits the following appliances for your consideration:

1. Dr. Fourt's Articulator, manufactured by the Marshall Dental Manufacturing Company, Des Moines, Iowa.—The particular advantages claimed for this articulator are its lateral and in-

*Read before the Illinois State Dental Society.
cising motions. The ball and socket joint is absolutely tight, as the balls corresponding to the condyles of the human jaw, are held against the walls of their sockets by the tension of concealed springs.

It has two flat surfaces allowing it to rest equally well on either; a great convenience, obviating the necessity of taking apart, and preventing tipping. It opens at a right angle, facilitating the setting up of cases and lessening the danger of dropping one plate while working on the other, in full cases.

The upper jaw piece is adjustable longitudinally, but sets in a slot, rendering it rigid and avoiding possibility of lateral displacement, and is gauged so that it can be changed with accuracy.

2. Dr. R. C. Brophy, of Chicago: Dental Laboratory Gas System.—It is designed particularly for practitioners who have not ordinary coal gas to use. By its use, equally as well as with coal gas, can vulcanizing, melting metals, heating water, acids, waxing up, soldering, porcelain work, casting aluminum, refining gold, etc., be done. A gallon of gasoline will run the generator one day at full blast, so the expense is merely nominal.

Dr. Brophy will demonstrate this apparatus at the clinic.

3. Dr. B. J. Cigrand, of Chicago: System for producing an interdental band.—This consists of two trephines of sizes usually desired for banding the interior ten teeth, and a gauge-mandrel which has two stumps which are the exact complement of the trephines. If it is intended to band a root of the size of the large trephine, the gauge-mandrel indicates on its side nearest the large stump the exact size of the gold necessary to fit the selected trephine.

The trephine is so constructed that the face of it is slightly larger than its body; this allows the instrument to cut without pinching. It has two large slots in its circumference, and this admits of the steel yielding in the event of uncertain leverage, and the teeth of the trephines are modeled after those of the log circular saw, and the small grooves leading from the teeth permit the sawed dust to escape without clogging the instrument. It requires but a few revolutions of the trephine to effect a perfect intradental groove. The band is usually made of gold, but may be of iridio-platinum. In setting a Logan crown by this method the band is cemented into the groove independent of the crown and the crown is attached by means of cement on the post with a disk of gutta-percha or chlora vulcanite at the joint end. The Rich-
mond crown can also be constructed with intradental band and mounted the same as the Logan.

4. Dr. J. W. Hard's, South Tacoma, Wash., Universal Forceps, wherein the gripping device will automatically adjust itself to all parts of the tooth to be extracted.

5. Dr. Kirkwood's Annealing and Sterilizing Combination.—This combination is a compact, convenient apparatus to be screwed to the corner of an operating table. It consists of a Bunsen burner, cotton tank, cotton waste catch, curved support for hot air syringe, tray for annealing gold, sponge holder, water tank, tube for annealing alloy, tray for annealing gutta-percha, and curved support for instruments.

Dr. Kirkwood will demonstrate this apparatus at the clinic.

6. Dr. Spooner's Dropper.—This dropper is made of glass, having a sharp end which can be screwed into a cork. As the dropper enters the fluid the same rises to its level. On taking it out of the liquid and holding horizontally no flow takes place. Thus it will not leak over the table in transferring from bottle.

7. Spooner's Cement Mixing Tab.—This tab contains about one hundred parchment leaves, to be used in place of glass for mixing cements. The advantage claimed for this is, that it does away with the necessity of washing glass slabs after mixing cement. In the tab, a leaf is removed after each mixing.

8. Dr. R. A. Dunlap's, Carrollton, Ohio, Safety Impression Cup.—The object of this cup is to prevent the plaster from falling into a patient's throat when taking an impression for a full upper denture. It consists of a safety cup attached by a spring to the end of an ordinary impression cup fitting automatically to any mouth.

9. Clamp and Press, by Dr. O. L. Bandy, LaSalle, Ill.—With this device a dentist is enabled to swedge any kind of metal in making plates. It has a combination hammer which can be used while the clamp holds the dies in place. There are many other features of this clamp which will be demonstrated at the clinic room.

10. By Frink and Young, Chicago: A New Hand Piece, Universal and Simple.—The locking device is a spiral eccentric and clutch. This will be exhibited at the clinic.

11. The Gould Fountain Spittoon, by J. P. Von Lackum & Co., Chicago.—A spittoon constructed with double bowl and hav-
ing two revolving arms to distribute water. Flushes bowl from upper edge and water passes directly downward instead of having rotary motion.

12. Dr. Spooner's Quick Filling Syringe.—This syringe is designed to save time. It is so constructed that water can be quickly drawn into the syringe and be evacuated in a fine stream.

13. Rubber Dam Spreader, by Dr. S. E. Knowles, San Francisco, Cal.—The claim made for this spreader is, that it is easily adjusted, and when adjusted will hold the rubber so that there will be no loose ends in the way of the operator.

14. A Method of Making Dies Without Sand, by Dr. J. P. Palmer, Chicago.—Prepare the mold in the usual way and give one coat of shellac, oil the surface, wipe off all excess. Then mix equal parts of fiber asbestos and plaster, take impression of model as high as plaster is intended to go, remove the model from the impression before the plaster is very hard, and dry out over a gas burner for one and one-half hours, then pour the metal into hot mold.

15. From Dr. L. G. Noel we have some samples of medicated thorns from the prickly pear tree, which he uses for the filling of root canals in the anterior teeth and the lower bicuspids.

16. The Black Diamond Wheel Co., of Chicago, has sent some samples of their black diamond wheels, which they guarantee to wear even and true, and not susceptible to heat or moisture. Any one wishing to try these wheels may do so at the clinic.

17. A Hand Piece, by the Dental Protective Association.—This hand piece can be set in three different positions by a simple sliding bar, and is held rigid at right angle, half right angle and obtuse angle.

18. Deflectejector, by Dr. J. E. Nyman, Chicago.—This instrument is designed for attachment in place of ordinary saliva tube. It depresses and deflects the tongue and provides an exit for the saliva. It can be held by the patient during an operation.

19. A New and Simple Pattern of the Berry Electric Dental Engine, resembling the old style foot machine in appearance, doing away with the belts, brackets and ceiling attachments. Was exhibited by Dr. Thomas, of Chicago, with the Berry Electric Silent Lathe.

20. W. V-B. Ames, of Chicago, has recently devised an apparatus for utilizing nitrous oxide or oxygen gas for blowpipe
purposes, which overcomes the irregular pressure which is so objectionable when the gas is taken directly from the cylinders.

The apparatus consists essentially, in addition to a good oxy-hydrogen blowpipe, of two rubber air pillows twelve by eighteen inches, confined between rigid surfaces—two boards for instance—about four inches apart.

One of these bags is connected with the gas cylinder and the blowpipe by a three way pipe, and the other connected by another three way pipe to a source of air pressure and an automatic pressure regulator. After filling the gas bag air is forced into the other bag, the pressure of which will force the gas through the blowpipe at a rate which can be regulated at will, by the automatic pressure regulator which can be set to allow the surplus air to escape.

This arrangement admits of a pressure of one pound to the inch from a foot bellows or other source of air pressure, creating over two hundred pounds pressure upon the gas bag, i. e., a pressure equal to a weight of over two hundred pounds placed upon the upper board without any air pressure in the air bag.

Dr. G. V. Black has designed and had made by the S. S. White Manufacturing Co. six additional forms of Perry Separators. They are designed to overcome certain difficulties met with in the use of the Perry separator as heretofore found in the market. In the regular set of Perry Separators there is but one size and form for the molars, one for the molar-bicuspid and one for the bicuspid.

Two additional forms have been devised for each of these positions. They are called specials. They are made to catch the tooth nearer the gum margin than those of the regular set, so that they can be used on very long teeth, or upon teeth very much broken down. The other forms designed have extra broad bows, so they can fit over teeth that are extra large or irregular.
Dr. W. E. Harper, of Chicago: I wish to express my thanks and appreciation for the effort, labor and expense that the essayist has so kindly made in the interest of our State society and the profession. I am aware of some of the great difficulties that he has had to contend with, having tried to illustrate the subject by means of photography myself. But I feel that I cannot permit the occasion to pass without making my humble protest against the methods of preparing cavities as advocated by the essayist. In this work I consider the two essentials to be—extension for prevention, and flat seats at right angles to the direction of the stress, as described by Dr. G. V. Black. These two principles I look upon as forming the basis of scientific cavity preparation. They have not been disproved, and have been confirmed by experience and observation in my modest practice, and for a great many more years Dr. Black's own practice, where he has had the opportunity to observe the results through two to four generations, often in the same families. I feel the essayist is mistaken in thinking that any operator carries out these rules for extension in all cavities, as conditions and circumstances must be and are considered, such as age, physical condition, disposition to decay, and where proximating teeth are lost. If I have any reason to believe that there is further disposition to decay, I should in all cases include in my cavity the parts of the surface so disposed, and carry my margins to a location of immunity, which in all proximal surfaces would exceed that advocated in this paper. If we were to find a cavity involving the middle third of a tooth in a patient of fifty or more, and in which there was practically no disposition to decay, it would be unwise to make the ordinary extension that would be called for earlier in life. Again, we may have in the mouth of an adult a great disposition to decay, and I would in that case make radical extension. Again, where the proximating tooth has been lost there is no necessity for a radical extension, as we already have a self-cleansing surface. There may be other conditions that would make it inadvisable to carry out this extension for pre-
vention, and I do not think that any operator has advised this radical extension in all cases.

I recognize the ability of some few operators to fill cavities in proximate surfaces in incisors from the lingual, but I do not think it is wise to risk the durability of a filling simply to avoid exposing a little gold. Under the most favorable circumstances it requires much skill to insert a filling in the proximal surfaces, and I would protest against adding to the difficulty, as I would consider a bright gold filling looks better than a black labial margin or wall, which will very generally result. If this method of procedure is carried out, I judge that the difficulty of access, particularly in the incisal angle, or at the junction of the incisal with the labial wall, would render it very difficult to adapt gold perfectly. This question of extension for prevention is too large to be considered from all standpoints at this time. I am free to confess that the cavities that have gone back on me in my practice have been the small cavities. The large cavities in which I have made great extension, even before I had any knowledge of the advisability of extension for prevention, are the ones that are to-day the best of those that I inserted in my early practice.

I have had the opportunity of examining the cavities from which these illustrations were made. I noticed that, in a general way, they were prepared with the gingival walls rounded, the retention depending upon grooves made in the walls. Lacking the flat seat, there would be a disposition to move under heavy stress, as it is known the most effectual method of resisting stress is to place the resistance at right angles to that stress, which is not the case if the seat of the cavity is made rounded, so that I would again take this occasion to emphasize the necessity of flat seats, which means flat in all directions, mesio-distally and bucco-lingually. I again am opposed to the grooving. If these buccal and lingual walls are extended even to meet the requirements of prevention in a modest way, they are too weak to locate grooves in them for resistance to the tipping strain, so that you must of necessity depend upon an extension into the occlusal surface of that tooth for resistance to that tipping strain. Again, the advisability of flat seats is emphasized in the condensation of your gold. If you try to condense gold against an inclined plane or if your seat is rounded it will slide or roll. The location in which you place your first gold we will call the linguo-gingival angle of the cavity
(referring to blackboard). You may have a little pit, which is what I observed in the cavities prepared, and that little pit is depended upon as a convenient form in starting the first portion of gold. My judgment is that in placing that pit there, there is a very minute surface for the cohesion of the mass within that pit to the mass within the cavity. There is a great disposition for the gold to roll in this direction (indicating), to slide, which is such a common complaint with operators. In my judgment, if that cavity was made sharp and angular and your force is directed in this way (indicating), there is no disposition for your gold to slide in any direction. That gold can be absolutely locked and condensed, either in this or in that direction (indicating), with very little disposition to move, so little that a slight pressure with some instrument will retain it until you have gradually built the mass of gold over to a point located on the buccal wall, and then continue your building. I am very free to confess that I cannot, in proximate cavities in bicuspids and molars, fix my mass of gold where I have made my seat as shown here, concave (indicating). I can do it with very little difficulty in this class of cavities with a seat so prepared, flat (indicating). In the preparation of that seat we not only facilitate the filling of the cavity, but we extend this angle linguo-gingival and bucco-gingival, which is so necessary for prevention of recurrence of decay. In the occlusal half of the buccal and lingual walls there is not the same disposition to decay that there is at these linguo-gingival and bucco-gingival angles. I would ask your consideration of the cavities, or fillings, that were shown in the teeth last night. I noticed that the greatest caries were found at this bucco-gingival angle; in the center of the gingival margin there was not so much; in the occlusal half of the buccal and lingual walls there was not so much because the excursions of food had protected them. Again, if anything is wedged and retained at that point it is more liable to be removed than if it were located down there. So in squaring out you increase the seat of your cavity and you carry this angle to a portion of the buccal and lingual surfaces of the tooth which is practically immune from decay if sufficiently extended. I would not depend upon a rounded groove alone extending from the gingival to the occlusal to resist the tipping strain, because if you have made even a modest extension your buccal and lingual walls are too weak to stand it, because that filling is disposed to tip to the mesial and the resistance offered by
this groove is practically parallel to the direction of the force instead of being at right angles to it. We will let that represent the proximate surface of a bicuspid (indicating). Now supposing we have made even this modest extension of the cavity, I would not consider that extension for prevention, it would not meet the requirements as I interpret them. This margin is too near the point of proximate contact and must be carried to at least about that point (indicating). Allowing that it was not carried to that point, decay would occur about here (indicating). Suppose it was located at that point (indicating), and I would groove it to resist that tipping strain there (indicating). If a tipping strain of fifty or one hundred pounds is exerted on the filling that wall is too weak to stand it. Again, in making the resistance here, instead of being at right angles, it is practically parallel with that wall there. The stress would be brought against that inclined plane and the stress on that wall would be increased by virtue of the law of the wedge; it would simply wedge that wall and failure would result. A step on the occlusal surface would much more effectually resist it. In no case would I depend upon a rounded groove; in fact, I cannot, in my work at least, make a cavity too angular. When I say angular I mean no less, practically, than a right angle. It is common to think or believe that you cannot fill these angles. You cannot fill an angle with a round plugger point, but if you take a plugger point that will fit an angle you can better fill it than you can fill a rounded groove.

The essayist made the statement that the average life of a filling that is confined to so small an area on the proximal surfaces of the teeth is five or ten years. I am quite agreed on that, but I am not agreed on his statement that in radical extension it would also be apt to fail in five to ten years. I do not believe that is borne out by clinical experience. I believe if such failures result in a general way it is due to faulty manipulation of the gold after preparing the cavity correctly. If you extend correctly and adapt the gold perfectly, unless there is a very great disposition to decay, I do not see that you should have any failure in five or ten years, and I have seen charts that have been made from Dr. Black's own record which will illustrate that conclusively, and I should be very happy to have him refer to those charts that he has made from his records, as I think it will help to clear up this question.

Looking upon those two features, flat seats and extension for
prevention as forming the basis for cavity preparation, I do not know that there is much more to be talked about.

Dr. G. V. Black, of Chicago: I do not know what the disposition of this society will be as to the discussion of this paper or as to the extent of the discussion. Probably it will not be the disposition to discuss it at considerable length. There is perhaps no more important question just now to be discussed than the preparation of cavities. I am under the impression that there is more advance being made at the present time, or within the past few years, in the preparation of cavities than in any other one thing in operative dentistry. And so it is the most important thing that we can discuss at this time, and yet, we are behind in our program and we must hasten through our work, because there are other important papers to come up.

I was exceedingly interested in the presentation last night, and was especially interested in the photographic feature of this presentation. It is the first serious endeavor to present this subject by means of photography. I have been thinking along that line considerably myself. How can we present this best to our classes and to the dental profession? I have thought considerably of photography in this connection, and this being true I was especially interested to see how these pictures would work upon the screen, and I wish to compliment the gentleman upon his effort. It being a pioneer effort, he is especially to be complimented on the work he has done, even though we have the feeling that it was not everything that could be desired. It shows a very great promise for this means of presenting this subject. On the other hand, it seems to me we failed to appreciate the principles involved in extension for prevention, and the principles involved in the relation of the form of cavities to the stress that comes upon fillings as has been intimated already by Dr. Harper. There seems to be some who jump to the conclusion that the idea of extension for prevention is to cut big cavities. Now that is not correct. We extend to prevent only where there is something to prevent, a liability to caries that is to be prevented. Instead of reckless cutting, what is involved in extension for prevention is a careful study of the surfaces of the teeth as to the immunity of certain surfaces and certain portions of surfaces, as to the liability to decay of certain surfaces and certain portions of surfaces, and of having come to a reasonable, and what seems to me a just conclu-
sion as to the portions of surfaces that are liable to decay and the portions of surfaces that are immune from decay, then cutting so as to arrange your cavity lines, the lines of your margins, within the limit of the immunity from decay. This is what it means, and it does not mean extension of pit cavities where all the region around the cavity is immune already. For instance, take a cavity upon the buccal surface of a molar in a person twenty years of age. Almost universally that pit is sufficiently removed from the unclean portion of that surface for all its margins to be immune, when it is on account of the pit that decay has occurred there. Now, it would be simply nonsense to talk about extending such a cavity for prevention. Take again the cavities occurring upon occlusal surfaces that occur on account of faults in those surfaces. All around that fault the surface is immune from decay. We would not extend that for prevention; we would only extend along grooves for the purpose of obtaining a good finish. There would be no reason for extension for prevention because the surface around the decay is already immune from decay. Hence, we confine extension for prevention to proximal surfaces, to surfaces habitually unclean, to surfaces, indeed, that are especially liable to be attacked by decay; and when we find such surfaces about our carious cavity we study them closely and extend in order that the lines of our cavity may be laid just within the region of immunity from decay. Dr. Harper has spoken something of my experience along this line. It would take me too long to run over this whole field, as it is much too large. I remember one case that comes now prominently to my mind. A little girl was brought in to me. I had attended to her grandfather's teeth, to her father's teeth, and the mother's and grandmother's on both sides, from time to time, and knew the family to be prone to terrific decay of the teeth. This little girl, eight years old, came in with an incisor already badly decayed upon its distal surface. At one sitting I took out the entire proximate surface well below the gingivus; at another sitting I put a gold filling in that cavity, and at still another sitting I finished it. She is now a grown woman and every proximate surface in her mouth has been filled since, except those of the lower incisors. They have all been treated in that way, and that woman is proud to say that she has never lost a filling. She takes a pride in saying it. Nor has she lost a tooth. That is worth something; it is worth something for
patients to have confidence that fillings will do that which they are intended to do. It is a great deal better, even though you succeed in saving the teeth, than to make half a dozen fillings to do it.

Now, gentlemen, I ask you to study this carefully and conscientiously; study this question of immunity of certain portions of the teeth, of the liability to decay of certain portions of the teeth under the conditions present, because these are varying continually with each individual patient that comes to us. The liability will be different, more or less, yet, there are certain lines of liability that we all know and understand, or we should. It is study of this character that should guide us in laying the lines of our cavities in order that we may prevent future decay. Then we will study also the changing disposition due to age. We know well that the liability to decay is greatest in youth, and as a person arrives at maturity it diminishes; that is the general rule. In some families we will find that this rule does not hold, and we must study these families carefully and critically as to the liability to decay. Then again, as persons become old there is a certain return of the liability in a proportion of cases, against which we will have to guard and guard very carefully. We need to study the habits of caries along these lines, for there are certain underlying causes of caries that we do not know yet, and we can only at present study it as to its habits. I hope that some day we may be able to know more about these changing conditions, know more of the whys and wherefores. We certainly know more to-day than we did some few years ago. The work of Dr. Williams along this line has thrown much light upon this subject; the finding of microbic plaques upon the surfaces of teeth, and the illustrations of the effects of the acid occurring under these plaques, by Dr. Williams, has done a whole lot to throw light upon this subject; and I venture now to say that we will find no caries beginning in any mouth except under these microbic plaques, and the reason for decay occurring in one and the immunity of the other is the fact that the conditions are such in the one that the microbic plaques are formed, and in the other the conditions are such that the microbic plaques are not formed. I am now enabled to cultivate microorganisms in broth in such a way that they will form these microbic plaques upon the walls of the tube, and in such a way that they will not form them. And recently Dr. F. B. Noyes
PROCEEDINGS OF SOCIETIES.

has cut for me sections of the gelatinous product formed by microorganisms in my tubes artificially; the same microorganisms in other tubes, with the broth treated a little bit differently, have formed no gelatinous masses whatever. Now, it is along these lines that we will study, in future, the underlying causes of caries of the teeth, and until we know more about it we will study the habits of caries, and we will so lay our cavity lines as to prevent decay, laying them upon surfaces immune from caries, and thus preventing the recurrence of caries; and at the same time generally flattening our seats, arranging to support the stress that comes upon our fillings so they shall not be moved by the stress. This means careful, close, manipulative work; and as I have talked so much about amalgam in recent years, let me say here, if any one supposes that in doing this I am recommending amalgam as in any way taking the place of gold, where we can properly manipulate and handle gold, he is mistaken. Gold is the king of filling materials. What I have done has been mostly to show the unutility of amalgam fillings, and to show how we can improve this very poor material.

Dr. C. N. Johnson, of Chicago: I feel some hesitancy in consuming any time in discussing this subject, because, I believe the members of this society know very well my position already on this question of cavity preparation. However, I will refer to one or two points brought out by the essayist. Some members of the profession seem to have the idea that the advocates of extension for prevention advocate it in all cases. I want to endorse what has already been said, that it would be utter folly to carry out the extensive cutting in all cases; and we are sometimes justified in putting in fillings, even in proximate surfaces, that are narrow. But what I do want to emphasize is this, that every time we put in a narrow filling on a proximate surface, we must have in our minds the possibility that we will have a failure there sooner or later. It may be advisable in many instances to do this temporary work; in fact, we are all called upon to do it at times, because of the conditions that may be present. A patient may be in a nervous condition that will not permit us to extend these cavities to the full extent that we believe to be necessary for the most permanent work. But we must also bear in mind, as I said before, whenever we are compelled to put in a narrow filling without extension, that we are doing work that in the ordinary course of
events will be more or less temporary; and such work must be watched subsequently. And I will say, as Dr. Black has said, that wherever we can do so, if the conditions are at all favorable, we should extend these cavities to the lines indicated, so that we do the most permanent work in the first operation. In ordinary cases it is better to make a permanent operation the first time than it is to be compelled to repeat that operation. By making our work permanent we increase the confidence of the public in the utility of dental service.

Now in regard to just one other point, the distinction between the concave seat and the flat seat. An illustration of that came to my notice very prominently last week at a meeting of a dental society where I was giving a clinic. The tooth was a bicuspid, and I had made the flat seat and started the filling with gold. A gentleman came along and said, "What do you do now if that begins to rock?" My answer to him was that "It will not begin to rock." I want to say that the time of rocking fillings has passed in my practice. Having the seat flat, you start the filling in one angle and carry it across to the other, and lock it between the buccal and lingual walls. It may require slight retention with an instrument in the left hand for the first pellet or two, but when you get it locked you can mallet on it as hard as you wish and that filling will not rock. But it seems to be a difficult thing for some men to realize that. This same gentleman stood beside me later in the operation, as the filling was being built up, and he turned around and said to a friend, "I will be blessed if I see what holds it there yet." And so it is; the average dentist does not seem to have a mechanical perception on this question of anchoring fillings. It is simply a question of mechanics.

Dr. M. L. Hanaford: By the courtesy of our secretary, I am handed a stenographic report of the remarks of the preceding speakers, with the privilege of saying a few words in closing my paper, although not personally present to hear the discussion.

I wish to thank the gentlemen who have spoken, and others from whom I have heard privately, for their kind words in regard to the photographic work done in connection with the paper. Of course, no one without experience in a like undertaking can form any idea of the difficulties involved. While, as Dr. Black says, the results are not all that we could desire, perhaps enough has
been accomplished to show that photography may be used successfully in illustrating subjects of this kind.

Possibly at another time, and under more favorable circumstances, better results may be reached.

As for the special points in the paper, as commented upon by Dr. Harper and others, especially "extension for prevention," I may say that the conservative ground was there advocated strongly because it seemed to me that the other, or more radical practice, was being overemphasized in these days, that the tendency, especially with the younger men, might be not to discriminate closely between conditions calling for extensive cutting and those where operations of less extent would avail. Dr. Harper implies that I am mistaken in supposing that any teacher has advocated extensive cutting in all cases of proximal decay. I reply that the only means we—the common people—have of knowing what a man thinks and teaches is by noting carefully what he says. We have listened from time to time to hours of learned disquisition, and read long articles in support of the theory of "extension," but never to my knowledge, until this discussion, has the other side been presented, and assented to by as many as three eminent teachers.

True, this assent has been rather parenthetical, as who should say, "We knew it all the time," but each speaker has stated, and the statement is timely and valuable, that some teeth having decay on their proximal surfaces may be preserved by fillings of moderate extent.

My main contention, therefore, is that it is our business to find out which ones are amenable to such treatment, and act accordingly.

But while emphasizing for a special purpose the idea of a reasonable conservatism, I endeavored in my paper not to lose sight of the opposite great fact that where indicated, the most radical measures are justifiable and necessary, and upon this basis my daily operations at the chair are planned.

I spoke of the average durability of fillings, and have been taken to task for speaking of the second or third operation, which I was careful to say might never be necessary. In this connection I may say that I do a great deal of admittedly temporary work for young people—in fact, I rarely make a gold filling for a patient of less than twenty years of age. I do not thereby lose his confidence, as has been predicted; on the contrary, by treating thus
tentatively I gain and strengthen a confidence which is likely to become a lifelong friendship.

The case related by Dr. Black, of the patient of eight years only goes to show what may be done by rare skill and tact. Not many dentists could succeed thus, and Dr. Black is too wise to recommend that you or I attempt it.

Two points more—the first is the flat seat—a mechanical detail which I use often. One of the cavities illustrated showed substantially that construction. Dr. Harper forgot to mention it.

The last point—the filling of the cavities in incisors from the lingual aspect.

Dr. Harper's criticism shows plainly that he has not studied this detail with his usual thoroughness, else he could not speak of thus "adding to the difficulty of access," but would know that in no other way is access to every part of the cavity so readily gained, and that, too, by the sacrifice of the wall of least importance.

Incidentally less gold will be shown than by any other method—in some cases none at all—thus conforming to the rule of art, which should prompt us to seek to conceal our art. I thank you.

**DISCUSSION ON "CERAMIC ART IN DENTISTRY."** See page 655.

Dr. C. B. Rohland, of Alton: I shall only take a minute of your time. When Dr. Allen asked me to allow him to put me down to open a discussion on some paper I told him to go ahead. I did not suppose for a moment that he could select anything that I did not know something about; but I underestimated his capacity, for he very promptly did that very thing. Fortunately for you, I happen to know when I do not know anything about a subject, so I shall not trouble you very long, and as your time is limited will save you an infliction. However, if I am not competent to pass judgment on all of the details which the doctor has given us, owing to my comparatively limited experience in the manipulation of porcelain, I do know a good thing when I hear it, and I appreciate to the full the practicability of his paper and the immense amount of information and labor that its preparation involved. I was particularly pleased with some of the practical points that he has given us here, because I have been troubled myself with the discoloration, for instance, of porcelain when it is ground with carborundum. That has troubled me a good deal in what little work I have done, and I never knew just what occa-
sioned it. Also the hint given us as to the use of borax was a new thing to me, and I am very much obliged to the doctor for that one point alone. The paper with its mass of information, so ably presented by Dr. Nyman, cannot fail to stimulate closer attention to this kind of work—a consummation devoutly to be wished—for the objectionable, not to say at times offensive, conspicuousness of much of our work leaves it a matter of doubt sometimes in my mind whether the patient has not been more injured than benefited.

Dr. G. W. Schwartz, of Chicago: I wish to personally thank Dr. Nyman for this very excellent paper, from the fact that it is along the line of work I am mostly interested in; and I fully appreciate the amount of labor it has taken to compile this paper. The history has required a great deal of time, as well as the working out of the practical experiments.

The first article I will take up in the paper is the test for the crushing of porcelain. He has given us the direct pressure only, and the criticism I would make is the experiments were not made with a lateral strain; but he hopes later to bring that out, and I am sure he will give us to a certain extent the accurate strain laterally. I intended to make these experiments myself, but he has gotten ahead of me.

The next article is the relation to the gauge of the metal. I forget what he quoted, but I know it is not quite as thick as I use for caps and bands. As a rule, I use twenty-eight and twenty-nine gauge platinum for bicuspid and molars, the very softest piece of platinum I can get, from the fact that it takes the shape of the root so kindly, making it easy to fit the root accurately; and for the laterals and centrals I usually use twenty-nine or thirty; for laterals I use thirty or thirty-one; and for the caps for the bands I use platinum iridium. I believe in seating a bridge on the same principles that Dr. Black seats his fillings, and I believe that the seat of a bridge should be extra strong when making the metal frame. I agree in regard to the size of the post and bars. I use the stiffest platinum iridium I can possibly get.

And here I wish to speak about the size of the band. In nearly all cases dentists doing porcelain work make the mistake of making the bands too wide. I use the very narrowest possible band I can make. Now, in proportion to that crown I would consider the band wide enough for all ordinary uses (referring to blackboard).
I wish to next thank Dr. Ames very kindly for what he has done for us in the way of solder. He has made practical to porcelain workers one of the best things that has been given to them in the last two years, that is, the manufacture of platinum solder; and in giving us this solder he has made it possible for us to thoroughly strengthen joints; for instance, we will suppose this is a platinum cap (referring to blackboard) as is often used in the back part of the mouth, where the bite is close and porcelain is not desirable. Now, the main trouble I have always had was at this joint of the platinum cap and cross bar. We used to run a bar after this manner (indicating) and solder with pure gold; that is when we first began to do this saddle work and solder stays in like that. In order to get any stability to this piece of work through here (indicating) this ought to be ground very accurately and fitted so that the parts would be in exact position, and then soldered. Dr. Ames has given us a solder that we can flow into that joint and it will not fuse out when it is baked. A fifty per cent solder is practicable and can be used with the oxyhydrogen blowpipe, and Dr. Ames has also perfected an oxyhydrogen blowpipe with which we can do this. Now, with the fifty per cent or forty per cent platinum solder this joint would remain intact. It has always been my custom, since I found that was the place where my bridge was most liable to give way, to split this bar and bring it around labially and lingually, and by soldering it to the crown I would have the bar in position so that it could not get away. Sometimes I have gone clear around the cap in order to grasp it and hold it firm.

I also wish to say something about the strength of porcelain. The greatest mistake has been made in not equally dividing the strength between the roots of the teeth, the metal and the porcelain. Dentists as a rule are afraid to cut down far enough in a great many cases. Suppose this was the occluding edge of the tooth here (indicating), they would be afraid to cut down to the gum further than that (indicating); they want that for the band. I think this is unnecessary, because a great deal of the work should rest on the post and frame, and the cap should be merely to keep the bridge in position and prevent splitting of the roots; and a band that is just under the free margin of the gum is sufficient. In all my cases I find this is extremely practical, and it is not necessary to go down and cut away some of the process; I certainly would not
go further than the free margin of the gum. There is a great deal
of metal to go in this bridge and it is necessary to divide the
strength equally between the metal and porcelain. Now I do not
use my bar too large. When we first began this work we found
that there were two others who disagreed with us in regard to the
size of the metal bars to be used; one dentist in particular con-
tended that he used the metal bar just as large as he possibly
could, and he used the square bar. I told him that after a while
he would come back to the smaller bar and that he would round
the corners in the bargain, and he finally did. Porcelain in
baking does not like very sharp angles. You can carve your
work ever so sharp and when it is baked it has assumed the
rounded shape that you generally want it. For that reason I would
suggest that your metal work have some of the sharp corners
rounded and no sharp angles be left to subject the case to fracture
from heavy occlusion after it is set.

Another point I wish to call attention to is the method of con-
structing this platinum cap. I consider it one of the most difficult
things to do. I first fit my platinum band as I require it—we will
suppose this is the occlusal part of the tooth (indicating). I fit my
platinum band first and contour it to about that proportion (indi-
cating). After I have properly fitted my band I lay it down on a
hone and I hone it flat. Then I get the proper occlusion in either
modeling compound or plaster and carve my cusps as near as pos-
sible to the form of the tooth to be reproduced. Then I make my
die and counterdie and swage a piece of platinum iridium; then I
swage another and I nest these two and swage them together; then
I solder them together, and I hone this cap down until it is just right
to articulate and until the cap and the band come square together;
then I solder them together accurately. They must fit accurately
because it is folly to try to fill up any chinks or crevices. I solder
this cope together in that way and I keep the blowpipe flame on
it for at least two minutes after it is soldered in order to alloy the
two pieces so they will not come apart. Now, since Dr. Ames has
given us this solder, the cusps can be filled with fifty per cent
solder, if necessary, and you can grind on that all you choose; and
in that way you have a very good cap; then you can put your
bar in or out just as you choose. In making a cap in that way we
will have a platinum cap that we can rely on as being just as safe
as a gold cap would be.
I wish to say something about crowns, bridges and clasp plates. It would be more reasonable to expect three crowns that were fastened on separate roots to stand more crushing strain than a bridge of three teeth used on two roots. This piece of work (indicating) would be a great deal more rigid than if there were three separate crowns. These two teeth would not move in their sockets as much as three crowns individually would. And I would say regarding cases of four tooth bridges, I do not make larger ones if I can make two smaller ones. I am getting more conservative all the time in regard to bridge work. I prefer small bridges where the case is suitable. I might crown a bicuspid or cuspid and make a clasp in such a manner that I could clasp those teeth and make a partial clasp porcelain plate. The solder that Dr. Ames has given us has made it more practical to do this clasp work.

I will say a word in regard to the setting of crowns. For a good many years I have painted the posts of Richmond crowns, before I began making porcelain crowns, with chloro-percha, and let it dry; then I would cement my crown on, and if it ever became necessary to get that crown off I could remove it very easily by heating. Dr. Taggart has been very ingenious in bringing to the notice of the profession again the use of gutta-percha as I understand it. He fits the gutta-percha onto the post and in the root and gets a proper adaptation first; then he dries the roots out and paints the inside of the canal with cajeput or eucalyptus; then he lets that dry a little and paints the inside of that with chloro-percha; then he paints the gutta-percha on the post with chloro-percha, warms it a little and drives it home. He has this advantage: They are not set solidly as they are with cement, and possibly the gutta-percha preventing a fracture of the porcelain, I do not use this method as much as I would if I did not use the chloro-percha paint as I do. The gutta-percha is not so irritating to the gums as nearly all the cements are, and in these bridges where the saddle comes down so close it is almost impossible to get the cement out just under the saddle. I wish to say here in regard to this part of the saddles, that I usually fill this crevice with body so the food will not lodge in there and cause irritation and bad odors.

I wish to speak just a little about saddles. Dr. Nyman trims his saddles out, as I understand it, something after that manner in
bicuspids and molars (indicating). I do not make my saddles after that fashion, like I used to. I trim this down much more and try to get as much porcelain near the gum as possible, from the fact that porcelain is cleaner.

I also have this piece of work that he referred to, showing the construction of this saddle, and I will pass it around for those who wish to look at it.

I wish to say just a word about furnaces. Dr. Nyman was very kind in his remarks in regard to my furnace. Now, it requires a great deal of knowledge to manage a furnace, especially a gas furnace. While I am an advocate of my own furnace in my own hands, I must say that without any instruction a great many of you would be at sea with it. In regard to electric furnaces. There are a great many electric furnaces that do good work, but there are deficiencies in nearly all of them. They are all very good, and this particular case here was baked in Dr. Custer's furnace. I have baked in nearly all of the furnaces and they all give a good surface. I would like to suggest to furnace makers that some man invent a furnace that has a porcelain muffle and has a time arrangement. Dr. Taggart has a very ingenious arrangement, but it is not on the market. I wish to say that in all the other furnaces, the gold test is the best I know of.

You cannot bake porcelain haphazard and get the same results each time unless you have the same test. Each time you will have quite an assortment of colors and conditions from the same material.

Dr. W. V-B. Ames, of Chicago: I would like to say a few words in behalf of my friend Dr. Custer, who was obliged to go away. From what Dr. Nyman said about porcelain furnaces, in speaking of the furnace of the Custer type, I think he must have drawn his conclusions entirely from the furnace of the Custer type which is in the office of his neighbor, Dr. Bryant, which is a furnace made by an individual named McBryer, and is an imitation of the Custer furnace. But Dr. Nyman is apparently not familiar with an up-to-date Custer furnace, in which there is almost no clay over the wire, and the difficulty of repair is very slight indeed.

There was something spoken of by Dr. Schwartz which I think ought to be corrected; i.e., that with the platinum-gold alloy, used as solder, he can fill in a cap solidly without having danger of its getting out of shape in the furnace. I must say that
my one disappointment in the using of platinum and gold mixture is that you cannot fill a cap like that and have it retain its shape. My experience has been that this solder is very valuable for securing joints, but if used for filling in cusps or flowing in any considerable thickness over an extensive surface the platinum matrix is pretty sure to change form.

It is unfortunate that it becomes necessary from the lack of time and amount of unfinished program to choke off the discussion of so important and practical subject as this. It is to be hoped that, with our programs in the future, there will be fewer papers or the time will be husbanded in such a way that the late papers can be subjected to a reasonable amount of discussion.

Dr. Nyman (closing discussion): The band, the cap and the post all have their share in standing the strain, and, as Dr. Schwartz emphasized in his remarks, the post takes the most of it, merely utilizing the band to prevent fracture of the root and prevent secretions working in and destroying the joint. My reason for putting heavy caps on my bands is that in so doing you have a cap that is strong, that you can submit to rough handling without getting out of shape. I invest my piece before I put in my cross beams, and when I put them I force them in so that I could take the investment and throw it ten feet and they would not fall out; and if I had a thin cap on there I might do this in forcing it in (indicating on blackboard). The investment is largely plaster, and plaster gives a little. Suppose I was going to fit an iridium-platinum bar across there and I started to force that in; if I had a thin cap on there I would be very apt to force that over here, so that my post would be at about that angle when I got through (indicating), because this cap here would not have sufficient strength, and the plaster itself might yield a little bit under the pressure that I exert in forcing the beam into place.

Now, in regard to timing an electric furnace and then simply running it a given length of time. That is a misleading procedure. The platinum wires in an electric furnace undergo an electrochemical disintegration. My electric furnace when I first bought it fused Close's body in nineteen minutes. Shortly before it burned out it was taking twenty-nine minutes to get the same result, so if I had kept up just running that furnace nineteen minutes the last ten or eleven times I baked in that furnace I would not have had my porcelain fused.
There is another reason why I make a saddle like I spoke of, and that is simply this: That you have that saddle placed accurately on the gum. One reason why you have trouble under the saddles of bridges is that they impinge so close upon the gum as to shut off the circulation, and one of two things occurs—there is either unhealthy granulations at the side nearest to the source of the circulation, right at that point where the circulation is shut off, or atrophy of this whole piece, and it will shrink away. If you will observe the method I spoke of, of burnishing in this little piece of lead, you will get a nice, even adaptation of your saddle when you get through, but still you should always try these in before you go on with your work.

It was very kind of Dr. Rohland and the other gentlemen to compliment me on my original methods. All of them were not original, however. The borax and the silex methods were not original, but I merely wanted to emphasize them, and to demonstrate what could be done, because I do not believe the profession in general knew of it.

I appreciate all that has been said by Dr. Schwartz in regard to the necessity of making experiments in regard to the lateral stress; but it has only been within the last month or more that I have been asked to prepare this paper, and I have had very little time outside of my practice to attend to it. I do hope to continue the experiments and let you know something definite as regards the stress and conditions as they are met in the mouth.

One other thing. One of our greatest troubles with porcelain work is that very few of our cases are fused accurately, so that we do not get all the strength that could be had in the porcelain, and I hope to give you later on a very simple method whereby you can tell absolutely when you have your porcelain fused right.
The first annual meeting was held in Omaha, beginning Tuesday, August 30, 1898. This being the first meeting, some few modifications in the constitution and by-laws were found necessary, but on the whole the sessions showed little friction. The papers were not numerous, but were mostly of good quality. Another year, when the new rules are better understood, everything will be as smooth as ice in the polar region.

The sections had so many new officers that much work was not done, and even some of them were not present. A new impetus was given to oral surgery by the passing of a resolution inviting Drs. Brophy and Fillebrown to read papers on closure of cleft palate at the next annual meeting. Cataphoresis or electrolysis did not receive much attention. Operative dentistry and other practical subjects received little or no attention. The removing of the pulp was considered by Dr. B. Holly Smith, and Dr. Barrett had something to say about the use of arsenic. Orthodontia received the lion's share of attention. This comparative new element in the practice of the dentists is growing in importance from year to year, and we cannot refrain from calling attention to the admirable paper published in our August issue. The social features of the meeting were pronounced and satisfactory and all felt well repaid for their journey to Omaha. The exposition was well worthy of a visit and careful inspection.

Removing the Pulp.

If we read the signs correctly it is the intention of dentists to freeze, anaesthetize or stun the pulp so he can be got out of his
lair without being killed with arsenic or cobalt or taken from an extracted tooth. There are many arguments in favor of taking the pulp from anterior teeth by any means or method which will prevent discoloration of the dentine; the only question is, how to do it. One says use salt water, inject it in three or four places around or opposite the end of the root. Another, use finely powdered hydrochlorate of cocaine applied directly to the pulp, then take a piece of spunk, moisten it and use a large ball of un Vulcanized rubber and produce gentle pressure until the cocaine is forced into the pulp, then take it out. Another says freeze it with ethyl chloride and take it. Another says use a five per cent solution of cocaine (freshly made) and add one or two per cent of formalin and after the spunk is wet with it, use the rubber ball and produce a little pressure, so the patient can feel it, and in a few minutes the pain is over—and presto—the pulp is out. (This can be used for sensitive dentine also.) Another method is to give chloroform, about ten inhalations; and still another, use nitrous oxide and remove the pulp. Some take the pulp out by picking it with a needle point, having first covered the pulp with strong salt water solution of cocaine. This is a good method. (We do not like or approve of the method of injecting cocaine into the gums for the removal of the pulp.) You can take your choice of the above for the present.

A Retrospect.

One of the dramatic things happened at Omaha when Dr. J. N. Crouse placed his resignation as a member of the executive committee before the meeting. He said that the president told him he ought to resign, and therefore he did it. Some one moved that the resignation be laid on the table, which was done. Not more than four or five voting out of thirty-five or forty present. We think he should have persisted and resigned. There are others fully competent, and they are not running dental depots. It is a very embarrassing position for a dental dealer to be directing the business affairs of a dental association, and we wonder why the doctor does not step aside. Such a feeble endorsement as he got at Omaha is not very encouraging. No one is more willing to accord praise to him for his work in the D. P. A. than the writer, but now that he has personal, public interests in the dental sup-
ply business he ought to leave the matter to the judgment of his friends and retire from such conspicuous society work and stay in the ranks. We feel sure that the association would do better to have an outsider do its business. The meeting this year was not a success numerically or from a literary standpoint, due, as we have said, to the dilatory methods of the executive committee. If the next year is not better managed or advertised we will feel called upon to criticise the executive committee more severely than we have in the past. We are for the success of the National Dental Association first and last, and men can take care of themselves.

REVIEWS AND ABSTRACTS.


The years 1897-98 are to be memorable ones in American history. Both have witnessed important events, marking a new union of the North and South, and an increased feeling of nationality in all sections of our country. The union of the American and Southern dental associations was the overshadowing event of last year's meeting. Both met at the same place, Old Point Comfort, Va., and a union was perfected under the name of the National Dental Association (of the United States, we suppose would be added for any announcement to be sent abroad).

The constitution, by-laws and rules of order were adopted as reported from the joint committee of the two societies.

This is a consummation long devoutly wished by many, but delayed by sectional partisanship. Theoretically, nearly all have favored union for years, but with very much of that spirit of compromise which requires "the other fellow" to make the principal concessions.

But the dentists of the North and South have at least anticipated the Presbyterians and the Methodists in their final recovery from sectionalism and the establishment of Christian relations.

Of course, the union was not effected entirely without friction and a bit of hysteria. As usual in such cases, the matter of a new name loomed up as an obstacle all out of proportion to its real importance. The preservation of the old term "American Dental" would have been acceptable no doubt to the great
majority, which same majority proved the sincerity of their desire for union by their concession to the minority. The agreement upon the term National, however, was a triumph, we think, of the right idea, and it is to be hoped that the various amendments introduced for a change of name at the next meeting will be voted down. Let the name stand, and go to work, we should say. Disturbance at this point will not sweeten the smell of the flower in 1898.

Membership in the national association is to consist of three classes, permanent, delegate and honorary. Additions to the permanent membership are to come hereafter entirely from the delegate class. The delegates are to come only from regularly organized State societies, who are entitled to send one in ten of their number. This is well, for a State without sufficient professional spirit to maintain a society is not deserving of recognition. The nation, for convenience, is divided into three sections, eastern, western and southern, and herein again the North has shown its inherent spirit of modesty and self effacement. Seriously, the division is a good one for the purpose intended, to insure proper rotation in the places of meeting and distribution of the vice presidency.

The constitution anticipated the new idea of American extension by including Ontario among the eastern States. What our loyal Canadian friends may think of this we know not, but in the event of an Anglo-American alliance the N. D. A. can claim the initiative. This year we assume that Cuba and Puerto Rico will be added to the southern, and Hawaii and part of Asia to the western divisions.

Each division, East, West and South, is permitted by the constitution to organize itself as a "branch," provided it behaves itself and pays its own debts, remaining strictly subject to the N. D. A. We have doubts about this provision being either wise or practical, and would say that the State societies will supply all the "branches" necessary.

PROCEDINGS OF THE A. D. A.

The report on necrology includes the names of Drs. Frank Abbott, New York; Francis Peabody, Boston; S. B. Brown, Fort Wayne, Ind.; Eli Slegel, Fleetwood, Pa.; and W. N. Morrison, of St. Louis.
The "Annual Address," delivered by the president, Dr. Truman, was an able one, treating of dental history, and dental legislation with some of it abuses; dental societies and the present demands upon them. Extracts from this address would be well worth publication in the various periodicals. It is an able and patriotic paper.

Dr. Weston A. Price, of Cleveland, Ohio, read a very exhaustive paper on the "Phenomena of Cataphoresis," a paper which Dr. Custer in the discussion pronounced "monumental." It is a paper one can scarcely attempt to review, but needs to be carefully read to be in any measure appreciated. We will only say that his experiments go to show that there is extreme variability in the resistance of dentine to the current used, and that the use of the milliamperemeter seems to be indispensable to accuracy and uniform success. He is able to achieve this in his own practice in an average time of thirteen minutes.

Dr. J. S. Cassidy, of Covington, Ky., read a paper, "The Relations of Chemistry to Dentistry," a good paper, valuable chiefly for its pointing out of common errors in the use of terms. The discussion, as often happens, went off at a tangent and related to the wasting of cement fillings.

Dr. Calvin S. Case, of Chicago, read a carefully written and well illustrated paper, "Principles of Force and Anchorage in the Movement of Teeth."

The principles set forth were so clearly explained and demonstrated, so evidently accurate by the laws of mechanics, that it seems strange that any one should venture to contradict a single statement made. Dr. Case has surely carried the study of mechanics into the practice of orthodontia more thoroughly, with more extreme nicety, painstaking and ingenuity than any other man.

There might be, of course, a rational difference of opinion with him as to the particular method advisable in a given case; but to dispute the principles set forth in his paper would be like kicking at Euclid.

"Macroscopic Tooth Development," by Dr. I. Norman Broomell, of Philadelphia, follows next in order. This paper was illustrated with stereopticon views of many sections prepared by the author. The illustrations are very well reproduced in the volume and form with the paper a valuable addition to the literature of the subject.
REVIEWS AND ABSTRACTS.

Reports, usually brief, were read upon the following subjects: Physiology and Etiology, by Dr. J. D. Patterson; Anatomy, Pathology and Surgery, by Dr. W. C. Barrett; Structural Development, by Dr. C. N. Peirce; Antral Disease, involving Frontal Sinus, by Dr. T. W. Brophy; Antrum and Sinus, by Dr. Thomas Fillebrown; Dental Education, by Dr. Louis Ottofy; Dental Literature, by Dr. S. H. Guilford.

Short papers were read by Dr. J. N. Crouse, on "Amalgam"; by Dr. M. F. Finley, on "Opening the Bite with Cap Fillings."

A volunteer paper was read by Chas. H. Ward, of Rochester, N. Y., which covers thirty-nine pages of the Transactions, on "Human Teeth, from a Comparative Standpoint." The subject is treated from the point of view of a specialist in natural science, and is, perhaps, the most important contribution of the association to the literature of the year 1897.

A very extensive exhibit of specimens illustrative of human and comparative odontology was given by the Ward's Natural Science Establishment, of Rochester, N. Y., under the auspices of Section VII. Catalogues of this and of a smaller exhibit are printed in the Transactions.

In the report on education we note that in the number of dental students for 1896-97, Pennsylvania leads with 1,210; Illinois following, with 1,108; Ohio, 522; New York, 492; Maryland, 453; Missouri, 437; Massachusetts, 322. In the number of graduates Pennsylvania leads, with 342; Illinois had 299; New York, 159; Maryland, 131; Ohio, 129; Missouri, 126; Massachusetts, 89. Michigan had 275 students in her two schools, with 73 graduates. New York had the most graduates in proportion to the number of students, Ohio the least.

Possessors of this volume of the Transactions of the A. D. A. will no doubt prize it highly for its important contents, and because it will be the last of the series covering nearly forty years of the history of dentistry in the United States.

Garrett Newkirk.
MEMORANDA.

California sent three members to Omaha.
Dr. T. W. Brophy has returned from Europe.
Dr. A. L. Northrup has returned from Europe.
Dr. W. R. Clifton, of Waco, Texas, was at Omaha.
Dr. J. B. Willmot, of Ontario, was a visitor in Omaha.
Dr. F. B. Darby, of Elmira, was in Chicago in August.
Dr. C. N. Peirce, of Philadelphia, visited Chicago in August.
Dr. Alex. Jameson, of Indianapolis, visited Chicago in August.
Dr. E. G. Betty, of Cincinnati, visited Chicago during August.
The editor's son, Ralph P. Harlan, has returned from Santiago.
Dr. Cogan, of Washington, made a call on the editor in August.
Northern Illinois Dental Society at Rockford, October 19 and 20.
Dr. W. E. Griswold, of Denver, Colo., was in Chicago in August.
Mr. Carl B. Case has returned from the war. He was in the navy.
Mr. Otto Holinger, of the naval reserves, has returned from the front.
Dr. W. S. Bagley has returned from Santiago in fairly good condition.
Nearly all of Nebraska went to Omaha to attend the national meeting.
Dr. M. W. Foster, of Baltimore, spent a few days in Chicago in August.
Mr. Fred A. Gray, of the naval reserves, has returned. He was on the Oregon.
Dr. S. H. Guilford was in Chicago in September, on his way from Omaha.
Dr. W. D. Miller is spending a few days in Ohio on a much needed vacation.
Dr. S. L. Good, of Hazleton, Pa., made a call on the Dental Review in August.

Mr. Geo. Nevius returned from the war in September, having been a member of the navy.

Most of the above boys are members of the senior class of the Chicago College of Dental Surgery.

Dr. M. F. Finley, of Washington, D. C., stopped in Chicago long enough to visit the Masonic Temple.

The faculty association admitted three colleges, one at San Francisco, one at Omaha and one at Denver.

The South was fairly represented at Omaha; Texas, Alabama, Kentucky, Tennessee and Georgia being best represented.

A popular journal on hygiene for the public will be issued by Dr. L. P. Bethel, about October 15. Price, $1 per annum.
Authors of books were quite en evidence at Omaha. Guilford, Barrett, Marshall, Thompson, Weeks, Fillebrown, Cassidy and others.

The great West is growing in wealth, population and intelligence, and we must look to it for still further advances in the near future.

Dr. A. O. Hunt, of Chicago, has been elected Dean and Professor of Prosthetic Art and Oral Surgery in the Omaha Dental College. His term will begin October 3, 1898.

Dr. A. C. Hewett, of Chicago, retired from practice September 1, to engage in the manufacture of copper bronze articles of various kinds. He is the inventor of the process.

The next meeting of the Illinois State Board of Dental Examiners will be held in the rooms of the Chicago Business College, 67 Wabash Ave., Chicago, Ill., on the 27th of September, 1898. J. H. Smyser, Secretary.

Formalin is, as an antiseptic, still on the rack. Recent experiments have not as yet been verified by observers. The recent meeting at Omaha produced one statement that formalin was one of the best sterilizers in a five per cent solution that we have.

The National Dental Association is still wrestling with our nomenclature. Slow, steady progress is being made. A word or two becomes better understood from year to year and an occasional new word is being coined. The committee is to be congratulated on its persistent work.

The third edition of Guilford’s Orthodontia is out. It is a better working book than any we have seen on the subject. The illustrations are good and it is of convenient size. As orthodontia is beginning to be such a large element in practice every one needs just such a work.

The seventeenth annual meeting of the First District Dental Society of Illinois, will be held at Monmouth, September 27-28. An excellent program has been provided and a cordial invitation is extended to the profession.

O. M. Daymude, Executive Committee.


Editor Review:

All the dentists of Northern Illinois should cross off 18th and 19th of October from their appointment books and attend the Northern Illinois Dental Society at Rockford. An unusually good program is being prepared. Will have program ready in full for October Review.

C. W. Cox, Chairman Executive Committee.

Batavia, Ill.

THE EAST—WHERE WAS IT AT OMAHA?

It must have been lost in transit.
J. S. McCleery, of Beatrice, and J. H. Wallace, of Omaha, were elected to places on the board of censors.

York was selected as the place for the next annual meeting, which is to be held the third Tuesday in next May.

**THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.**

Notice is hereby given that the next annual meeting of the National Association of Dental Examiners will be held at Washington, D. C., commencing 10 o'clock A. M., Thursday, October 18, and continuing in session the 14th and 15th. The headquarters will be at "The Hamilton," 14th and K Streets, opposite Franklin Park. The rates will be $2 and $2.50 per day.

Members can communicate with Dr. H. B. Noble for additional information regarding accommodations.

The poll vote closed August 9, with 72 votes for Washington, 20 for Louisville, 17 for Chicago and 12 for Omaha, balance scattering.

**Charles A. Meeker, D. D. S.,**

Secretary.

**NEBRASKA STATE DENTAL SOCIETY.**

Officers for the ensuing year were elected as follows: President, T. J. Hatfield, of York; Vice President, C. R. Teft, of Lincoln; Secretary, George S. Nason, of Omaha; Corresponding Secretary, B. F. Fisher, of Omaha; Treasurer, H. J. Cole, of Norfolk.

**COMMITTEE ON THE INTERNATIONAL DENTAL CONGRESS, PARIS.**

A. W. Harlan, Chicago; A. H. Fuller, St. Louis; H. J. McKellops, St. Louis; J. Taft, Cincinnati; H. A. Smith, Cincinnati; W. W. Walker, New York; James McManus, Hartford; W. C. Barrett, Buffalo; T. W. Brophy, Chicago; B. Holly Smith, Baltimore; W. E. Griswold, Denver; C. L. Goddard, San Francisco; L. L. Dunbar, San Francisco; H. W. Morgan, Nashville; Frank Holland, Atlanta; E. C. Kirk, Philadelphia; J. D. Patterson, Kansas City; Thos. Fillebrown, Boston; Thomas E. Weeks, Minneapolis.

**NATIONAL ASSOCIATION OF DENTAL FACULTIES.**

Officers were elected as follows: President, Dr. D. J. McMillen, Kansas City; Vice President, Dr. B. Holly Smith, Baltimore; Secretary, Dr. J. H. Kennerly, St. Louis; Treasurer, Dr. Henry W. Morgan, Nashville, Tenn. Drs. Kennerly and Morgan were reflected by acclamation. Executive Committee: Drs. J. Taft, Cincinnati; Theodore Menges, Chicago, and S. W. Foster, Atlanta. Ad interim Committee: Drs. James Truman, Philadelphia; W. T. McLean, Cincinnati, and G. V. I. Brown, Milwaukee.

The next meeting will probably be held at Niagara Falls in 1899, the time and place being left to the executive committee.

**NATIONAL DENTAL ASSOCIATION.**

Officers for 1898-99.—President, H. J. Burkhardt, Batavia, N. Y.; Vice President from the East, S. H. Guilford, Philadelphia, Pa.; Vice President from the West, T. E. Weeks, Minneapolis; Vice President from the South, B. Holly Smith, Baltimore; Corresponding Secretary, E. E. Chase, St. Louis; Recording Secretary, Geo. H. Cushing, Chicago; Assistant Secretary, W. E. Walker, Pass Christian, Miss.; Treasurer, Henry W. Morgan, Nashville, Tenn. Executive Committee—J. Y. Crawford, Nashville, Tenn.; G. V. I. Brown, Milwaukee; C. S. Butler, Buffalo, N. Y. Next place of meeting, Niagara Falls, N. Y. Publication Committee—C. N. Johnson, Chicago; C. N. Peirce, Philadelphia. Local Committee Arrangements—C. S. Butler, D. F. Bentley, M. O. Cooley.
ORIGINAL COMMUNICATIONS.

THE LOGICAL RELATION OF DENTISTRY TO MEDICINE.*

By A. T. Holbrook, M. D., Milwaukee, Wis.

There is a very popular fallacy which ascribes the marvelous achievements of this age to a peculiar specialization of research. Undoubtedly the achievements have been largely the results of specialization, but the assertion that this is peculiar to our age is baseless. The magnificent results of the specialists in every department of science and art within the limits of this century attained because the method was new or the energy greater, but because the valuable discoveries of biochemical laws gave to theoretical conclusions past the so-called sciences were theories and unreasonable demonstrated facts.

No department of study is this more evident than in the science of medicine. It might surprise some nineteenth century enthusiast to learn that Herodotus relates that when, in about 450 B.C., he visited Egypt he found the doctors of medicine divided into different specialties—that there were doctors for childbirth, for the eyes and ears, for the mouth and teeth and for almost every separate part of the body, as well as doctors for cattle and for fowls.

In the recent excavations at Pompeii, a surgeon’s establishment has been discovered which shows that the instruments and appliances with which the surgeon of that day worked were practically sufficient to perform the most exacting operation of eighteen

*Read before the Wisconsin State Dental Society.
hundred years later. It is not that the surgeon is now for the first time a specialist in his profession and hence has perfected his department; but it is that he has within the past half century been given biological knowledge, with which he has advanced his calling above a mere art, and made surgery a science. Had Galen or Hippocrates our second year medical student’s knowledge of bacteriology alone they would have performed surgical operations more successfully than did the surgeons of our Civil War.

And what has been the history of Dentistry? Not only does Herodotus tell us of those earliest doctors who cared for the mouth and teeth, but in the oldest Egyptian mummies are found false teeth to prove, as some one has said, that “dental procedures and false teeth are as old as coquetry—and God knows how old that is.” Dentists were recognized as specialists of medicine in Rome as early as the “laws of the twelve tables,” about 450 B. C. Teeth were made of ivory at that time and fastened with golden wire. Celsus, in 30 B. C., writing on medical subjects, devoted one section to dentistry, in which he described extractions of teeth by forceps; fastening of teeth with gold wire; bursting hollow teeth by peppercorn pressed in them, and of the ill effects of extracting teeth when they are ankylosed to the alveoli; and of caries and necrosis.

Ovid, Martial, Horace and other Greek and Latin poets allude to artificial teeth. The ancient Arabians practiced dentistry, but on sentimental grounds avoided extraction. Coming down to mediaeval times, in the eleventh century, most respectable dentists refused to extract teeth, though the quacks did it with impunity. Other procedures of dentistry were commonly practiced, but they followed the passionarius of Galen, which taught the dangers of extraction by citing the case of a philosopher on the Island of Delphi, who died from the effects of the removal of a painful molar. Galen, who had a most remarkable conceit for his medical interpretations, explained that death resulted because the marrow of the tooth migrates from the brain, and when the root of the tooth is lacerated this marrow runs into the lung and death ensues.

From 1650 to 1750 dentistry enjoyed a stimulating prosperity in France under Pierre Dionis, Jean Verdue, and Pierre Fauchard, the last named publishing in 1728 the first complete work on dentistry, entitled: “The Dental Surgeon, or Treatment of the Teeth.” This work with those of Fallopius, Eustachius, Ambroise
PARÉ and Bichat were then the classics on the subject of dentistry. At this early period in Germany the profession was largely in the hands of quacks and was practiced chiefly as a cosmetic art. It was scarcely taught in any manner in German universities excepting at Vienna, until Albrecht established, in 1855, the first dental clinic of Germany.

In England, the famous surgeon, Sir John Hunter, by his splendid work and careful writing, laid the foundation of the English school of dentistry. But his work, which was done between 1770 and 1780, was too theoretical, and nothing practical was given the English profession until Blake and Fox wrote in the early part of this century. Newspaper advertisements of that day show a division in the profession itself, dental surgeons doing the operating, and jewelers advertising to clean and make teeth.

It was left for an American dentist, Leonard Kolcker, who had practiced in Baltimore and Philadelphia, to give, in 1826, what is accepted as the first practical and scientific work on dental surgery. It was entitled "The Principles of Dental Surgery," and when it appeared in London and Europe gave the American school of dentistry a prestige it has never yielded. Such, in brief, has been the history of dentistry, with its antiquity; with its connections and separations from the medical profession; with its degeneracy in some countries to quackery; with its becoming here a theory and there the simple adjunct of a cosmetic art; but ever with a vanguard somewhere leading it to the realms of rational science where you have found it. Let me trace with you, by way of comparison, the career of another specialty, that of surgery.

The surgery of the ancients was an heterogeneous collection of brilliant operations, of most stupid blunders, of logically planned procedures skillfully executed, and of absurd guesses that cost many lives. Nothing better illustrates the varied successes and failures of the ancient surgery than the story of Alcon, who was surgeon to Claudius, the Roman ruler, and to the elite of Rome. For the failure of an operation Claudius once fined this surgeon what amounted to $500,000, but the historian hastens to assure us that "his fees soon made up the amount."

It is reported that Galen received a fee amounting to $21,000 for a single visit. There is a record of a $10,000 fee being paid a surgeon named Charms in the year A. D. 33; but history also records such laws as these: "If a person dies by a surgeon's cut
the surgeon shall be given to the family of the deceased, who may punish him as they will, even unto death.”

Surgical procedures became so questionable and results so uncertain and disastrous that the all-powerful church, which contained most of the thinking men, in 1163 forbade all physicians and monks from performing and all universities from teaching any manner of surgical operation, under pretext that the church abhorred bloodshed of any kind. Who then was to do the surgery? Who should bleed the apoplectic, amputate the crushed foot, or break the Hippocratic oath and “cut for stone?”

When a person was bled, a staff was placed in his hand, and his arm bound by a fillet to make the veins swell out prominently. When not in use this fillet was wound about the staff and laid aside. To-morrow when you walk down town, in front of every barber's shop you will see a representation of this staff with the fillet wound about it. Every highly colored barber's pole is a reminder that when surgery was dropped by the physician it was taken up by the barber and bath-keeper. Technical and general histories have made famous the name of Ambroise Paré. Many of us have thrilled at stories of this wonderful army surgeon, Paré—how at the siege of Metz, the almost demoralized Dutch army rallied when he appeared, shouting: “We fear nothing now—our Ambroise will heal our wounds!” And who was this Ambroise Paré? He was a barber, and his father had been a barber before him. But his was not a mind to accept merely the old routine practices and principles which his father taught him. He studied and experimented; he visited Paris, and acquired what the great hospital, the Hotel Dieu, could teach him. His scientific spirit went with him into the many wars where his greatest work was done, and when he died in 1590 he had earned the name that shall never leave him: “The father of modern surgery.” But it took more than two centuries to raise surgery to the dignity of a science. All countries were overrun by charlatans whose wonderful tales and extraordinary promises were so opposite to their results that people looked askance at the knife and tourniquet.

In England, Edward IV. in 1461, had licensed barbers to practice surgery and forbade it to others. Henry VIII. started a reform by calling the profession “barber surgeons,” but being conservative enough to impress the people that he considered the surgical part of the combination the inferior. In 1745, English
barbers and surgeons were made two distinct corporations, and in 1780 the last barber was licensed to practice surgery in England.

The Electoral College at Erfurt was the most conspicuous reformer of Germany. In 1797 this college called for prize essays on the subject, "Is it Possible to Combine Medicine and Surgery, Theoretically as well as Practically?" The essay denying such possibility, which won the prize, must have voiced a popular sentiment, for as late as 1811 barbers practiced surgery in Germany. In France matters were much the same, there being a grim law which not only licensed barbers to practice surgery, but gave the same privilege to public executioners. A famous result of this combination was the development of Dr. Guillotin's knife. The reception of this instrument shows the ignorance of physiology in that day, for it was solemnly declared, by highest available authority, that experiments on decapitated heads proved that a man executed by the guillotine was not instantly killed, but that life remained long enough for him to be a conscious spectator of his own tragedy!

With the advent of the new century came a gradual removal of prejudice against dissection—the careful experiments and clinical observation—the results of experiments on the lower animals—the discovery of bacteriology, the establishment of asepsis, then this gift from dentistry of the general anaesthesia—all this joins to make surgery at this moment the highest developed, most truly scientific and satisfactorily practiced branch of medicine.

This review of the histories of these professions may seem to you irrelevant; but I have made it for the purpose of pointing out not only an evident analogy, but these two facts which are pertinently taught:

First, that their practice as specialties is as old as history itself.

Second, that their greatest development has resulted not from their isolation but from the establishment of their proper relations.

Surgery was first the possession of medicine. Then it was given into the hands of tricksters, to the bath-keepers, the barbers, the public executioner, until finally for all time it is reclaimed as a branch of medicine. And the reason for this settlement of surgery as a part of medical science is the consideration to which I invite your especial attention, because the same reasons are sooner or later to place dentistry in its logical position as a branch that is as
closely related to the science of medicine as surgery, midwifery or orthopedics.

Surgery became a recognized division of the science of medicine when men realized that the same laws of nature which governed medicine also governed surgery. That the embryology and physiology of the human being were in no different relationship to medicine than to surgery; that the histology and morphology, in its every aspect, in normal tissue, and the pathology of abnormal tissue yielded the same causes and produced the same effects for surgery as for medicine. That it was illogical to suppose that since a man could cut hair or decapitate a criminal gracefully, he could amputate an arm, because the relationship between the operation and the technical art of cutting was of infinitely less value than the relationship of the operation to the causes of disease in the arm, and the physiological laws under which it would heal.

But this relationship in surgery has been easy to trace. It is hard for us now to look upon the operation as anything but the curative procedure for an abnormal condition, and yet but one hundred years ago the operation was looked upon as a certain skillful piece of work that was in its last analysis nothing different from the cutting of hair, criminals' necks, or a quarter of beef. It is more difficult, perhaps, to establish the connection of dentistry to medicine, yet it is a safe prediction that at the end of another century, the tooth crown and the artificial plate will be considered as truly a part of a medical specialty as the plaster jacket or the club-foot shoe. Why is it that dentistry has not been taught as a medical specialty? It is because it was not known that the operating causes were the same in consumption, in typhoid fever, in white swelling of the knee, and in a carious tooth or a necrosed jaw. Because the reaction of tissues to bacteriological or chemical irritation was unknown. Because the connection between a pathological condition in the jaw and a neuralgia felt in the face had not been traced. Because it was not recognized that a dentist could treat and correct diseased conditions of mucous membrane, gum, bone or tooth by the same rules under which the oculist treated membranes, orbit or eyeball; or the nasal specialist the soft and hard structures of his field. There was no scientific account taken of the effect an erratic digestion or an impoverished blood might have on the buccal cavity.
Just as there was a time when surgery meant nothing but the actual cutting, so in dentistry there has been a time when the profession meant nothing but plugging cavities, pulling teeth and the substitution of artificial sets. But what dentist to-day ignores the physiology and pathology of the condition he treats? Will you tell me, then, what is the difference between dentistry and the commonly recognized specialties of medicine? It has been urged that the distinctly mechanical side of dentistry makes it a distinct profession. But is not this mechanical skill simply used to correct a pathological condition? And is not the understanding of this condition of paramount importance? Would you call ophthalmology a distinct profession because every department store has its "trained optician who will examine your eyes free, and fit glasses while you wait," or would you say that these glasses are adjusted to correct serious pathological conditions, and you prefer to have men treat your eyes who are versed in the medical science which teaches of these conditions?

In the early American colonies the blacksmith set broken bones, because he was best prepared to make splints. You would not advise a return to that policy.

Is the end of the orthopedic specialty the making and fitting of plaster casts, jury masts, Scarpa shoes, splints, slings, braces, extensions and all those wonderful mechanical contrivances, or is a study of medical science necessary to their successful use? But, it may be urged, dental colleges teach anatomy, physiology, pathology and all branches sufficient to your needs. True there are such courses, but is there a dental school in this land of the best that provides a curriculum which connects the elemental branches with the pathology and treatment of disease as do the medical schools? Is there a dental school where clinics of general medicine show the relation of disease to health, and the interdependence of constitutional and local conditions—where the principles upon which depends the success of the dental operation are shown by the pathological demonstrations and procedures of a large surgical clinic? I am fully aware that many dental schools are affiliated with medical schools, whose clinics and courses are often at the disposal of dental students; but I know of no school where this attendance on clinics and courses is required. And yet is there any rational separation between the studies of the medical and the dental professions?
This subject is not new. It has been repeatedly presented. When the Dental School of Harvard University was founded in 1868, Dr. Oliver Wendell Holmes, then professor of anatomy in the Harvard Medical School, urged and had adopted the degree of doctor of dental medicine in place of the orthodox D. D. S.

But twenty years before this, Dr. Gardette, of Philadelphia, published a long and exhaustive petition to medical schools for the addition of a professorship of dentistry, and the graduation of men with the degree M. D. qualified to practice the medical specialty of dentistry.

In 1876 a popular wave toward this change swept over the country, various medical and dental societies proclaiming in favor of the recognition of that for which Gardette worked. In 1881 the American Medical Association formed a dental section, which has done excellent work ever since, and admits any graduate of medicine who practices dentistry. It is practically the adoption by the American medical profession of dentistry as a specialty, the degree M. D. being a natural qualification. For fifteen years the World's Medical Congress has had similar dental sections.

As a technical legal definition the legislature of Missouri in 1895 passed a special act declaring dentistry to be a specialty in medicine.

To make the practical change and graduate the dentist from a medical school with the degree of M. D. has been the greatest obstacle in placing dentistry in its logical position. There are arguments presented to show that such a course would take a student too long, that the schooling would contain much that is needless, that the profession under existing circumstances is making great and satisfactory advancement. Then there is opposition on sentimental grounds from the older schools; there is also much money and property invested, there is a certainty of drawing fewer students for the longer and more severe course of study, and there are the selfish interests of men who would lose opportunity for advertisement and pecuniary profit. But these are not unsurmountable objections. There is no medical school in the land that sends its new graduates forth sufficiently qualified to practice any one specialty. Special knowledge is acquired from different instruction, and perhaps, elsewhere. President Eliot, in a recent address to the alumni of the Harvard Medical School, said that the tendency in medical education is to a broader and more elective system. He
calculated that a good student would require sixty years of consecutive study if he devoted himself exclusively to following the courses of Harvard College, and predicted a similar future for the medical school in which a student would elect a four years' course out of an amount of teaching that would take from fifteen to twenty years to complete. And among such elected courses, it seems inevitable to me, shall be dentistry, or, to use the term fostered by Dr. Fillebrown, of Boston, the new medical specialty of stomatology. Such an elective course could certainly be maintained by teaching the elementary branches as in all medical courses, by particular attention to the principles of the higher branches, but sacrificing the technical in surgery, practice, obstetrics, eye and ear, physical diagnosis, etc., for the technical and mechanical in stomatology.

These principles are right: That all medical knowledge need not be identical, as is proven by the success of the specialties; and that dentistry is a branch of medicine, as is shown by analogy. Therefore our conclusion is certain, that the logical place for dentistry is in the same school where the degree of M. D. is given the practitioner of internal medicine, the obstetrician, the surgeon and all other specialists whose success depends fundamentally upon his common knowledge of the same principles of medical science.


The use of clay in crown and bridge work may not be apparent at first glance, because in the actual process of crown and bridge construction it is used only in the production of dies and counterdies for swage work; but when we consider the pliability and ease with which clay can be molded into desired forms, its utility as a means of developing artistic talent and of enhancing the powers of observation becomes appreciable, and for this reason it is rendered especially valuable to the progressive dentist who desires to do really fine and artistic crown and bridge work.

Most practitioners have made a study, more or less minute, of the general forms of the teeth, and could easily recognize any tooth, if presented for examination, and be able to tell whether

*Read before the Odontographic Society.
upper or lower, and from what side of the mouth it had been extracted; yet few are able to differentiate between the variations in form of the occlusal surfaces of the upper and lower bicuspids and molars.

This inability becomes very apparent if an attempt is made to carve or draw the occlusal surface of one of these teeth.

Perhaps not one man in five, if asked to draw a square, could produce one approximately correct. Few, if any, could draw an exact rectangle; but by proper training each man's work could be improved, some more than others, depending on the natural talent inherent in each individual, yet all would be improved by practice.

It is far more difficult to produce detail than to recognize it, for in the recognition of it is involved a simple mental act, while in its production the hand and the eye and the mentality must act together in unison; and just in proportion as these work in harmony and with accuracy will the results produced be harmonious and accurate.

John Ruskin says, "Sculpture signifies the reduction of any shapeless mass of solid matter into an intended shape, whatever the consistence of the substance or the nature of the instrument employed, whether we use for our forming instrument axe, or hammer, or chisel, or our own hands, or water to soften or fire to fuse. Whenever and however we bring into shape a shapeless thing, we do so under the laws of the great art of sculpture."

According to the foregoing statement, dentistry might be classed as a specialty of sculpture proper; for do we not mold into shape shapeless things, and do we not go even further by correcting some of the defective shapes or misshapes nature has made?

Since we can be classed among the fine, as well as with the healing arts, the progressive dentist readily hails with delight any means that will enable him to become more proficient in his chosen calling.

The object of this is to call the attention of the members of this society to the value of clay modeling as a means of developing the artistic talents along specialized lines.

For the specialized needs of the dentist clay modeling can be taken up and followed by any one who so desires, without any special instruction, but a few lessons with an artist or sculptor would be of decided advantage to the beginner. For
those who cannot avail themselves of the services of an instructor, a few simple directions may be of benefit.

Materials needed will be a few pounds of composite clay and two or three modeling tools, which can be bought for a few cents or can easily be made. They should be simple in form, shaped somewhat like the finger but flattened on the sides. These, in addition to the fingers, will be all the tools that will be needed. The fingers really do most of the work, while the tools aid in making the work a little more definite.

A convenient size to make a model tooth would be from one and a half to two inches across the occlusal surface.

The model used as a pattern should be a natural tooth in as perfect a condition as possible. This can be set in a small piece of clay in such a position as to present the occlusal surface directly toward the modeler.

Outline this surface of the tooth, marking the grooves in their proper relation, then with the tool remove the clay along the sides of the groove, and in this manner produce the slope of the cusps, being careful not to lose the proportions the grooves have outlined.

When this surface has been molded into proper proportions, the position of the model tooth can be changed and one of the surfaces produced, and so on until the entire crown and roots can be developed if so desired.

In order to get the best results, a tooth should be modeled a number of times, until its form and detail is familiar, and can be produced from memory. This can be done by alternation, using first the natural tooth as pattern, then modeling the same from memory, and comparing with the pattern tooth. The first efforts will naturally be crude, but continued application will accomplish results both pleasing and satisfactory.

Black's Anatomy is a valuable help in this work, because it gives a thorough, detailed analysis of each individual tooth, and of each and all the surface markings, and can be used in conjunction with the natural teeth to very great advantage.

The following description of the occlusal surface of the lower first molar is taken from this work, and who could not, when modeling this surface, approach more nearly the ideal, after reading such a description.

"The outline of the occlusal surface, when seen in a line with the long axis of the tooth, is trapezoidal, with the buccal marginal
line the longest. The buccal angles are about equally acute, while the lingual are equally obtuse, and all more or less rounded. The buccal margin is convex, but made irregular by two buccal grooves. The lingual margin is nearly straight, but sometimes slightly concave, or notched in the center of its length, by the lingual grooves, but more generally it is slightly convex.

"The occlusal surface has five developmental grooves—the mesial, buccal, disto-buccal, lingual and distal—which divide it into five developmental parts, or lobes. These are the mesio-buccal (a), disto-buccal (b), mesio-lingual (c), disto-lingual (d), and distal (e), lobes; each bearing a cusp of the same name. The mesial groove (n) runs from the central fossa over the mesial marginal ridge to the mesial surface.

"The buccal groove runs in a deep sulcus from the central pit to and over the buccal marginal ridge to the buccal surface, and divides the mesio-buccal from the disto-buccal cusp. The disto-buccal groove (p), also runs bucco-distally, from the central pit over the buccal ridge, more or less near the distal angle, as the distal cusp is large or small. It divides the disto-buccal lobe from the distal.

"The lingual groove (s), runs from the central pit in a deep sulcus to and over the lingual marginal ridge, onto the lingual surface and divides the two lingual lobes.

"The distal groove (r) runs distally over the distal marginal ridge, and divides the disto-lingual lobe from the distal. The mesial and distal grooves form a line traversing the whole extent of the occlusal surface, from mesial to distal, in the center of which is a V-shaped deflection, with its point to the lingual, the base receiving the point of the triangular ridge (i) of the disto-buccal cusp.

"In most examples the central fossa occupies all the occlusal surface within the circle of the summit of the marginal ridges.

"The occlusal surface of the lower first molar has five cusps, one on each of the five lobes, three on the buccal marginal and two on the lingual marginal ridge. Usually, these are not so high and prominent as the cusps of the upper molars. The mesio-buccal (a) is the largest and strongest of the buccal cusps, and occupies rather more than one-third of the buccal marginal ridge. The disto-buccal cusp (b) is of less extent from mesial to distal, but has a longer triangular ridge, though not so high, which ends in
the point of the V-shaped deflection of the mesial and distal grooves.

"The lingual cusps (c, d) are about equal in size and height (perhaps the mesial is a little higher on the average). They have strong triangular ridges (k, l) which terminate in the angles formed by the junction of the lingual with the mesial and distal grooves in the central pit.

"The distal cusp (e) occupies the distal portion of the buccal ridge, and forms the disto-buccal angle of the occlusal surface. It is the smallest of the five cusps, and varies most in its relative size.

"It is the distinguishing mark of the lower first molar, being but rarely absent in that tooth, and never present in the lower second molar."

This is not the full description of this surface as given in the Anatomy, but it shows of how much value this work will be to the modeler.

In order to preserve the modeled teeth in as permanent a form as possible, a description of the method is here given:

Oil the outer surface of the clay tooth, and after making a mix of plaster sufficient to cover a surface about four inches in diameter and an inch in depth, press the modeled tooth into the plaster far enough to get the entire outline of the occlusal surface.

The plaster is now allowed to harden, then the upper surface is smoothed, notched in one or two places, varnished, and another mix of plaster applied to one-half the circumference of the model, building it in such a way as to leave the margins square. When this plaster has set the margins are varnished, and the last piece is completed by building plaster on the base and against these margins and the clay model.

The three parts can easily be separated, the clay removed and the inside of the mold varnished, after which the matrix can be filled with plaster. When the sections are removed, the plaster tooth can be trimmed and the piece kept for a pattern.

A little time devoted to modeling the various teeth and reproducing them in plaster will soon give a set of working models that will be extremely useful in carved plaster cusp work, and for cusp and contour work in porcelain art.

Clay modeling, specialized to meet the wants of the dentist, may be considered as a sort of technique training, and plaster mod-
eling a practical application of the knowledge, gained from the clay, to the actual processes of crown and bridge construction.

The manner in which it is usually manipulated is as follows:

When a molar or bicuspid band has been properly fitted to the root of the tooth, the impression taken, molds procured and the case mounted on the articulator, the occlusal surfaces of the opposite teeth should be varnished, the band filled with plaster and the articulator closed tightly.

This will give an accurate impression of the surfaces against which the cusps of the crown must strike. Now, with the knowledge one has of the forms of the cusps and the location of the grooves on the occlusal surface, cusps can be carved in the plaster corresponding to the occlusal conditions.

The margins of the cusps must be carved even with the inner side of the band to compensate for the two thicknesses of gold that form the cusps, and which is conformed to the outside of the die.

When the carving of the cusps is completed, the band, with cusps, is removed, and pressed into moldine, and a die of fusible metal obtained.

The steps from here on are familiar to all, so the details will be carried no further.

As a means of encouraging that which is highest and best in prosthetic dentistry, clay modeling stands without a rival; and I feel assured that those who once undertake it will never regret the time spent nor money expended, but, on the contrary, will feel both pleasantly surprised and greatly benefited in the results accomplished.

_European Dentistry._*

By W. A. Ivory, D. D. S., Wayne, Nebraska.

You are no doubt aware that there are strong feelings of prejudice existing on both sides in regard to things European and American, and when I found that dentistry in Europe was practiced so differently from what I had expected and from what we have been taught to think is the right way, I must say that I had feelings of this kind myself. Perhaps it is well to say, too, that in

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*Read before the Nebraska State Dental Society, held at Lincoln, Neb., May, 1897.
a country where they are all so exclusive, not given to answering
questions, but only to asking them, it is quite impossible to get at
the real facts in the case, although in what I have to say I will
endeavor to fairly and honestly express myself about European
dentistry only as I saw it, and the impression it left on my mind
during the year I was privileged to spend there.

I will in the first place confine myself to the United Kingdom,
though some things said may in a general way apply to all
the countries but it shall in no way apply to American den-
tists who are practicing there—of these I shall speak later on.

They have quacks and advertising men, of course, but these
are of such a low order that they are not worth considering; our
cheap men have some redeeming features, but a careful study of
these men failed to show anything worthy whatever. They are
always located in the business portion of the city, and call them-
selves American dentists, and in most cases have the whole store
front filled with false teeth, etc. There is another class of den-
tists who might be called cheap, but they are not advertising men;
they copy as largely as possible after the better class of dentists,
but have none of the qualities that will bring around them the
better class of people.

Their fees for filling are about the same as for extracting, and
the work is so poorly done that filling teeth is not encouraged.

The representative men of the profession are always located
in the residence portion, and most frequently these are all closely
associated together in one part of the city; the office is always on
the ground floor, and in most cases is also the residence of the
dentist; but whether this is so or not, the furnishings are always
the same and exactly that of a private residence.

The only sign these men have is a small brass plate on the
door; often it is simply "Mr. Brown," though in many cases they
have L. D. S., M. R. C. S., etc., and when it is only the plain
name these men are extremely hard to find, as almost every door
has a brass plate, and the architectural design of each house is
very similar.

There is never any way to open these doors from the outside.
The large proverbial brass knob is always there to pull it shut, but
none to open it by, so it is always necessary to ring for admittance;
and if there is a yard in front of the house, which is often the case,
you will also have to ring for admittance to this.
The entrance is always into a hallway, and in every instance my attention was called to the number of ponderous locks on the inside of the door, which were there, I thought, mainly for the purpose of carrying their thoughts back to "ye olden time." The servant, invariably in dress suit, who answers your ring will show you into the waiting room, which is always the dining room and furnished as such. While there is a very wide difference in the cost of the furnishings, the style is always the same, so that when you have seen one office, you may know that every other in the general arrangement will be just like it.

If a man has the means to have these furnishings in good taste, has the qualities of a gentleman, and can obtain recognition of some of the nobility his success is practically assured, although he may have very few of the qualities of a good dentist. The judgment of one with such a recommendation would never be questioned by one of his patients, so he would simply advise for them in his practice something that he has the-ability to do, and I am not sure but that social standing or a recommendation of this kind would count for more in almost every case than skill in saving teeth.

Changes are few in that country; when once people have given their patronage to an office they seldom go elsewhere. And it is also a fact that any stranger can buy out a practice anywhere in Europe, and if he is in any sense worthy, he will undoubtedly retain the full patronage of the office—so it would appear that it is the office rather than the man which needs to be established.

Another fact that will bear out this idea is that it is very seldom that patients will find fault if the work is done by an assistant, so there exists little necessity for dentists endeavoring to keep up with the advance of dental progress, or be more skillful in performing their operations; for theirs is a "finished profession"—simply following the methods already established, and it is more a money consideration with them than the real benefit they might do their patrons.

They get as much for putting medicine in a tooth to relieve pain as they do for a filling; extracting teeth they speak of as a surgical operation, and what differently can they do when so many of them say that they work for thirty patients regularly every day?

Judging from what I saw, there is very little care taken of the teeth in that country, for I am sure I would see more decayed
teeth in one week on the streets of any of their cities than I would see here in a life time. A very prominent dentist in Manchester, who is dean of their principal college, said to me: "I have no faith whatever in stopping teeth, and discourage it all I can." Another prominent dentist in Liverpool said: "You fellows in America are killing yourselves trying to save all the teeth, and filling teeth with gold; we extract them, take an impression, and the man in the laboratory does the rest."

The fee system is another drawback to skillful operating—one guinea being the regular charge for each operation.

This was illustrated to me by a dentist whose patient had just left his office; he had only smoothed off a rough place on a tooth of this patient, and when it felt all right to his tongue, said "Thank you," laid his guinea on the table and walked out, and would have done exactly the same thing had it been a gold filling that was put in for him.

One dentist in Huddersfield, a city of 150,000 population, had solved the problem of saving teeth as far as he was concerned; said he: "There is not one dentist here that is making any attempt to fill teeth whatever, and I am going to America to get some man who can do this work, as I cannot do it myself, and then I am going to fill teeth six months for nothing just to show people that it can be done."

Very many of them know no use for the rubber dam; not that they have any substitute, but simply because they are doing nothing to require it; while the masses of the people are suffering, totally ignorant of the fact that they have not exhausted the resources of modern dentistry.

I got myself into difficulty soon after I arrived there by calling a dentist "Doctor," and I did not forget afterward that the title doctor was never applied to a dentist; by most of his clientele a dentist is looked upon as a servant, and treated as such. Their definition of a gentleman is one who can live on his income; this is especially so if it has been inherited. I think one who had earned this competency himself would not be looked upon with much favor. Speaking about a dentist one day, and referring to him as a gentleman, the party quickly corrected me, saying "Oh, no; he is not a gentleman, he is a dentist," and he was absolutely correct according to their standard of reasoning.

Titles, too, count for a great deal there, and many cannot
understand why this does not help them fill teeth; one dentist said to me, “Why, I have more titles than any dentist in England, and still I cannot fill teeth with gold.” Filling teeth with gold is not practiced to any great extent, nor is it looked upon with favor by the people; their chief objection to it is the appearance, but why this is so and yet at the same time it is considered perfectly “proper” to allow teeth to go without any care whatever with cavities of decay in plain sight, is something hard to understand.

Cements and amalgams are the chief materials used in filling teeth. A prominent dentist said to me, “We can get just as much for a cement filling as for gold, and as soon as they are worn out the people are perfectly willing to pay to have the teeth refilled; consequently, it is to our advantage in every way to continue the use of cement.”

I do not know to what extent the treating and filling of roots is practiced, but I was told by representative men in the profession that the custom with them was to leave an opening in the filling when they did an operation of this kind. I made numerous inquiries concerning regulating and bridge work, but was unable to learn anything in regard to either, and I saw nothing in the laboratories I was in to indicate that this class of work was ever done. The only crown work I saw was made by Dr. Cunningham, at his office in Cambridge. It was a difficult case, and nicely done.

Generally speaking, artificial dentures are, to a very considerable extent, the work of the dentist, and there are reasons, of course, why they should not wish it changed; this class of work has never been cut in price, and again, no dentist is obliged to do his own laboratory work, nor would he think of doing it. Labor is cheap there, and it is no trouble to train a man to do this class of work, and when he is once trained in this particular branch he will stay for life if he is wanted.

Many of these dentures are made up on a metal base, but I do not remember of having seen a single one where the teeth were attached with rubber; they are always soldered to the plates. They are still using the old-fashioned spiral springs to hold the plates in place instead of the suction plates.

Excising teeth instead of extracting them, and putting the plate over the roots, was another feature in dentistry that was new to me; they claim in its favor that there is no absorption of the
gums, although it is quite easy to detect these cases from the red line at the margin of the gum.

Though they differ greatly from us in the practice of prothetic dentistry, if they are entitled to any credit for what they have attained in the profession it is along this line.

The dentists of the United Kingdom are, as a class, a splendid lot of men, well educated and thorough gentlemen; while they are making efforts to raise the standard of dentistry, yet from what I saw and was able to learn I am of the opinion, generally speaking, that but little progress is being made. It is only a few that can be said to be skillful operators, and it was surprising to me to see what little attention was given to this most important branch of the profession. I would say that they are much more careful not to violate the rules of etiquette or professional customs, and to be eminently "proper" at all times, than they are to follow closely the teachings of a Black or a Johnson.

By their high gentlemanly qualities and by inheritance many of them have gotten a very rich clientele, and are justified in getting good fees, for it is a fact that many people over there would prefer patronizing an office where their grandfathers had had work done than any other. "What was good enough for them is good enough for me," is their reasoning; but be this as it may, it is nevertheless true that the teeth are not receiving the care they should.

How often have I said to myself as I walked along their streets, "What a field here for some of our operators," but their laws are almost prohibitory; listening to a discussion at a dental society meeting, where one of the speakers took exception to the term "American dentistry," I found myself asking the question, "Is there any other?" I remember seeing but very few dental journals or text-books; one of these, an English journal, I am sorry now I did not in some way obtain, for I am sure if you could read it you would say that my description of dentistry in Europe was quite flattering. I think the Cosmos and Items of Interest are the journals most generally read.

I am unable to give any information regarding the work they are doing in their colleges of dentistry; most of them require a three years' course, and in addition to this it is necessary to serve two years with a preceptor in a laboratory.

Very many of the young men who are ambitious to succeed in
the profession come to America and graduate from our schools, having in addition a diploma from one of their own colleges; one stated to me "That he got the privilege of practicing from their schools but the ability from ours." The degree of Licentiate of Dental Surgery can only be granted by the General Medical Council, as the dental profession has no authority, as I understand it, except that granted it by the medical profession.

The students of all schools are obliged to go to either London, Dublin or Edinburg for a final examination; so their diplomas would read respectively L. D. S. E.—L. D. S. I.—L. D. S. Eng., thus distinguishing from which school they have been granted. While a diploma from London is considered as carrying more weight, I think one from any of the schools will permit the holder to practice anywhere, although I am not sure that a diploma from Dublin would be accepted in England.

I visited a school of dental technology in London which is quite a model of perfection; it is fitted up with all modern improvements, and they are prepared to teach a thorough course in manual training, electricity, chemistry, metallurgy, mechanical dentistry in all its branches, and crown and bridge work. The principal is Mr. George Cunningham, M. A., D. M. D., L. D. S., R. C. S., and it was mainly through his exertions that the school was started; it has the elements of a splendid institution. They have but few students, and it has no support whatever from the profession which it is so well calculated to assist.

Though there is a tendency in England for the American dentists practicing there to more and more follow in the way of the English dentists, yet American dentistry being acknowledged superior to any other, and as nearly all of these Americans are thorough gentlemen and abundantly able to maintain their reputation for saving teeth in a skillful manner, they have things much their own way. This might be illustrated by a little conversation occurring in Dr. Mitchell's office in London. One was complaining about high charges, and Dr. Mitchell said: "Well, what are you going to do about it? We know you will not go to any of your English dentists, and you have made laws to keep out any other Americans; so if you do not come to me you will go to some of my friends, and they will not do any different with you."

There is not a very lively feeling of friendship entertained for the American dentists practicing in Europe by the rest of the den-
tal profession; it is possible that they feel that their rights are being interfered with, and then they do not take kindly to the preference shown American dentists and dentistry. They also have a grievance from the fact that some of our best dentists who have been visiting there, and not finding dentistry practiced up to our standard, were loud in condemning the whole profession, and saying things, and in a way, that certainly would be distasteful to any people.

It was a particular pleasure to me, after having spent five months in England, Scotland and Ireland, to be able to meet with the American Dental Society of Europe, which met in the city of Boulogne, France, in the month of August, 1895. In order to become a member of this society it is essential to hold a diploma from some reputable American dental college, and nearly all the American dentists who are practicing in Europe are members of this society, hence it is well supported; they meet once a year to exchange greetings and to talk about and demonstrate what is new and useful in dentistry. It seemed like getting home again to meet with these gentlemen, and if I ever felt proud of being an American citizen it was at this time; the banquet at the close brought forth the truly American sentiment, and exhibited a spirit which proved that no matter how long they were absent, their love and regard for the stars and stripes was ever the same, and in no instance had they transferred their love and allegiance to other lands, and I could not help but feel that these men were wielding a potent influence for good among the people with whom they were associated.

The United States of America are well and creditably represented in all the principal cities by these men who are in every way worthy, and having won the confidence of the people, the most of them have succeeded in building up large and lucrative practices. Besides these there are on the continent, and in almost every city, a large number of American dentists who are native born subjects of the countries, but who came to the United States, graduated from our dental schools and then returned to their native homes and commenced to practice as American dentists, and in a very large number of cases claiming American citizenship. It is very gratifying to hear the high words of praise for our country from all who have spent any time here.

Happening into a dental college one morning in Berlin, the
professor, who was about to administer chloroform for the purpose of extracting a troublesome molar, asked me if I would like to witness the operation. Of course I assented. As the patient was recovering from the effects of the anaesthetic, he turned his head, and seeing me for the first time, stared at me in rather a vacant way, when the professor introduced me as a doctor from America, when the fellow started up, saying, "Are you from America? My God! I'm glad to see you; I was in that country once, and I was fool enough to come back to see my folks, and they nabbed me and made me serve in the army—but I am going back there as soon as I can get away;" and then he shook my hand as if I was the only friend he had in the world.

A few weeks later I had the privilege of attending the French Dental Society which met at Bordeaux, in the south of France; this meeting opened with all the members in full dress, which was rather a novel feature to me. There were few papers of scientific nature; one of these, which seemed to monopolize more of the time than part of the members wished, brought out a heated discussion, and it looked at one time as if they would come to blows. Knowing nothing of the language, it was hard for me to derive any benefit from what was said, but it was easy to discern that this meeting was not of the practical nature of that at Boulogne, and was not calculated to raise the standard of dentistry.

There were no clinics or demonstrations, and I do not think the discussion of the papers elicited anything of a practical nature; and in the articles on sale in the supply houses there was nothing whatever that would be used in operative dentistry. From what I was able to learn of dentistry in France, the profession is not nearly so far advanced as it is in England. There are some exceedingly bright men in the profession, of course; but, generally speaking, there seems to be very little ambition for improvement.

In some of the principal cities of Switzerland, such as Zurich, Basel and Geneva, I met a number of exceptionally competent dentists who were American graduates. Kolliker's dental department in Zurich is quite as well supplied with the new appliances as our own depots.

I spent two days very pleasantly with Dr. Herbst, of Bremen. While he knew very little of English or I of German, the time passed very pleasantly for both of us I am sure. Dr. Herbst is an exceptionally skillful man; he is original in his methods, and ap-
pears to succeed in doing everything he undertakes, and doing it in a very short space of time. In the two days I stood at his chair I learned several things which have since been helpful to me; though he is so skillful an operator, he could not hold a practice in our country owing to the fact that he has what is termed a "slam-bang" way of performing his operations which is characteristic of the German dentists.

I saw him put in a number of gold fillings by his celebrated process, and while the work was done quickly, and the gold in the cavity solid beyond any doubt, yet in most of the cases the enamel had been fractured by the force used in his method of burnishing, which was entirely unnecessary had any degree of care been used in his manipulations. He made several crowns and also inserted a bridge. This was the four upper incisors, where each root was in place and a pin in each one—better speaking, would be four crowns soldered together. While the work was skillfully done, in no case had he given any attention whatever to the treatment of the roots; calling his attention to this he made me understand that he deemed it entirely unnecessary. He considered that it took altogether too much time.

He was very kind in showing me through his factory, where he is manufacturing gold quite extensively; in working some of this which I brought with me it has given me the utmost satisfaction.

Another of their bright minds in dentistry is Dr. Sachs, of Breslau. I spent several hours in his operating room, and found him also original in his views and methods, and an exceedingly clever operator. Through his kindness I was enabled to spend some time in the dental school of which he is the principal, and the methods they are teaching in reference to operative and mechanical dentistry are the correct ones—not knowing the language I could not judge further than this.

The leading school in Germany is in Berlin. Dr. W. D. Miller is in charge of this school, and he has an able colaborer in Dr. Warnekros. I visited this school several times and am of the opinion that it is conducted on much the same plan as our own colleges.

Paris has two schools of dentistry. I am personally acquainted with some of the demonstrators in these colleges, and with them visited the institutions several times. The arrangements are all modern, but it would be difficult to judge of the character of work
that is being done without giving it a most careful and extended study.

To a very great extent America is manufacturing the dental supplies for the world, with the exception of teeth. Germans manufacture quite extensively, but nearly everything they make is of such poor quality that the better class of dentists have discarded their use entirely, saying that they expect excavators, chisels, etc., to break about the first time they are used. Chairs made on the same pattern as American chairs are always out of order, and dealers say that they can get more for a second hand S. S. White or Wilkerson chair than for a new one made from the same pattern by a German house.

They make electrical appliances of all kinds, except cataphor-esis—this has not reached them yet—but compared with our American appliances they are still in a very primitive stage of evolution. The Germans are great imitators and will manufacture almost everything that is taken to their country and sold there; to protect themselves the S. S. White Dental Manufacturing Co. has opened up a depot in Berlin for the purpose of supplying dealers, or will sell direct to any dentist through his dealer.

Outside of the United States, England is the only country that is engaged to any particular extent in the manufacture of artificial teeth. Ash & Sons, of London, are perhaps the largest makers of teeth in the world.

The quality of their other manufactures in England is much better than that of the Germans, although they do not manufacture so many of the latest novelties, because they are not such great imitators as the Germans. Some of their appliances are worth mentioning; their gas apparatus is supplied with two cylinders, from either of which the gas can be turned by the foot of the operator into the bag—this is to lessen the danger of the supply of gas giving out in the middle of an operation. Another thing I would mention is their vulcanizers, but more particularly the flasks; these are much larger than ours, and it occurred to me that they would prove much more convenient.

There is one thing for which we Americans are not sufficiently thankful, and that is sunlight; in every dental office in Europe it is necessary to have artificial light in order to be able to work; the one most frequently used is a globe of water, behind which is a gas jet; this gas can be shifted in any direction desired. There are
many others, of course, some being electric, but I will not trouble you with a description of their various ways of getting light.

To tell all about the various acts of kindness that I received from these dentists of Europe would take more time than this society would care to give me on this occasion, but I feel that I shall always be indebted to them; I could not speak of one for that would make it necessary to speak of all, and from the letters which I have received from some of them since my return, I am glad to be able to count them among my best friends.

Hydronaphthol.*

By H. F. Dean, D. D. S., Whitewater, Wis.

Probably most of you present have read Dr. Sidney S. Stowell's excellent article on Hydronaphthol, published in the November Cosmos of last year, and doubtless many of you, like myself, were favorably impressed and have been trying hydronaphthol for yourselves.

Dr. Stowell writes that he has used the drug constantly for more than five years to the exclusion of nearly every other antiseptic agent. I have been using hydronaphthol since January 1 this year, not long enough to feel that I know much about its action.

I have not combined the drug with any other antiseptic, but have followed the instructions of the chemists, which is, "that the applications in surgery must be distinct and not associated with any other antiseptic, as by so doing its action is nullified."

Hydronaphthol is a grayish powder with a sharp, biting taste, somewhat irritating to the mucous membrane of the nose, and, of course, alcoholic solutions produce pain if applied to the live exposed pulp of a tooth until the alcohol is evaporated.

It is not necessary here that a full description of hydronaphthol be given, but a brief statement of qualities might be helpful. On the original packages is the following: "Hydronaphthol possesses one-fifth the antiseptic strength of mercury bichloride, but has double the strength of betanaphthol and iodoform, three times the strength of salicylic acid, and about fourteen times the strength of carbolic acid. Unlike all of these antiseptics, it is ab-

*Read before the Wisconsin State Dental Society.
solutely nonpoisonous and can be employed with perfect impunity as a preservative in cases where no other known antiseptic could be used at all. Solutions of 1 to 10,000 parts are reliably antiseptic, but to arrest the action of putrefactive germs already formed, stronger solutions are necessary.

**SOLUBLE.**

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<thead>
<tr>
<th>Solution</th>
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<tr>
<td>In alcohol</td>
<td>1-2</td>
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<tr>
<td>In hot water</td>
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<tr>
<td>In cold water</td>
<td>1-100</td>
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<tr>
<td>In olive oil</td>
<td>1-20</td>
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<td>In ether</td>
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"It is also freely soluble in benzol and the fixed oils. Alkaline solutions dissolve it readily but greatly reduce its antiseptic properties. The alcoholic solution (1 part in 2) reduced to any desired strength with glycerine affords a convenient solution for many purposes." And in their circular they say, in part: It is sufficiently soluble to effect thorough antisepsis of wound discharge and sufficiently insoluble not to be readily washed away from the dressing. The minimum antiseptic action is about 1 in 7,200 parts, while the maximum lies between 1 in 2,500 and 1 in 3,000.

Alcoholic solutions of hydronaphthol are exceedingly penetrating. When placed in a dry root canal some of the powder must be deposited in the delicate tubuli of the dentine. After evaporation, this on account of its insolubility and great antiseptic strength must make the nerve canal as thoroughly aseptic as one could wish. In dental practice it seems especially indicated where it is impossible to prevent it from coming in contact with the fluids of the mouth, because one need not be afraid of toxic effects, and it is odorless, giving the patient no discomfort.

We cannot say this of iodoform. In all the cases where I have used hydronaphthol in the treatment of abscessing teeth, I have been surprised at the rapidity of its action. Oil of cassia, eugenol or myrtol has never worked in my hands so satisfactorily.

So far I have discovered no irritating effect whatever in its use; on the contrary I have often had my patients, while inserting at a treatment in a root canal, say immediately "That makes it feel good." Those of us who have undergone several successive treatments of oil of cassia in a pulpless tooth know how intensely
irritating it becomes, making a change of remedy absolutely necessary. I have never had a patient complain of a treatment or treatments of hydronaphthol being irritating or uncomfortable, and I have used it exclusively in the treatment of pulp canals since January 1—treating a great number.

I have used hydronaphthol in treating pyorrhœa pockets with satisfactory results. One bad case of pyorrhœa alveolaris where nothing was hoped for I will mention. Mr. C. had been troubled for years with pyorrhœa around the roots of the lower incisors and cuspids. He had been treated in Chicago by specialists with but little relief. Two of the teeth had become so bad that extraction was necessary. When he first came to me there were two left with pockets running to the ends of the roots and the teeth very loose. I removed what little calculus was present, and had treated them occasionally with pyrozone and terebene for temporary relief during the past year. During the latter part of the winter he came again, the pockets troubling him. This time I packed the deep pockets, with cotton, wet in a saturated alcoholic sol. of hydronaphthol. He returned some time later and said he believed that last treatment had done some good. I gave the pockets another treatment, and in three or four days a third. Some time after when he returned I found the pockets had practically disappeared.

I do not doubt but there are drugs and modes of treatment that would have done as well in the above case; but in a country practice where it is impossible to see your patient regularly or to persuade them to submit to a systematic course of treatment, hydronaphthol seems to have considerable promise, and for giving comfort to the patient I do not believe there is a drug that compares with it.

In treating abscessing teeth I clean out the root canals at once and dry them as far as possible with cotton, then place a broach with a few fibers of cotton wound on it in the canal and carry a little of the alcoholic solution on my pliers and let it follow the broach up the canal, pumping it carefully in. If it is a blind abscess and needs drainage I leave it open for a day or so until it is safe to leave a treatment in the canal. So far I have made every case better from the beginning, but in these cases I have been very careful.

I have also used the hydronaphthol powder with oxide of zinc.
as a nerve capping with (I shall have to admit) some recklessness, but so far without failures.

We all know that there is no one drug that will cure all diseases, and in time we shall know where not to use hydronaphthol. We still need a great many of the old drugs that have served us well in the past; but this one seems of considerable promise in some cases, in fact more promise than any new drug I have ever tried.

Specialism in Country Practice.*

By R. W. Robertson, D. D. S., Plymouth, Wis.

Dentistry as a profession in years is but an infant compared with the other recognized professions.

Scarcely more than a half century has passed since attention was first paid to dental education. However, as short as this time may seem in the establishment of a profession, yet during that time the growth has been as phenomenal as the shooting forth of a plant under a tropic sun.

The time has now arrived when we can see examples of great dentists occupying exalted stations in the realm of science beside those of great physicians and great philosophers, some of which may be specialists and others of which may be general practitioners. It matters not to which class they belong, they are without doubt worthy of their exalted stations. Their illustriousness is due to their untiring efforts for the advancement of the profession.

We can truly allude with professional pride to this wonderful advancement in a half century's time, although many of us have to acknowledge with chagrin, when we see some of the specimens of dental art made over fifty years ago, the superior skill of some of those pioneers of dentistry.

How many of us think we can start out in the wilderness with our laboratory in a carpetbag and stop at a settler's cabin to make a plate for one of the inmates—a plate, too, that would be a credit to many of us with our modern equipped laboratories. But you say circumstances alter cases; true, so also do circumstances lessen the advancement of skill sometimes.

By the improved methods in manufacturing, the mechanical

*Read before the Wisconsin State Dental Society.
part of our work at least has been made comparatively easy. Here is where our advancement has largely been made, and not in individual skill only.

Those to whom the most credit is due for this progress it may be true lack considerable of being learned dentists, if we accept the meaning of the term in its broadest sense.

A learned man is one who knows everything about something and something about everything. From this hypothesis I assume that a learned dentist is one who knows everything about teeth. Can this be? For a man to know everything about teeth, must know everything about biology, physiology, pathology, and all the other ologies. If this is the case I conclude that we have no learned dentists, strictly speaking.

Our hypothesis has two essentials to be learned: First, must know everything about something; and second, must know something about everything.

The first is likened to the microscope, which by its system of lenses, so constructed and arranged, enables the eye to penetrate into the very substance of matter and disclose the secrets of its formation; so the man who knows everything about something by his wonderful power of mental penetration is able to take that something and search through its intricacies and become the possessor of its secrets. To be able so to do places him among that class known as specialists. The dental specialist is, therefore, the microscope of the profession, and is only in part what constitutes a learned dentist.

The second may be likened to the telescope, that far-seeing instrument that gives man the power to search for new worlds in that infinite expanse beyond the vision of the naked eye.

Practically I also say, the man who knows something about everything is capable of reaching out among the apparently invisible realms of nature and bring the objects of his investigations into a closer relation with the immediate.

The general practitioner is the telescope of the profession, but we also see he only fulfills but partially the requirements of a learned dentist, and of whom it has been said, "knows a little of everything and not much of anything."

The general practitioner with his telescopic mind permits himself to change the direction of his thought and associate his ideas with matters at hand. He has the ability of collecting his knowl-
edge with all other knowledge. He collects his earth with that multitude of earths of the planetary and stellar systems; the terrestrial with the celestial; and thus realizes that he is not only the subject of a branch of the work, but has an inheritance in the universal work.

The microscopic mind of the specialist has a tendency to conform to the thing about which it is continuously occupied. He imprisons himself within the limits of his specialization. He sees value only in anything that has direct bearing upon his specialty, like the mathematician who loses the power of estimating the value of anything that cannot be mathematically proven.

He is not always satisfied to endow with specific character some part, but has a tendency to subdivide until the original identity is lost. The botanist may analyze a flower until he has no flower. The effect of such a contraction of ideas is apt to be what is generally called crankiness. While these are some of the disadvantages of specialization, its advantages are by no means to be underestimated.

The dentist who gives exclusive attention to orthodontia eventually becomes the possessor of a knowledge that enables him to skilfully and expeditiously correct such irregularities of the teeth as are apt to occur. Such is the case with the crown and bridge worker and the other specialists. Its helpfulness is often wonderful and its advantages in many cases beyond question.

What I wish to consider here is the realm to which specialization properly belongs. Has dental specialization a place in the country practice? So far as his thinking goes the dental specialist is apt to see everything through the spectacles that have insensibly come over his eyes from the specialty which he adores. The bridge expert sees at a glance an opportunity to make an effectual piece of bridge work that another equally skilled in his line would replace the lost parts with a plate; the crown maker sees a chance of crowning a tooth that a brother practitioner would at once embrace the opportunity of filling—both of which perhaps would be perfectly satisfactory. Yet there are cases that are favorable to one and not to the other; and for the expert noncohesive gold operator to fill a tooth, to further his ambitions to excel in his specialty, that should be crowned is guilty of not giving his patient that which he most desired. Again we have, throughout the country, dentists and others under the protection of the laws of
dentistry, either traveling about or permanently located, extracting teeth by the wholesale to advertise some local obtundent or create cases for artificial dentures of their own particular liking.

Specialism has its advantages and disadvantages, but its disadvantages are more to be discerned if practiced without the cities than if within; for it cannot be practiced exclusively in the country and not be detrimental to the profession. What we need and should have in our country towns are dentists capable and having confidence in their ability to successfully handle those difficult cases that occur in a country practice whether it comes under the province of a specialty or not. These complicated cases may be of rare occurrence, in fact some of them confined exclusively to the cities; nevertheless many cases occur of the exceptional kind in a country practice that is enough to tax the ingenuity and skill of he who specializes in that work. He cannot say to his patient—this is out of my line, my friend across the way makes a specialty of that work, he can minister to your needs better than I—but on the other hand he takes hold of the case probably at the expense of more time and considerable brain racking, and if he is made of the right kind of metal he will eventually succeed.

President's Address.*


We are gathered again in this beautiful city in annual convention to discuss the new theories, aphorisms, inventions and remedies that have been discovered and brought out by the thinking minds and hard workers in our profession since last we met; and to compare them with those that we have already passed upon.

It affords me great pleasure to preside over a society that has passed through darkness and hard struggles to light and success; a society which at the first meeting I attended was without a directing head, the president having left the State without notifying any of its members. But there was a handful of hard and earnest workers that stood together and pulled it through until now we have a society that is gradually but surely working itself to the front ranks.

*Read before the Wisconsin State Dental Society.
With our rapidly increasing membership, and the influx of new blood each year, petty jealousies have been forced out and supplanted by a feeling of fraternity, and have given place to broader and more advanced ideas which mark our progress, and which is demonstrated more and more as we meet from year to year.

The noble profession of dentistry is an art as well as a science; and of all the different branches of the healing art or medical science there is none that has made such rapid strides, and has advanced so far as our own chosen profession, which has broadened out to such an extent that it is now beyond the capabilities of anyone man to be perfect in all its branches. Consequently we are forced to specialize more or less, naturally choosing that branch to which we most incline; and ere we are yet aware we are drifting into the narrow channels of specialism. It is the realization of this fact, coupled with the fact of our inability to individually determine the value of all the vast claims of new methods and theories promulgated through our journals, that convinces us of the necessity of banding ourselves together and forming societies for friendly and honest interchange of thought and experience in the different special branches, and to sift the various claims of new discoveries and methods so that their proper place and usefulness may be established.

The younger members, fresh from college, filled to the brim with theories, and the older ones full of experience, must all feel this necessity. Now granting this to be so, we are brought to face the deplorable fact that out of about 727 registered dentists in this State we only have a membership of ninety in the State dental society.

In order to have a representation in the national association we have to pledge ourselves to adhere to their code of ethics, which forbids advertising.

In the past we have had several members resign on that account, claiming that they were forced to advertise by quacks coming into their locality and springing handbills and flaring posters on the public and ruining their business. But the public of to-day are becoming more educated, and getting suspicious of the man that has to advertise in order to get business; so that in the future I hope this restriction will not bar any good man from joining our society; and that the absurd idea so often advanced of
"letting down the bars" to increase our membership will never be thought of again.

The young man who has spent his time and money to reach that point where he is able to launch forth upon his career and practice his profession intelligently, backed by his Alma Mater, does not want to be classed with a quack or quasi-quack, who advertises in an underhanded way. He has higher motives governing him, and feels the necessity of continued study and research. He knows he must join a society, for as surely as he isolates himself he will lose his identity in the profession.

Now why does he not join the State society? It should be the first thing he thinks of after receiving his license.

Some years ago I induced several of my friends to attend one of our meetings, with a view of having them join the society; but upon asking them to sign an application I was met with the following answers: Some said, "Do you suppose that I am going to take the chances of being 'jumped upon' by some of the 'big guns' before the whole society for the methods I use, just because it is not their way of operating?" Others said they were afraid to say what they wanted to because they felt timid, and were afraid of being "roasted."

I told them that in the first place we had no "big guns" in our society, but that we were all of the same broad caliber; and that they were very foolish to look upon a discussion as a "roasting bee;" that they would have as much right to express their opinions as anyone else had, no matter how long he had been a member; and that if anybody antagonized their views in a friendly way they must not consider themselves "sat upon," but be ready and willing to defend their statements. This seemed to convince them of their folly, and they joined us. I simply mention this in order to remove any such scruples from the minds of any one that may be a candidate for membership in this society, and at the same time assure him that he will receive none but the kindliest treatment from members of this society, no matter how great the differences of opinion held by him may be to the opinions held by others.

In the line of new discoveries, inventions and remedies, I do not know that there has been anything very startling sprung upon us in the past year. In the operating branch cataphoresis has proven its value, and no doubt has come to stay. There is, however, room for much improvement in the details of application.
Especially is this true in regard to the time consumed to produce the proper effect. That bane to all of us, pyorrhœa alveolaris, Dr. Younger now claims he can successfully treat and cure. One of my patients is at present undergoing his treatment, and I will report the case at our next meeting.

In the line of antiseptics, disinfectants and germ destroyers there seems to be a great deal of activity, especially among the chemical companies, who are constantly sending us samples of new compounds, which, however, we must be cautious about employing, for their efficacy must be thoroughly tested before their value can be truly proven.

That the State Board of Dental Examiners and the National Association of Dental Examiners are doing good work in the direction of elevating the profession is proven by the fact that the diploma mills in Wisconsin have been closed up and most of the dental colleges have now adopted their rules and conditions for obtaining and maintaining recognition by the National Association of Dental Examiners.

For the benefit of those who may not be familiar with these rules, I will read the one relating to preliminary examination required of students seeking admission to colleges, which is as follows: "The minimum preliminary educational requirements of a college shall be a certificate of entrance to the first year of a high school or, in States that have no high school, of graduation from a grammar school, or its equivalent, to be determined by an examination."

This rule if strictly enforced will be the means of barring most of that undesirable element which in the past has drifted into our profession.

One very important point I want to call your attention to, while I have this opportunity, is the fact that the International Tooth Crown and Bridge Company has not been put to sleep by the last knock-out blow dealt them by the Dental Protective Association. They have instituted fresh suits, and we are liable to be called upon again by the representatives of that company, and asked to "pay up." Therefore it may be well for us to consider the best plan for action in this matter. I know of no better and cheaper way than to join the Protective Association, which has fought and beaten them, and which is now watching every move they make, and is therefore best qualified to checkmate them. If it were not
for the past efforts of the Protective Association we would to-day be paying immense royalties on our crown and bridge work. The International Tooth Crown Company is composed of some of the same men that were at the head of the old Rubber Company. Those of us that have had to pay tribute to that company know with what an iron grip they held us, and how we were forced to come to their terms or stand suit in which the company invariably came out the winner. This company is not going to give up without a hard fight. They know if they can once "catch us on the hip" they can "feed fat the ancient grudge they bear us;" and they also know that it is an easy matter to beat us if we are not united and organized against them. I was told not long ago that they had made overtures to the Protective Association, and offered to give each member a free license, and to collect no royalties from them, if the association would promise not to fight or interfere with them. This offer was rejected, and rightly so; for had it been accepted the association in all probability would have gone out of existence, and thus left us an easy prey in the future to the leeches that might secure patents in a similar way as did this company. "Eternal vigilance is the price of liberty," and we can best secure this vigilance through a protective association.

In closing I wish to say that I had the pleasure, last May, of attending a meeting of the Southwestern Wisconsin Dental Society, held at Dodgeville. The meeting was very pleasant, as well as instructive. The boys down there are made of the right kind of stuff, and I would urge all of you when you go home, to seriously consider the matter of forming local or district societies, the best efforts of which should be offered to the State Dental Society, so that at our annual meetings we will be flooded with material, and thus make them so interesting that no member can afford to stay away. There is plenty of talent lying dormant all over this State. It only needs the impetus found in organization to bring it to light.

Thanking you for the honor which gave me this opportunity, we will now proceed with the regular order of business.
THE PHYSIOLOGICAL AND PATHOLOGICAL CONDITION OF THE NERVES RELATIVE TO DENTISTRY.*

BY G. C. MARLOW, D. D. S., BLOOMINGTON, WIS.

In selecting my subject I do so with the full knowledge of my inability to do it justice. It is of prime importance to dentists to know the physiology, anatomy and pathology of the nerves relative to dental work. Perhaps it would be better to say nerve rather than nerves, as I shall limit it to those branches of the fifth nerve which terminate in the teeth and deal with them alone.

The one thing which brings patients to dental offices is pain, and pain is the expression of the pathological condition of the nerve. This leads up to my subject with what I have to say upon it, and I will begin with the anatomy of the fifth nerve.

The fifth nerve has its origin in the medulla oblongata and arises by two roots. The posterior or sensory one is the larger and its beginning is at the posterior gray horn of the medulla. The anterior or motor branch is smaller and arises from two masses of large, multi-polar cells situated on the inner side and close to the gray tubercle and intimately connected with it.

Two roots of the nerve pass forward through an oval opening in the dura mater on the superior border of the petrous portion of the temporal bone, above the inferior auditory meatus. They then run between the bone and the dura mater to the apex of the petrous portion of the temporal bone, where the fiber of the sensory root forms a large, semi-lunar ganglion (Gasserian), while the motor root passes beneath the ganglion without having any connection with it. This ganglion gives off three important branches: The ophthalmic, which passes out of the skull through the sphenoidal fissure; the superior maxillary, which passes out through foramen rotundum, and the inferior maxillary, which passes through the foramen ovale. It is with these nerves, especially the two latter, that the dentist has to deal.

Nerves, generally speaking, terminate in corpusescles or little elongated oval bodies. Gray names the following three principal peripheral nerve endings of sensory nerves, viz.: First, the end bulbs of Krause; second, tactile corpuscle of Wagner; third, the Pacinian corpuscle. To these may be added: Corpusescles of Herbst, corpusescles of Grandy, reticulated end plates and terminal plexus.

*Read before the Wisconsin State Dental Society.
Just which one of these endings is found in the nerves of the pulp no one has as yet demonstrated.

It is enough to say that it is a highly sensitive ending.

Nerves in their physiological condition are of a pearly white appearance and are composed of a medullary or inner portion made up of the nerve cells proper. This is called the axis cylinder of Purkinje. Outside of this is the white substance of Schwann, and outside of this is the neurilemma, a connective tissue which is very tenacious and protects the two inner layers. The white substance of Schwann acts as an insulator to the axis cylinder as the wrapping on an electric wire does. The outer coverings of a nerve are lost at the ending, leaving the nerve proper entirely exposed, which accounts for the extreme sensitiveness of nerve fibrils. The functions of nerves are as follows: First, conveying sensation; second, regulating and producing motion; third, controlling the blood supply and nutrition; fourth, guarding the exposed parts of the body against external injury.

Nerves may suffer from inflammation when they show the usual signs of pain, redness, swelling, heat and loss of function that is seen in the parts.

Degeneration of nerves may result from disease of nerve centers, or even disease or tumors of nerve trunks, or through irritation of the nerve ends from external causes. There may be functional disease of nerves which leaves no pathological appearance, but does affect the function of the nerve. When there is no constitutional diathesis or debility and the nerve force is great and the nerve healthful there is apt to be no inconvenience from slight irritation.

On the other hand, where there is a constitutional diathesis, debility, oversensitiveness of the nerve, or anæmia, a slight irritation is apt to produce intense pain.

Irritation may be either central or peripheral. It is well to discriminate between these two as far as we are able. Dentistry deals only with peripheral irritation; central irritation lies in the province of the physician or surgeon.

I shall name briefly a few of the causes of irritation of the sensory division of the fifth nerve. They are: Caries, exostosis, abscess, pericementitis, pulp nodules, polypus of the pulp, gangrene, or a sympathetic condition.

Caries is the most common cause with which we have to deal. Even when it only affects the dentine, because of the close con-
nection with the odontoblastic fibrils and the fibers of the nerve ends, pain, more or less severe, may be produced. Some believe sensitive dentine to be true inflammation.

After decomposition of the contents of the root canal if there is not a free external opening an abscess is very likely to take place at the apical foramen of the tooth. After the death of the nerve of the pulp pain no longer exists within the tooth, but severe pain is felt owing to the pressure on the nerve and inflammation at the seat of the abscess.

Exostosis is an abnormal bony growth that produces pain by pressure on the nerve.

Pericementitis is caused by injury to the tooth or its surroundings.

Pulp nodules are osseous formations in the pulp chambers. They consist of secondary deposits. They may be purely physiological in character, and are not necessarily pathological. They may be found in the teeth at all ages.

Polypus of the pulp is usually caused by breaking down of the tooth, causing continual irritation of the exposed pulp. It is a tumor formation attached by a constricted neck to the pulp.

Thermal changes and electrical shocks are causes of local irritation. Concussion may produce local irritation, and injuries to the tooth or alveolar process always cause pain as a result of nerve irritation.

Alloy as a Filling Material.*


Conservatism in dentistry, if it means anything, means that all teeth can reasonably be retained through life, and a very substantial progress in the art of conservatism can be noted by the older class of practicing dentists. Hope lies in this fact, and to this end we cast about to discover any and all means that may aid us in our purpose. The public are more critical, exacting and appreciative in these later days, and through our teachings are enabled to form an opinion that will stand the test. They appreciate an alloy filling, because it can be made in one-fourth of the time with less pain and expense than a gold filling, and there are cases where an alloy filling will serve the purpose as well as a gold

*Read before the Wisconsin State Dental Society.
filling. These facts should never be overlooked, because you render a service that saves time, money and gives comfort, all of which if well performed gives satisfaction to the most exacting of our patients. To-day we are rated as failures just in proportion to our losses of fillings that we make for treatment in conserving teeth.

In our early practice the mechanical part of dentistry was thought to be, by the then discriminating public, the highest attainment of the dental art; and for the best results people would make pilgrimages of long distances to reach the experts in that line, for in those days artificial dentures were used more in proportion to other dental operations than they are to-day, and the high appreciation of them in former days kept up their price, so that the best efforts of our profession was directed along that line. An opinion was very prevalent at that time that sooner or later everybody would be obliged to wear artificial teeth, because operative dentistry did not then fulfill the expectations of our patients, and the many failures of alloy fillings were excused on the ground that they were only a temporary expedient at best, and charges for those services were made accordingly. Happily for humanity these two articles have changed places in the minds of a discriminating public, and the alloy filling has taken the place its merit entitled it to, and the other, I am sorry to admit, is in the hands of the six-dollars-a-set man, so much that their usefulness is greatly impaired.

As the years have come and gone, among the additional requirements and responsibilities impressed upon one, is the larger range of usefulness of dentistry to the great multitude of humanity whose means have been and always will be meager, yet whose dental requirements are even greater than those whose means are adequate for their comfort.

We should measure our success by the amount of good that we can do our fellow men, and this thought brings me more closely to my subject.

It is not my purpose to enter into the relative merits of the different filling materials, but rather to call your attention more closely to what may be relied upon in the construction of an alloy filling.

Original investigations in alloys and amalgams by a number of our leading professional lights have resulted in much good information of which we can avail ourselves. Among their deductions are the following facts: That amalgam is susceptible of good
edge strength, capable of sustaining the necessary occlusal pressure, color and polish, and the more carefully these properties are brought out, the less shrinkage there will be.

To make a good alloy filling as much care must be used in preparation as for a gold filling, and three principles must be kept in the mind of the operator in order that he may do his best in every case. First, the cavity of decay must be prepared in the manner dictated by the latest and most approved system of dental technics; second, the alloy should be so skillfully mixed that all of its parts shall receive a like quantity of mercury and force applied at the same time so that the hardening shall be simultaneous; third, careful and skillful manipulation must be exercised to obtain the best results. Amalgams or alloys that have soft spots and an uneven surface are due to the lack of careful attention in mixing, and sometimes due to introducing the mass after the hardening has set in. Another cause for soft spots in the alloy is too much pressure under the instrument the tendency is that by overpressure the precious metals flow away with free mercury to the edge or cavity walls; this process leaves the filling to harden disproportionately, and as a result we have a surface soft in spots and edge strength impaired, a surface that will not admit of dressing and polishing in a satisfactory manner. The shrinkage in such cases is very marked and by proper care can be largely overcome. After the filling is placed attention should be directed to the occlusal pressure, and if this be not attended to faithfully, fracture and displacement will result and render our best efforts unavailing. My own method for overcoming these difficulties I fully believe reduces them to a minimum. I repeat then that the basis for the best results is the skillfulness with which the cavity is prepared for the retention of the filling. To illustrate, we will suppose a case in hand to be a distal cavity in a superior second bicuspid, nothing unusual, just an everyday affair. We should first place the rubber dam in position, then with chisels remove all overhanging enamel until supported by sound dentine, then remove decay and outline the cavity as follows: The base or gingival wall should be made perfectly flat and should extend below the free margin of the gum to render it self-cleansing, the axial walls should be extended to the lingual and buccal surfaces and should be perpendicular to the base, then with fissure-bur cut out fissure on the occlusal surface and make a dove-tailed extension for retention, and then a reason-
able undercut may be made all around the margins, so that if the cavity were an ideal one the filling would be keyed in and would take the appearance of a keystone in an arch. I believe too much stress cannot be laid on the preparation of the alloy, because its density, color, edge strength and shrinkage depend altogether upon the manner in which it is treated in its formative stages. After discarding the mortar and pestle for mixing, the chamois skin for expelling excess of mercury, sodium and alcohol for washing to improve color, my method is simply this: Place in the palm of the hand a sufficient quantity of alloy, then add mercury from time to time, and rub both together with the index finger until a stiff paste producing a creaking noise when rolled under pressure is produced. The shape of the mass at this stage will be oval and the ends will be softer than the center due to the fact that the mercury has been forced to the ends; so the mass is pressed longitudinally which produces an equal density throughout, and is then cut into small pellets with a sharp instrument. Thus far we have met the conditions in the preparation of the cavity and alloy and although we proceed confident of good results, much still depends upon the manner in which we introduce the alloy into the cavity, for it requires careful manipulation to produce the required results.

Be careful, then, to place in the cavity small pieces of amalgam pressed snugly against the cavity walls by small, flat, smooth instruments, which should be repeated until a sufficient amount has been introduced. A final finish should also receive our best efforts, and what we should strive to prevent at this stage is burning, because it brings the mercury to the surface with the objections which we have before stated. Use sharp, thin cutting instruments to contour and finish, and at a second sitting after the amalgam is thoroughly hardened polish in the usual manner with strips and disks, and you will find that it is susceptible of a very high polish. In conclusion, I will say that I have used nearly all of the so-called best brands of alloys, and I must say all serve nearly alike, so I have nothing to especially recommend in that line, except the alloy made by our colaborer, Dr. B. G. Marcklein. Having tried samples of his make, I am prepared to say that I esteem it equal to, and in some instances superior to any that I have yet used.
A regular meeting was held May 9, 1898, with the President, Dr. Geo. W. Schwartz, in the chair.

Dr. J. H. Prothero read a paper entitled, "Clay and Plaster Molding Applied to Crown and Bridge and Porcelain Work."

DISCUSSION.

Dr. Geo. W. Schwartz: I wish to compliment Dr. Prothero on his paper, and especially thank him for bringing the clay and modeling before the society. In opening the discussion I presume each person is asking himself what value is this to me, and why should I model in clay. To those fresh in their technique work and those who have carved in ivory or wood and closely studied the anatomy of the teeth it is not so useful or necessary, but to those who have not, I can say it will be of great value and much help to them in crown and bridge work. It is very serviceable in both gold and porcelain bridge work. The first essential in this work is to know the anatomy of the teeth to be restored and their relative positions. I know of no easier or simpler way than to take Black's Anatomy, study it carefully, and then take a given tooth for a model and try to reproduce it in clay. By doing this you will find nothing to so thoroughly impress it on your memory as modeling, and for those of us who did not get the rigid drill in technique work that students get at the present time, I know of no better time spent than three or four hours per week until we have learned the anatomy of the teeth sufficiently to be of great help to us in our daily practice. In doing porcelain work, if you do not know the anatomy of the teeth you wish to replace, you cannot estimate the time you have lost until you learn it and note the difference.

In my gold work I never use manufactured dies. I always make a die for each case. I do not ask any better forms than I can make by carving the cusps for the die myself. In doing this work the results I get compensate me for the extra time I have taken.

Another little thing in modeling, while foreign to the paper, I wish to speak of, that is, in operative dentistry you can save time...
in a great many cases if you will fill the cavities after they are prepared with Gilbert's stopping, and get a proper occlusion, then shape your filling as it would be finished in gold. Carry this in your mind's eye, and in many instances you can save yourself a great deal of building and grinding by knowing how your filling will articulate when finished.

I again wish to thank Dr. Prothero for his excellent paper.

Dr. H. J. Goslee: Continuing: I was much interested in, and particularly pleased to attest my approval of the paper we have just listened to, first, because it is practical, and, second, because it is right along the line I have been advocating and working for several years. I do not hesitate to say that I think modeling and carving are invaluable to both students and the busy practitioner (who may not have had such training before) alike, because it trains the hand, the mind and the eye, and thus making us familiar with general forms and relation of surfaces, brings out the artistic in us, enables us to execute and accomplish much better results. I have for some time contended that it was almost impossible to teach students properly in any other manner, and have made this work consist of a large portion of our technic course, and find evidences of its many advantages and benefits every day. In fact, to carve nicely any given object it must first be pictured in the mind's eye, and this talent can best be cultivated by modeling of the forms or objects in larger sizes; and I think that the practical application of the method of carving special cusps for each individual case, whether it be crown or bridge, from plaster (preferably) which has first been formed into the outlines of opposing or occluding teeth, is the only means of securing good, practical, accurate results. This is surely what we desire and it can be accomplished in just about the same length of time that would ordinarily be consumed in selecting a somewhat suitable cusp from any of the so-called systems of stereotyped dies.

When I am asked which I consider the best of these various systems, I simply say that the best is the one containing the largest selection of forms, because no one die or set of them will suffice to give you a good occlusion in the vast variety of cases we have; hence, if we are disposed to get the best possible results in our adaption, which is usually imperative, the only way to do it is to carve your cusps and make from them special dies for the case at
hand, as the essayist has described in his paper in a similar method to one published by myself in the *Items of Interest* of April, 1897.

The successful results incident to the exclusive adoption of this method have been so gratifying that there is not now, nor has not been for several years, a die or die plate for crown or bridge work in the college with which I am connected, and I am only wondering why it is not more universally taught, advocated and practiced.

**Dr. George W. Haskins:** I object to the method of making the cusps of teeth by dies, for the reason that we have no alloy which it is practical to use for this purpose but which will change in shape under the pressure necessary to shape the gold plate to it. While theoretically it is an ideal plan to carve the cusps and strike cusps upon dies made from them, in practice I find it quite unsatisfactory, and prefer some method by which a solid cusp of twenty-one or twenty-two carat gold can be made. When the time comes that we have at our disposal an alloy which is as easily manipulated as the fusible alloys we now use, and as little liable to change in shape as a steel die, I can think of no possible plan by which such artistic and perfect work in all respects can be obtained as by the method suggested by the essayist.

**Dr. J. N. McDowell:** The thought contained in the paper and the work delineated by the essayist were certainly very interesting and instructive. This subject should receive our serious consideration, for in the time to come it will reflect valuable influence toward the dental profession. The literature upon the subject of modeling is not very voluminous, that is, in its relation to the dental profession. In fact, there is but little to be found upon the subject in the dental literature of the past. There are one or two colleges in this country that are giving instructions upon this subject in a general way. There is a field for this work in the dental profession, but we cannot all expect to become artists at it. A work of this kind will never be taken up by the whole dental profession at once, but by a chosen few. It may never become a successful branch until it is placed upon a firm and solid basis, until it is systematized comprehensively; for this subject not only has its advantages and influence upon the department of crown and bridge work, which in its application has become so valuable to man in supplying him with those gruesome, yet indispensable crutches of the mouth, but it can also be used with great advantage in the
study of comparative anatomy. Its value is incomparable in its
direct association with that rapidly advancing branch of dental
science known as orthodontia. We can never expect to be success-
ful in the treatment of malocclusions of the teeth unless we under-
stand normal occlusion. Then the study of modeling teaches us the
value of the natural shapes of the teeth, the natural and perfect
harmony of contact. It imbues us with the idea that these things
are necessary, and should be understood comprehensively. Let
us emulate our posterity and place it on a firm and solid founda-
tion.

Wisconsin State Dental Society—Twenty-eighth Annual
Meeting.

Discussion on President's address. See page 959.

Dr. B. C. Campbell: I am sure that there are others who are
more competent to open this discussion than myself, and I feel very
much like listening to them. I was impressed especially with what
the president said in regard to the past of this dental society. As
one of the younger members of the association, I think that I voice
the sentiment of that contingency when I say that we feel very
grateful to the older members, such as our president and others
who are with us here to-day, for the way in which they have labored
and carried on this association to the degree of success that it now
enjoys. I was just speaking with one of my classmates here a few
moments ago, noting the progress of the association since 1892.
I believe that in that year there was quite a number of the younger
members of the profession in this State who came into the society
I was one of that number, and I cannot forget how heartily we
were welcomed by the older members. I have failed at any time
since to note in any way a look or action from one of the older
members of the society that would lead us, as younger men, to
believe that they depreciated anything that has been said in dis-

cussion, or has been done in the way of clinics or the presenting
of papers. For my part, I feel that we are under great obligations
to these men.

Dr. W. H. Carson, Milwaukee: I only have a few minutes,
and I thought I would take advantage of that time before I retired
to speak on one phase of this paper, and that is the phase that was
touched upon as to the State board. When at Dodgeville I made
a few remarks along this same line, my idea being to have a better understanding as to the relationship between the State board and the members of the profession in this State. There seems to be an understanding abroad that the State board’s business is to look after all those that are infringing upon the law; and that the members of the profession have nothing to do with it. Now what this board wants is simply a hearty cooperation of the members of the profession in this State to help the State board rid the State of those that are not qualified to practice dentistry. Now you can readily see that the secretary or the president, or any member of this board, cannot be making it his business to run all over this State, or to run all over the city of Milwaukee, and find out whether there are men practicing dentistry illegally. It would be an utter impossibility to do that. We hold ourselves in readiness, and are willing at all times, and anxious at all times, to assist you in ridding the State of those that are not qualified to practice. What we want you to do is this: Whenever you find any one in your locality that has no right to practice, to simply drop the secretary a line. It will be confidential, and we will look that matter up immediately, and we will see that the gentleman, whoever he may be, is taken care of. We are perfectly willing to do that, but we absolutely cannot do it without your assistance and hearty cooperation. We want the cooperation of the State dental society to help us do this work. You know that we do our work gratuitously. You know that the law requires you to pay a dollar, each one of you, to help move this work along. Now you know we have a Dental Protective Association that charges $10. That is a corporation for self-interest and self-protection. Now this dollar that you pay into the State board is to help defray the expense. We cannot run this machinery without “oil.” Of course we do not mean “oil” to lubricate our throats, or anything of that sort, but we have got to have some money to run this institution. Now most of the members of the profession pay their dollars and do not say a word; but some of them growl a good deal about it, and say it is illegal, and they ought not to be obliged to pay it. If they look at it in this light, and say to themselves, “This dollar goes in to help pay expenses to protect me when some renegade comes into my locality and is interfering with my practice, and is not qualified to do so,” they will look upon it in the right light. All around this State
are fellows who want to get in and get licenses to practice dentistry. They have got to get licenses before they are entitled to practice here. You fellows all along the border line do not want men coming in and cutting into your trade, do you? We had a little trouble, and I had a little correspondence with a young fellow that was not a graduate in a certain town in this State. He got very angry with me because I came down upon him, and told him he could not practice until he was legally qualified. He was raving. There was nothing to do but quit and go to college. He went to college and got his sheepskin in Chicago. He came up to my office in Milwaukee and came in with the sheepskin under his arm. I did not know him. He opened up by saying, "You see that?" I said, "Yes." He says, "What do you think of it?" I said, "I guess that is all right." He says, "Can you show as good a diploma as that?" I said, "I do not know whether I can or not." He says, "Well, I want you to understand that is the best diploma that is to be had in this country, and I want you to understand that it is mine." "Well," I said, "I am glad of it. I am glad to have brought you to time; but," I said, "now, do not get too hot. You have gone through this process of three years, and spent your good money and all your time to get this diploma, did you not?" He said, "Yes, I did." I said, "You are going over there to practice in a certain part of the State?" He said, "Yes." I said, "Do you want some fellow to come in there and practice that is not qualified, and has not paid his good money out, and set up his office in your town?" Well, that was a corker. He "acknowledged the corn," and said, "You are all right." And we are good friends to-day. That is a sample of the idea that some of these fellows have got. I want to say that it is for the interests of you gentlemen to stand by the board. We will do this if you will help us and give us a chance.

Dr. Reinhold Maercklein: I was very much pleased with that portion of the president's address in which he touched upon the "Protective Association." I will state that the protective association is protecting each and every dentist in the State, and even outside of the State. It is reaching throughout the United States. I am only sorry to see that the protective association has not more members. Those who belong to the protective association certainly are protecting all the dentists who do not belong to it. The money in the treasury has been spent for fees and
expenses and various other things, fighting the Tooth Crown Company. At the time we joined we had to sign a note, and if it became necessary they might collect another ten dollars. Now certainly unless we can get more new members to join, the old members will have to pay in another ten dollar bill. There is no question about that. I have listened to a part of the report only a few months ago down to Chicago. I would simply say that if the old members belonging to the protective association are obliged to pay out another ten dollars, some day the association will have to make some rule by which they will simply protect their own interests, and those who do not belong to the protective association will certainly have to fight their own battles. It does not look rational that a few hundred dentists should carry along and protect all the practicing dentists throughout the United States. Probably there are some new beginners who cannot see their way clear to send in a ten dollar bill to join this protective association; but there are a great many who can, but simply think, "Well, we are not in danger." Perhaps they are not at the present time, but the time will come when they will be in danger. For that reason I would like to impress upon all those who can possibly join this association that it is a benefit to every practicing dentist throughout the country. I think there are some members here who can give you some light on this subject, and I think they have been saving money by being members of this association.

Dr. C. C. Chittenden, Madison: Mr. President and Gentlemen: I am very glad to feel the general tone of the pulse on the subject of this protective association. There is no question but that the work of Dr. Crouse is one that is remarkably good in its results, and it is one that has been a very severe strain upon him. He has submitted himself, and been subjected to any and all kinds of criticism and unfair interpretation; but he has nevertheless gone straight on. As Dr. Maercklein says, he has been called on once, and is afraid he will have to pay another ten dollar bill. I am glad and proud to say that I have already paid two more ten dollar bills. Every time he has called upon me I presume he has called upon every member of the association for more assistance. When he says he needs money, the only thing to do is for honest men to give him money, if they have it. I am very glad this protective association matter is being discussed here in this way. There is at the back of this program a list of the gentlemen
who were appointed by the president of our society last year to solicit membership. I suggest that these gentlemen do not forget their duty.

I would like to speak for a few minutes on one or two other points brought out in the president's address. He opens with a reminiscence in connection with the first meeting of the society in the Senate Chamber. What year was that?

President Richter: 1878.

Dr. C. C. Chittenden: We were then eight years old. At that time our society had six or seven members left. There were a number who had joined the society, but they had not any foundation underneath, any soil, and they withered up and died and quit. There were five or six of us. Dr. Richter joined at that time. Dr. B. G. Maercklein joined the society at that time, and there were two or three others that I do not recall now, who came in and gave a little bit of new life to us, which we needed very badly. I remember after we had managed to worry through for a time, we were helped out very beautifully by Dr. Swain, of Chicago, and Dr. Kitchen, of Rockford, from the Illinois society, who came here as missionaries. A little knot of us met in my office— I think there were perhaps seven or eight or ten—and we talked over the condition of things, and what we should do. We had begun this work, and it had bid fair for a time, but it was gradually dropping away, so that we had got to let go, or stand firm. We finally joined hands in a circle in my office, and pledged ourselves that as long as we lived and had our health and ability to be present we would see that Wisconsin had a State dental society. That work has been carried on, until to-day we have the largest membership we have ever had, although our membership has changed continually by the dropping out of some. By reason of our dental law we have increased the professional education in the State. We have driven over 400 to the colleges, who have come back here into practice, and we have got to-day an element which I see about me here of young, fresh blood, with proper foundations underneath of an educational character, so that the dental profession and its interests in the State of Wisconsin from this on will be well taken care of.

There is one thing that has been spoken of in the address which I wish to call attention to, and that is the preliminary education required by dental colleges. I speak now as a member of
the Board of Dental Examiners. There has been a controversy between the colleges and the Board of Dental Examiners continuing for the last five years. Previous to that the National Association of Dental Examiners had been a sort of "me, too," addendum of the National Association of College Faculties. They undertook to, and did, for a long time, rule and dominate the National Association of Examiners. Three years ago, at Saratoga, they took the bull by the horns and decided that they would lay down requirements for the dental colleges. The colleges have rebelled, and there is a fight on. Now, as to the preliminary education requirements for admission to the dental colleges, I received this morning from the secretary of the Association of Dental Examiners a communication asking for an expression from the Board of Examiners as to the advisability and desirability of changing the time and place of their meeting from Omaha, in September, to some other place, in October, giving a month or more of interval after the National Association of Dental Faculties shall have had its meeting and decided what it is going to do. Then the desire is to have this meeting changed, and let us see if we can come to an understanding as to the requirements, and not let these colleges dictate, and take in men, as they have been doing, without having any preliminary education. I will read from this program:

"The importance of this particular meeting is that there is every indication pointing to a settlement for the future of the preliminary educational problem. The faculties may be forced to deal with these matters with their present knowledge. By meeting separately from the faculties, and in October, every possibility of an open conflict will be avoided. Those who act on these questions last will probably act best."

Your State Board of Examiners' duties are not simply confined to seeing that every man registers, and that no man infringes the law in this State, but we have a higher work in hand—to establish standards for dental colleges. That is the present work, and has been for the last three or four years, of the National Association of Dental Examiners. Now, Wisconsin has not been asleep. I take great pleasure in saying that when Wisconsin gets into those national associations, we never have had occasion to be ashamed.

President R. G. Richter: Has anybody else anything to say? If not I will close the discussion by urging every one of you, when you go home, if you have not already done so, to send
$10 to Dr. Crouse, of Chicago, for the Dental Protective Association. Do not wait for somebody else to do it. Dig down into your pockets and send him $10, and get your neighbors to do so, too.

Dr. G. C. Marlow, of Bloomington, Wis., hereupon read a paper entitled, "The Physiological and Pathological Condition of the Nerves as Relating to Dentistry."

DISCUSSION.

President Richter: This paper is now open for discussion. I will call upon Dr. B. G. Maercklein to open the discussion.

Dr. B. G. Maercklein, Milwaukee: I have been well pleased with this paper, and especially the different divisions of the stages as they occur. I will probably only touch upon one phase of the paper, and let some of the rest touch upon the others. That is the subject of fungoid pulps. I feel probably a little egotistical, or selfish, in connection with this, but I will bring it out here, because the subject is of a very important character.

Until the time I attended my medical studies at Philadelphia it was supposed by the best teachers of this country, and probably elsewhere, that a tooth having a fungoid pulp could not possibly be saved; and the teaching at that time was, whenever you came across a tooth of that kind, to at once take the forceps and extract it. I incidentally heard of the character of that teaching, and I took special pains to listen to the lectures upon dental therapeutics, and not to miss one. When the lecture was given on this subject I took the liberty of dissenting from the opinion of the professor—no less an eminent man than James Truman—on that subject. At first he was rather skeptical about the remarks I made, that this tooth could be saved just as well as any other exposed pulp, with a trifle variation of the treatment. One of the textbooks on the subject goes so far as to say that some one had attempted to destroy one of those fungoid pulps, had succeeded in reducing it, and had filled the roots, but its tenacity of life, its virulency and its fungoid growth were of such a character that it threw out the entire filling of the roots and of the crown. That is the statement in one of the books, and it is vouched for by Prof. Truman. The teaching was to extract them at once. I objected, and said they could be saved by treating them with a strong solution of tincture of iodine and afterward a mixture of carbolic acid. Packing small wedges of cotton, saturated with those solu-
tions, around those pulps very soon reduced them and got rid of the fungoid without producing any marked pain. Afterward we could destroy the pulp in the usual manner, afterward filling the roots in the usual manner and making no distinction in this class of teeth. In the next lecture Prof. Truman had a paper about as long as from here to that chair, in which he quoted extracts from all the books pertaining to the subject, in order to justify his own position. He mentioned to the class that one of the students in the university had objected to his position, and that he did not feel justified in holding the position that he did without supplementing it with these abstracts, which he read, giving the pages and the works from which they had been taken, from the illustrious John Hunter down to the present day.

The treatment, however, was tried in the clinic, and was found to be successful. In the last year of my studies of medicine I was requested at one time to write out the treatment. I did so on one of my note books, and tore off about half a dozen pages, and it has been incorporated in the American System of Dentistry. I do not know on which pages it is recorded, but on finishing the subject the editor, Dr. Litch, even holds to the old theory, and says that he does not know, but thinks the safest practice is to follow the old established rule, and extract them. Now, I bring this before the society to show the importance of that class of teeth, and the teaching as it has gone out. It is just possible that a great many have been following that treatment. I will positively assert that those teeth can be treated in the manner I have described, and be saved. I dare say I have treated hundreds of them. As I told Prof. Truman, I had no idea it was such a difficult task.

President R. G. Richter: Has anybody else anything to say? This is a very interesting and important subject. It should not be passed over hastily.

Dr. B. G. Maercklein, Milwaukee: In connection with this I might state that it would be well if some one would discuss the subject of the sympathetic pain produced in this very nerve the doctor has described, the pains located on the different branches of it, and the almost impossible task, sometimes, of locating the trouble.

Dr. Reinhold Maercklein, Milwaukee: I would like to hear from Dr. G. V. I. Brown on this subject.
Dr. G. V. I. Brown: It is very kind of you to call on me, but I would prefer to hear from others. I was particularly interested in what Dr. Maercklein said about fungoid pulps, because I think a new factor has come to his assistance. His position, I believe, is admitted to be absolutely secure. Since they have adopted the means of destroying the pulp tissue through the apical foramen, and taking casts of the pulp chambers without any necessity for reaching it through the outside in any other way, and therefore without altering the form of the pulp chamber, they have found out that the fungoid growths are much more common in pulps than at first supposed. Therefore, we must all of us have been treating more pulps that had more or less of this fungoid growth than we thought for. There are those cases that we could recognize were absolutely hopeless that must be extracted, and others that were not noticeable which we treated more frequently than we thought. I think from that direction will come a complete refutation of the old idea that such teeth must be lost.

Now, this question of pain is particularly interesting to me, because just now I am doing that kind of work almost exclusively. I am trying to take care of these cases for physicians as well as dentists. I am not doing any other work particularly at this time, outside of the college. There was one important factor in these cases, one important source of irritation, which I think the doctor did not mention. I was pleased with the manner in which he did refer to those that he mentioned, so that anything which he did not mention would be easily noticed, and those he did were mentioned in such regular order that we have them more clearly in our minds. He referred to the sensory branches of the fifth nerve as being the ones which we, as dentists, were most interested in. In one way we are, and another way we are not. We are, because through them we get the expression of the trouble. Pain is the expression of some pathological condition, and therefore they warn us in that way. But the motor branch, the branch which supplies the muscles of mastication with their motive power, it has been demonstrated is more often a source of irritation than we realize; in fact, I recently made the statement in Denver that I believed in every case of neurasthenia, in every case of severe neuralgia, in every case of extreme nervous affection of any kind, particularly referring to that region, the region of the fifth nerve, we have the action of these muscles of mastication as a factor, either as an irritant in
making more severe the symptoms of some other trouble, or through the central irritation and spasmodic action of those muscles, we have them as an etiological factor, pure and simple; and are able to distinguish whether it is a result, for instance of neurasthenia, or some general nervous condition. Whether we have an irritation of the centers governing those particular muscles in their action, and through that an irritation of the peridental members that communicate with the fifth nerve, thus causing this pain, or whether we have some other cause of which this is simply an aggravated symptom, is a matter upon which rests a great deal. It has never been fully carried out and studied in symptomatology. I do not know of any branch of dental science that has been so neglected, and in which one in studying can make so little out of, as the subject he has selected. We have no regular formula for distinguishing the symptoms with reference to the etiology of these pains, such as they have of other diseases—diseases in other parts in which the symptomatology has been carefully and systematically studied. I am, of course, much more interested in that work, because I am doing that specially now; and I am glad to have had this opportunity to call attention to that particular line.

Dr. W. H. Chilson, of Appleton, hereupon read a paper on "Alloy as a Filling Material."

DISCUSSION.

President R. G. Richter: Gentlemen, the paper is now before you for discussion; and I would ask Dr. Fletcher to open the discussion.

Dr. T. B. Fletcher: I heard so little of it that I do not feel capable of opening the discussion.

President Richter: I will ask Dr. Wenker to open the discussion.

Dr. R. J. Wenker, Watertown: I could not hear all of the paper, on account of the storm; so I am not capable of opening the discussion properly. I would mention one thing while on my feet, and that is that I have used an alloy containing 68.5 parts silver, 25.5 tin, 5 of gold, and 1 of zinc, made by the Michigan Refining Company, that has given me a great deal of satisfaction. I like it even better than the alloy made by the Dental Protective Association. It gives a higher polish and makes a more dense mass than any amalgam I have used. I have not tried Dr. Maercklein's, so I could not say anything about that.
Dr. B. G. Maercklein, Milwaukee: This is really not my forte, amalgam, and it has not been, and I do not know as it will be. It is well known to the members of this society that gold is my great sheet anchor for filling teeth; but realizing the fact that thousands of teeth require fillings that cannot possibly be filled with gold, either for the reason that they are too expensive, or that the people are very often out of reach of a competent dentist who is capable of restoring such large surfaces successfully with gold, I have for about the last twelve years been experimenting considerably with amalgam. The results of my experimentation have been very unsatisfactory to me for a long time, for the reason that it is almost impossible to get an alloy that will answer the requirements that we ask of it. The great bulk of alloys either disintegrate, discolor very largely, or what is worse than all, shrink very materially after they have been placed in position.

I ought to have prefaced this, perhaps, with a compliment to the author of the paper. He has gone over the subject so carefully that it leaves very little for discussion, especially in reference to the handling and manipulation, and the preparation of cavities, so I shall simply discuss alloys. Any one that will take the time and trouble to fill cavities in tubes, either of metal or of ivory, and carefully subject them to tests, will find that the great bulk of the alloys, even on the market at the present time, are not worth using, if we had the gift of all that we needed for nothing. There are some that are of excellent quality, but very few of them. I have in my experiments eliminated all the base metals in the alloys excepting tin. I do not believe that any other metal adds anything to an alloy that is worth having. Gold, silver, platinum and tin in various proportions, and under various manipulations, can be made to make as good an alloy as any that can possibly be produced, or at least any that I have seen produced so far containing any other metal. Now, Dr. Wenker’s formula may be a very good one, but the fact that it contains zinc would condemn it in my mind at once. Copper condemns it, cadmium condemns it. They all sooner or later disintegrate, but tin does not, as we all know from the ordinary tin fillings. Tin is a metal peculiar to itself. It is somewhat different from the ordinary base metals. In the experiments that I conducted here before this society last year you will remember that the alloy I presented here as “No. 1” was the only one that came out without any change under the most
severe tests that could possibly be put upon it by Dr. Crouse in twenty-four hours. All the others, including Dr. Crouse’s, had changes to the extent of from $\frac{4}{1000}$, I believe, to $\frac{8}{1000}$ of an inch in shrinkage or expansion. I have followed, during the year, this work, making and experimenting with this alloy, and using it in practice. I have given samples of it to some of my friends, and I have yet received no comments upon it unfavorably, so far as the alloy is concerned.

Now you may prepare your cavity, you may manipulate your alloy just as carefully as it can possibly be done, and if it changes its form, either expanding or contracting, after you leave it, you cannot possibly stand for the result. You want to get an alloy that is as near as possible stationary. It must neither expand nor contract. If it expands first and contracts afterward it is defective. Now, that point has been the great object of my experiments. I am glad to say that I have succeeded at the same time in producing an alloy that remains almost perfectly white in the mouth. If they are well polished they will stand for probably years without tarnishing. It also has a remarkably strong edge—as hard as it is possible to be. It can only be cut by sharp instruments, corundum wheels or emery disks.

Upon the request of a large number of friends I may be induced to put this alloy on the market, and probably at no distant date. I have only been manufacturing it for myself and for my brothers and a few friends, on a small scale; but the encouragement I have received may induce me to put it on the market. If I do you will probably hear from me later. I gave Dr. Chilson some of it some months ago, and I was more than pleased to hear his comments upon it in his paper. I had not seen him since.

Dr. R. J. Wenker: I wish to state that the formula of alloy I gave is not one of my own, but is one most highly recommended by Dr. Black. I have sent in the formula to the refining company to have the alloy made for my own use.

Dr. Louis Meyer, Oconomowoc: I have given some thought to this question of alloy. I would lay special stress upon properly preparing the cavity. My method has been to make a square base; have a square anchorage. Let the margin of the cavity be shaped as it will, but the interior I invariably make angular if I can. In that way I think I control the shrinkage to some extent. I may be mistaken, but I have always been of the opinion that the sphe-
roid was more readily changed in shape than a square. I think many alloy fillings fail because the cavity is more or less carelessly prepared.

I noticed that the essayist spoke of using large serrated instruments. I use a round or oval head and burnish it down in that way. When the margin is much broken down I use a matrix to make more sure of getting it into the cavity all right. If necessary I leave the matrix in twenty-four hours. I make small copper bands, and I find that they are convenient and readily made. Ordinarily, even though I do not use the matrix, I use round or oval shaped points.

Dr. Reinhold Maercklein: I would like to inquire of Dr. Chilson, if he uses large serrated instruments in packing amalgam, if they do not fill up and become burnishers?

Dr. W. H. Chilson: I did not notice the mistake in my copy. What I meant to say was, "small serrated," or "smooth instruments." I discovered it after I passed over it, but I did not think it would be noticed, therefore I did not stop to correct it.

Dr. B. G. Maercklein, Milwaukee: In connection with that there was one very important point made by the doctor in stating that too much pressure could be brought to bear upon the amalgam. You make in that way an uneven or more or less porous filling. You have the mercury at some point, and the alloy at others. I think there is nothing more true than that statement. I would have disagreed with the doctor as to the serrated points, but he has modified that now. Pressure ought to be, if possible, brought over the entire surface at the same time. Dr. Bonwill demonstrated that, I think, as early as 1882. Making pressure over the whole surface at the same time is not always practical; but where it is the larger instrument you can use the better, so as to bring the pressure over the whole surface. You then get an even density. Then put in another piece and make pressure over that again, and you will make the best amalgam filling than can be made.

In connection with this I may state that it is impossible for anybody to bring an even pressure upon an amalgam filling on a proximal surface unless he uses some kind of a matrix, no matter what kind that may be. For my part I use a small tin band; tin rolled out as fine as I can roll it, made in the form of a loop and the ends soldered in alcohol, with a little soft solder and chloride.
of zinc. I make them as near as possible to fit the neck of the tooth, and give it the shape I want the filling to have after I am through with it. Then I pack it full. I have then practically a simple cavity or plain hole to fill, all sides being taken care of excepting the orifice. In that way you can make pressure over the largest amount of surface, and in the most even manner. When you have finished that, and your filling is in, leave the matrix in situ twenty-four hours before moving it. Any one wishing to try the edges of the amalgam can then find how hard it is by trimming off any overlapping edges there may be in there. It is almost impossible to remove a matrix of that kind, that has been thoroughly packed with amalgam, without displacing some portion of it. I have never been able to pack from two surfaces, for instance a proximal surface and an occluding surface, at the same time, without pushing it one way or the other—unless you get your amalgam so very soft that it is unfit for any one to use. Now the preparation of mercury is probably a more serious question than we have been in the habit of considering it. It was once thought the drier you could handle the mercury the better filling you would make. Now that is a mistake. We should endeavor to ascertain and compound our alloy so that it will form an amalgam that will be the most dense and hard, with a certain amount of mercury as compared with a certain weight of the alloy. If you will try the crushing test, as Dr. Crouse has done very largely, you will find that the drier you use your alloy, or your amalgam, the less crushing weight it will sustain. When you reach up to quite a large proportion of mercury the crushing strength is very much greater. Now I have not gone into careful experiments of weighing, but from the observations I have been able to make I think my alloy takes up more mercury than any other alloy I have ever used. It takes a larger amount of mercury to amalgamate it. You can work it when it is reasonably soft, and it sets quite rapidly and forms more of a homogeneous mass. In fact, one man told me, only the other day, who has been using it for some time, that he thought it actually shrunk in itself, and that is what made it so dense. He noticed that it did not go nearly so far as other amalgams went, or alloys, to the ounce. He thought in the amalgamating process it got together and made a more dense mass after he got it perfectly amalgamated.

Dr. Reinhold Maercklein: I will state that some amalgams
have run about in the proportion of fifteen grains of alloy to nineteen grains of mercury. I have seen them weighed out, and they used more mercury than alloy in that preparation.

One thing I wanted to ask Dr. Maercklein was whether he means pure tin, sheet tin, or whether he means ordinary tinner’s tin rolled out into a sheet and used as a matrix.

Dr. B. G. MAERCKLEIN: I use tinner’s tin, not tin foil, as mercury would dissolve it very quickly. It is the ordinary tin that you can get in either little strips, or I frequently get it from the tin box in which the rubber is sent which we use for base plates. I roll it into the rollers until it becomes about as fine as ordinary note paper. We all know that tin is practically steel with tin on both sides. It leaves a very fine coat of tin. By adding a little chloride of zinc and touching over the alcohol lamp, it will solder very easily. It can be made any thickness, and you can shape it to any tooth.

You very frequently find a bicuspid has two proximal surfaces on it, probably united in the fissure through the occluding surface. You can shape a matrix over that with the edges properly trimmed that will hug the neck very closely. Let it alone twenty-four hours, take the lancet and cut your tin and pull it out without any danger of displacing the amalgam. If you have the materials at hand, if you have the tin rolled out and cut into small varying strips a quarter of an inch wide, and you have your alcohol and chloride of zinc and soft solder there, you can do it in very much less time than I am telling it; and certainly do a very superior article of work.

Dr. T. E. FLETCHER: I did not hear Dr. Chilson’s paper well enough to be able to answer it at all, but I have been very much interested in listening to the discussion on this amalgam question. I have been called a crank on amalgam for the last twenty-five years, simply because I believe in it, and was willing to stand up and state my belief in it. I know it is a good thing. I have had it and used it, and as long as I practice dentistry I shall continue to do so. But there are amalgam fillings, and amalgam fillings. One is a filling, and the other is a botch. One is put in with the same care as a gold plug would be, and the other is put in “hit or miss,” “I do not care, let her go at that.” I have seen thousands of them that looked as if they were put in with the thumb and forefinger of the right hand. Of course those
fillings fail. But where the tooth is properly prepared, and the amalgam—I do not care what amalgam it is if it is anything decent—is put in properly under the dam, and finished as it ought to be, it will answer the purpose.

Now, in our discussions we ought to have something that is not only theoretical, but practical. We do not all practice in Milwaukee. The majority of the men here practice in smaller towns. We cannot leave a matrix on over night, or twenty-four hours. Our patients are not coming in eighteen or twenty miles the next day to have that taken off and the filling finished. We cannot spend the amount of time on amalgam fillings that these men do—at least that they talk about. A patient comes to our office and wants a tooth filled, or two or three of them, in a short time. He has driven eighteen or twenty miles. He cannot pay for gold; he has not got the means. We give him the next best thing; we give him an amalgam filling, and we do the work conscientiously. We put on the matrix or dam, and we put in those fillings, and dismiss him at the same sitting; and I think we give him pretty good service.

Another question comes up as to the crushing strain that an amalgam filling will stand. Last year Dr. Crouse was with us, and he performed a lot of experiments with different amalgams brought up here, that were put into that little machine and tried under pressure. Did he try any gold plugs under that same pressure? Take a gold plug and put it under that pressure and leave it in the same time and see how it will spread. It will spread worse than an amalgam plug will after the amalgam has set.

Now, as to the integral parts of a good alloy filling. I am not chemist enough to know about that, but some of the older practitioners know perfectly well that the old amalgam we had was about as good as anything. I have seen amalgam fillings in the last six months which were put in thirty years ago. That is pretty good. I have got amalgam fillings in my mouth, in molars, that were put in in 1864. They are pretty good yet. I have no fault to find with them.

There is one more point that I want to make: In years gone by—and, Mr. President, you know it just as well as I do—we have had practitioners come in here and get up before this dental society and say, "I do not use it;" "I would not have it in my office;" and they lied, every one of them. I have caught them at it. I
know what I am talking about. Perhaps I do not use poetical language, but I am more practical than they. There is not a man practicing to-day, unless it is in the cities, that does not use amalgam, and dead loads of it.

Dr. W. H. Chilson: I do not think I have anything to add specially to what has been said, but I might emphasize the three points upon which I laid stress. In the first place I think it is necessary, more times, perhaps, than you are willing to admit, to place these amalgam fillings. When those cases present themselves it is obligatory upon us as professional men of character, practicing the branch of medicine which we claim to be practicing, that we do for our patients the best we can under the circumstances. It is not expected that we should make the best operations for the same fee that we can afford to make an amalgam operation for. In our practice we class that about second in our filling materials. Now when those cases are desired I want to lay stress upon the formation of the cavity, which should be done just as thoroughly and just as well as for any other filling. I believe that the inner lines of the cavity should be the broadest, so as to represent the key, as I said in the paper, to the arch. In that way I believe it overcomes shrinkage more, because if the filling is well anchored in those inner walls there will be less opportunity to give way, and it will haul to that anchorage, rather than give way. The alloy should be carefully prepared. I believe that there has been too much slouchiness along this line, because of the prejudice that amalgams and alloys have had against them. They are really entitled to dignity in our treatment, and we should treat them as one of our agencies, and treat them as well as they deserve. When we use them we certainly have got nothing to be ashamed of. Now, then, if the alloy is thoroughly mixed, so that each part of it shall receive mercury and pressure alike—I mean by that that we get it thoroughly mixed in all of its parts—its density will be uniform. In that case it is capable of resistance. I do not think you add anything to the density of your alloy filling by giving it hard pressure. Give it just enough pressure to bring it to the location in the cavity where you want it, and make it smooth so that it joins to the various parts. It is immaterial what instrument you use, whether it be a large instrument or a small instrument, if it will serve this purpose. If you use a small instrument you are compelled in that case to make very slight pressure. There is no need of any further
pressure than to bring this substance into a smooth form, so that it will unite with the substance that has preceded it. When this process is followed to the conclusion of the filling you have got one that is as nearly dense as it is possible, I think, to make. It depends entirely, as it were, upon the manipulation. Then if we do not attend to the occlusal part of it, and our patient is not instructed, as he ought to be, or he does not observe that instruction, they are liable in twenty minutes to bite on something; they will want to exercise those masticatory muscles, and the first thing you know the filling will be dislodged. In that case it may not break off entirely, but it will break off, making a very rough surface. In that case it is not meeting what it is intended to have it meet. It is in a very poor condition, of course, and cannot conserve a tooth a great while. Where you can control those things it is always better to call them back at a future time to give it the final polish. This will give you an opportunity to see that your work has met the conditions which your instructions gave for it.

[to be continued.]

VALUE OF SALIVA FROM INFANCY TO MANHOOD AS A FACTOR IN HEALTH AND A DIAGNOSTIC EVIDENCE IN HEALTH AND ABERRATIONS IN DISEASE.

Dr. W. G. A. Bonwill, of Philadelphia, said that he had noticed that nipples for infants' bottles are so long that they get under the infant's tongue, that they collapse readily and then no milk is delivered, and that the perforation is of such irregular size that the milk flows irregularly and usually too freely, so that no sucking is necessary and no saliva is secreted. To regulate the flow he has had a secondary nipple with a perforation of regular size introduced within the outer nipple, and the latter is made short and of a form much like a woman's, so that the infant must use its buccinator muscles in suckling, to obtain the milk, thus causing a flow of saliva and aiding digestion.
A Weekly Dental Journal.

In the United States the Weekly Dental Journal has had two distinct trials, once in Chicago and lately in Atlanta. Dr. Louis Ottofy, now of Tokio, Japan, was editor of the first journal of this kind, but it came to grief after a few months.

The second venture began in Atlanta, Ga., with Dr. B. H. Catching as editor in chief. After one year it has (for the present at least) suspended publication. During its existence it was bright and newsy and deserved to succeed. We regret to announce its discontinuance. Whether it will be revived we are not informed. We believe that it is only possible for one such journal to exist in a large city like Chicago, New York or Philadelphia. Such a journal would need a large list of subscribers and a good advertising patronage. Who will be the proprietor of the next weekly?

A Retrospect Again.

In reply to our editorial in the September number, the editor of the Dental Digest has published nearly two pages having little or no pertinence to the subject. We do not assume to be the censor for the dental profession, but we are always on the lookout for what we believe to be its best interests. Innuendo and personal matters do not enter into a subject of this nature. The publishers of the Dental Review have never sought or attempted to direct the policy or dictate what should go into our reading pages. When the writer was a member of the Executive Committee of the late A. D. A., he did his duty as he saw it, and such a matter as
that mentioned in the "reply" did not enter into the arrangements of the meeting. Abundant proof of this can be furnished if necessary.

In this connection we will quote from an unsolicited letter the following: "I would have gone to the Omaha meeting but I never saw a program, did not know what they were going to do, and I did not want to go on a wild goose chase. They do not manage that society very well or more of us might go. I could say more, but would rather talk it over with you." What we claim is that sufficient energy is not injected into a proposed meeting early enough to assure a good attendance. For the next meeting the local committee of arrangements has already been appointed, and the one for the late meeting was not appointed until after the middle of May or later. The editor of the Dental Digest unfortunately has so many things on hand that it is not possible for him to manage all things equally well. In addition to handling a large practice, the advertising pages of his journal say that "alloy" is all tested by Dr. J. N. Crouse personally and proven to be perfect before we offer it for sale."

There is a slight, but certain discrepancy here between the statement in the editorial and the advertising pages. In conclusion we beg to submit that there was nothing personal or vindictive in our "A Retrospect." Any one occupying a public professional position is a legitimate subject for criticism; provided such criticism does not enter into false or libelous statements, we think the unprejudiced reader will see that our position is unassailable from this standpoint. The fact of the matter is that the National Dental Association will not fill the position it should occupy until it is well and carefully managed by those who are entirely devoted to its interests. We do not believe that the next meeting will be a failure, as every chairman of a section will try to outdo the other. This is a generous rivalry which is commendable. The president elect is young and vigorous and the place of meeting is desirable. We have served in the ranks of membership for twenty-five years and point with pardonable pride to the part taken during that period as a reasonable excuse for stirring up matters for the general good.

This work is a companion volume to the series of American Text-books of Operative and Prosthetic Dentistry: Essig and Kirk. It is well printed and copiously illustrated. There are about thirty-two chapters, covering the field of pathology (dental and general), anatomy and development, and a short chapter on dental medicine covering twenty or thirty pages. The illustrations are frequently original and are well chosen. We have had much pleasure in conning these pages, and believe it a good work to place in the hands of a student. The subjects are well grouped, and no author of repute is left out in the building of the system of practice designed by the author. The dental pharmacopoeia is carefully selected (it might have been more complete), and the directions are safe for a student to follow. An extended review is not attempted here, as it is not our custom to discuss the subject matter of a book when it is such speaking evidence of the industry, care and learning of an author. The work is one of great value to a student and practitioner, and as such we commend it.

DOMESTIC CORRESPONDENCE.

Letter from Denver.

Denver, Colo, Sept. 16, 1898.

To the Editor of the Dental Review.

Dear Sir:—I suppose the National Dental Association is to be considered in the same light as the Supreme Being, and above criticism; but to a man from the "wild and woolly west," who travels 500, 1,000, or 2,000 miles for information at the fountain head, and meets with disappointment so great as was evidenced at Omaha, the question naturally suggests itself, have we reached the excelsior of our hopes, climbed the highest pinnacle of progress, fought all the battles, won all the victories, and begun to retrograde? Has our representative body, embracing in its mem-
bership the best talent of the United States, degenerated from a scientific into a legislative one; from a broad minded, generous, and philanthropic lot of professional men, to narrow minded, place seeking, ethical harpies, who would bar a man whose acknowledged talents in the community in which he lives have caused him to be selected by his contemporaries as the best one to represent them in this gathering, simply because he has no diploma? It seems to me to cast a slur on some of the founders of our profession who have taught, and possibly are teaching to-day, the best means of saving the organs which pertain to our specialty, and yet have not taken the prescribed collegiate course, and are perhaps better for it, as there is an originality in their methods which might be a saving grace to this organization in creating interest in its meetings.

My motto would be, welcome all; bar none. Make this consolidation of the two best organizations in the country, supposedly, a reality. Drop this section business, except as to the four points of the compass, and elect or appoint a man or men in each to be in touch with all State and local societies, and collect every item of possible interest to the profession and report at our annual gathering. It seems to me this would conduce more to create enthusiasm than submitting your ideas to a sectional boss to be criticised, curtailed or thrown out altogether, as his supreme authority dictates. Is this an organization for the favored few, or one of colaborers in the vast field of science, to get together the latest and best information of value to our profession, and disseminate it to all who are sufficiently interested to obtain it?

Why cannot we have some clinics? Was there a man in the convention who would have felt that the tone of the organization was lowered by seeing Brophy, for instance, perform his world celebrated operation for closure of cleft palate? I think every man who has attended one of the clinical meetings of the Chicago societies will bear me out in the statement that they are among the most interesting in their experience. Graft some of this into the N. D. A. Get some of the patriarchs who have been leaders in the profession for the last fifty years to perform for the benefit of their many admirers and followers. A true desire to help would make them willing to do so. It is true our friend from Philadelphia did perform for our benefit in a way, but we all know he could give us more pleasure by doing so to our mental development. I have
heard men remark that they would not mind a trip half way across the continent to see such men operate, but would not again go to hear them talk. While I feel that the hand shake is worth a considerable trip, I should like to get more that I could use in my practice, and retail to my professional friends, or add to the interest of our local societies, which one naturally expects to do. But the paucity of mental pabulum which can be assimilated for the public good is proverbial at these meetings.

I hear some growls about the failure being due to the chairman of the executive committee. It is always nice to have some other fellow's shoulder on which to shove the burden of failure, but if his fault, why should not the convention have accepted his tendered resignation. Methinks I hear as an answer that a full vote of honestly expressed opinion would have done so by a large majority. It is to be hoped that new officers, new blood in the executive committee will act as a cerebral stimulant to its chairman, and evolve some antirut ideas, and give us a meeting at Niagara which will make us all feel that it is a good thing to be "one of 'em."

Yours very truly,

W. E. Griswold.

Removing the Pulp.

Editor Dental Review.

Chicago, September, 1898.

Dear Sir:—In the September Review you have an editorial on removing the pulp. I have found the following method better than any of those mentioned. It may not be original with me, but I have never seen it in print.

I depend on it mainly where arsenic has been applied and the pulp deadened enough to remove the bulbous portion, but on attempting to enter the canals with a broach you are greeted with a groan from the patient, followed by looks of vengeance if you persist in your efforts. Here you are, you have probably reserved an hour or an hour and a half expecting to finish the filling; it is in all probability the last work you have to do for that patient. You have noted with a feeling of buoyancy the plump condition of the patient's purse, a condition you hope to transfer to your own, which is sadly in need of inflation, or you have a bridge to put on and can do nothing on account of that contwisted nerve, or rather
a measly little remnant of it. That is the way it used to be, but it is not any more. I have the rubber dam in place, and proceed to dry out the bulbous part of the canal with hot air. After getting it as dry as possible, I prepare a ball of temporary stopping large enough to nicely cover the opening; take a small pellet of cotton, very loosely rolled, dip it in chloroform, place in bulbous portion, heat my temporary stopping, place it over the opening, and immediately press on it with a suitable burnisher or tightly rolled ball of cotton. If the patient gives a slight flinch, you can remove cotton and stopping and work away at those roots as long as you please. Several years ago I removed a number of nerves painlessly by using chloroform and the hypodermic syringe, but abandoned the practice as the tooth became very tender afterward and remained so for some time, but have had no trouble whatever in using temporary stopping. In using solutions of cocaine the same way I have met with very poor success, as the solution leaks out around the stopping; but in using the chloroform it softens the stopping enough to make a tight joint, and very little practice is required to make a success of the operation every time.

I commenced by using only where arsenic had been applied, but am gradually enlarging its sphere of usefulness. Take the following case, for instance: Lateral incisor with large gold filling, tooth very tender on percussion, and had been giving severe pain for twenty-four hours, drilled through palatal portion in direction of root, but found on drilling into the nerve that it was so sensitive that I could not touch it. The opening I had made was very fine, but by flooding with chloroform, and placing piece of temporary stopping over the opening and pressing with finger, I was enabled to open with large bur, then by using pellet of cotton I removed the nerve without pain. I had hoped it could be used in a similar manner for sensitive dentine, but have had no success, although I have tried numerous methods of forcing the chloroform into the dentine.

Very respectfully,

Frederick H. Bowman, D. D. S.
Do you set crowns with gutta-percha?

*The American Dental Weekly* has suspended publication.

Dr. L. P. Haskell will return from Europe early in November.

All of the regular dental societies of Chicago are at work again.

The next International Medical Congress will be held in Paris in 1900.

Dr. Geo. A. McMillen, of Alton, Ill., paid Chicago a visit in September.

Dr. Geo. H. Cushing is residing temporarily at Florence (near Los Angeles), California.

We will shortly publish the report of the meeting of the American Dental Society of Europe.

We will begin the publication of a series of articles on "Porcelain Art" before the end of the year.

Northern Illinois Dental Society will meet at Rockford, October 20 and 21. A large attendance is expected.

Dr. W. W. Walker has returned from Europe full of new ideas from a three months' tour in continental countries.

Dr. Chas. Boxton, of San Francisco, is in Manila. He went out as major but has been promoted to be a lieutenant colonel for gallantry.

Oregon had two representatives at Omaha and the State of Washington two. California having four instead of three as we mentioned last month.

Manning A. Birge, D. D. S., of Dillon, Montana, died October 7. Dr. Birge was a graduate of the Chicago College of Dental Surgery, class of 1892.

We are using an alcoholic solution of betanaphthol from five to twenty per cent for pyorrhœa with good results; about once in three days is often enough to use it.

Guilford’s Orthodontia is one of the best books on the subject in the English or any other language. If you have not the third edition be sure and buy it. You cannot do without it.

Dr. C. Edmund Kells, Jr., paid a visit to Chicago during September. Dr. Kells is of the opinion that we have a sufficient number of colleges in this country to supply the need for several years.

Mr. W. Booth Pearsoll, F. R. C. S., of Dublin, Ireland, has been spending a few weeks in Chicago. He was dined by Drs. Brophy, Case, Harlan, Good, Barrett, Younger, Gardiner, Wassall and others during his stay in Chicago.

Mr. W. Booth Pearsoll made a very interesting talk on die making and the swaging of plates, with a demonstration of the use of his flask. In the course of his remarks he said he always added a fresh piece of zinc at each melting to make the die stiffer and more dense, which we all know is a great advantage.

The Chicago Dental Society will celebrate its thirty-fifth anniversary February 3 and 4, 1899, by giving a clinic and dinner. There will be papers read by prominent men in the profession. The committee having the matter in charge consists of A. W. Harlan, J. G. Reid, J. W. Wassall, E. D. Swain and J. E. Hinkins.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

Officers for 1898-99 : President, L. A. O'Brian, Dresden; Vice President, G. C. Daboll, Paris; Secretary, W. A. Spring, Dresden; Treasurer, S. S. Macfarlane, Frankfort on the Main. Next place of meeting, Brussels, August 4, 5, 6, 7, 1899.

HERE ARE A FEW SO-CALLED HOMŒOPATHIC REMEDIES!

Creosote, mercury,aconite, chamomile, belladonna, silica. In a paper read somewhere (in New Jersey) we believe, an author calls the above homœopathic remedies. What is medicine? It is not a series of practices, all based on the materia medica of the world.

An old gentleman, past eighty years of age, who had broken a bridged tooth, wrote to his daughter of the accident and expressed it as follows: "This morning at breakfast I suffered a disaster. I bit upon a piece of the inside of a cantaloupe, and my bridged tooth rolled over—the whole structure including both abutments—and left a hole that feels as though I must hang a red light in it at night.

Liniment for neuralgia:

Ichthyol ........................................... 1 dram.
Mercurial ointment .................................. 1 dram.
Chloroform ............................................ 6 fluid drams.
Spirit of camphor ...................................... 6 fluid drams.

Shake well before using, and rub over the affected part.

—EULENBURG (Medical Weekly).

SELECTED FORMULAS.

An analgesic (to replace morphin):

Codein sulphate .................................. 32 grains.
Aromatic spirit of ammonia ..................... 6 fluid drams.
Whisky .............................................. 1 fluid ounce.
Syrup of orange peel ............................... 4 fluid ounces.

Dose—From 1 to 3 teaspoonfuls once or twice daily.

—I. J. Jones (Texas Medical News).

SOUTHERN CALIFORNIA DENTAL ASSOCIATION—BUSINESS SESSION.

Dr. Geo. H. Cushing, formerly of Chicago, was elected to honorary membership. This being the first annual meeting, over fifty members of the profession signed their names for membership. It was the largest dental meeting ever held in Southern California and speaks well for the future success of this association.
MEMORANDA.

All of the old officers were re-elected: President, W. A. Smith, D. D. S., Los Angeles; First Vice President, H. R. Harbison, D. D. S., San Diego; Second Vice President, Dr. C. W. Sylvester, Riverside.

MOUTH WASH.

B. Betanaphthol.................. gr. xxx.
Eucalyptol........................ min. xv.
Oil cassia........................ min. x.
Carbolic acid.................... min. xii.
Alcohol............................ ⅜ iij.
Distilled water ad q. s. to make...... ⅔ xvi.

M. Sig. Dilute with water to suit.

Harlan.

When oily medicaments are used in connection with a bulb syringe, dilute alcohol is the best to clean them with. The alcohol not only cleans the bulb, but tends to harden it when softened from use. Another thing to be remembered, and which will bear repeating, is that needles usually become closed with some organic substance. Instead of using a wire cleaner, time can be saved by holding the needle in the flame of the lamp and pressing on the bulb or piston at the same time. The degree of heat necessary will not injure any needle, and it will seldom be found necessary to use the wire cleaner.

J. Austin Dunn.

MINNESOTA STATE DENTAL ASSOCIATION.

The fifteenth annual meeting of the Minnesota State Dental Association was held in St. Paul, September 6, 7 and 8, 1898. The following officers were elected: President, Dr. L. P. Leonard, Waseca; Vice President, Dr. G. S. Munson, St. Paul; Secretary, Dr. H. L. Cruttenden, Northfield; Treasurer, Dr. H. M. Reid, Minneapolis. Chairman of Executive Committee: Dr. C. H. Goodrich, St. Paul. Master of Clinics: Dr. W. N. Murray, Minneapolis. The next annual meeting will be held at Northfield.

H. L. CRUTTENDEN,

Secretary.

TO THE EDITOR.

Dear Doctor:—In the Dental Review, Vol. XII., No. 4, April 15, 1898, p. 321, bottom paragraph. Some ten years ago I had an exactly similar experience, only the root went up into the antrum with a sound like a cork blown out of a bottle. I let it alone after getting tired of trying to get it out and have had no trouble from it since.

M. C. Smith.

TO REPAIR A BROKEN PIN IN A LOGAN CROWN.

An old-time dentist came into my office the other day with a central Logan crown in his hand the pin of which he had broken off, in biting an apple. About an eighth of an inch remained in the crown. We repaired it thus: Drilling a small hole through the pin a piece of wire was passed through, and the two ends twisted together to the length of the original pin; the twist was compressed laterally with a pair of pliers; a little solder was run into the spaces between the wires and between these and the old pin end; and a new pin was thus formed to all intents as strong and having a better hold on the cement than the original. Note.—
In twisting up the wire, hold the pin with a pair of small nosed pliers, or you may loosen pin in crown.  

J. H. HUGHES, D. D. S.  
MARYSVILLE, TENN.

“Science!”

“If a fifty per cent solution of peroxide of hydrogen is prescribed as a mouth wash, for several days previous, it will greatly assist in scaling off heavy deposits of hard tartar.”

We clip the above from a dental journal. If the writer meant fifty per cent of a fifteen volume solution even then it would not do for a mouth wash as most of it is preserved with dilute acid which is injurious to a tooth. Peroxide of hydrogen is not sold for dental or medical purposes stronger than three to three and one-half per cent in water.

“Yesterdays in the Philippines.”

The author says: “I made a call on the local dentist (Manila) yesterday, and found him sitting on a wooden figure of St. Peter, carving some expression into the face. I thought I had got into a carpenter shop instead of a dental establishment, and apologized for the intrusion. But the gentleman said he was the dentist, and dropped his mallet and chisel to usher me into his other operating room. It is quite a jump from carving out features of apostles to filling teeth, but on being assured that he had received due-instruction from an American dentist, I allowed him to proceed to business. The whole operation lasted about seven and one-half minutes, and by the time I had got out my dollar to pay him for the filling I swallowed soon after, he was again at work on biblical subjects.” [Good place for a few of our young men to emigrate to.]

MOUTH WASH.

It is said that this will be a good mouth wash:

B  Tr. baptisia ........................................... 3 ij
    Thymol.................................................. 3 ij
    Ac. boracic.............................................. 3 j
    Oil gaultheria ......................................... gtts. lxxx.
    Oil eucalyptus ........................................... gtts. xl.
    Alcohol.
    Glycerine .............................................. à à 3 viii.
    Aqua ................................................... qs. 3 xvi.

M. Macerate sixty-two hours and filter.

COMMITTEES OF THE NATIONAL DENTAL ASSOCIATION.

Section I.—Prosthetic Dentistry, Metallurgy and Chemistry. I. N. Broomell, chairman; Wm. E. Walker, secretary.

Section II.—Dental Education, Literature and Nomenclature. S. H. Guilford, chairman; M. F. Finley, secretary.

Section III.—Operative Dentistry. J. Y. Crawford, chairman; Frank Holland, secretary.

Section IV.—Histology and Microscopy. T. L. James, chairman; L. L. Dunbar, secretary.
IS CHLOROFORM SAFE?

The city coroner held an inquest yesterday afternoon, at the Royal Sovereign Hotel, Liverpool Street, touching the death of Mrs. Cook, the wife of the licensee of the hotel mentioned, which took place while under chloroform, on Sunday afternoon. Some facts of peculiar interest came out during the inquest, and the question arises: Is it safe to administer chloroform, even under favorable conditions? Mrs. Cook was but thirty-nine years of age, and, so far as was known, was a robust and thoroughly healthy woman. Dr. Chisholm, by whom she was examined and given chloroform preparatory to undergoing a dental operation, could see no reason why the anaesthetic should not be administered. In fact, the doctor considered her to be a "capital subject." Only a small dose was administered, and the usual precautions were taken. After several minutes there was a sudden muscular spasm, and Dr. Chisholm ceased operations. The pulse stopped beating, and to all appearances life was extinct. The usual methods of restoring animation were immediately resorted to, but without effect. In answer to a jurymen, Dr. Chisholm said he had had forty years' experience in using chloroform, and had administered it to thousands of cases, this being the first that had proved fatal. Death, he believed, was due to heart failure, for which he was unable to account. Upon some people, he said, the anaesthetic appeared to act like poison, and there was no way of distinguishing such cases. Dr. Taylor, by whom a post-mortem was made, deposed to finding slight signs of disease in a blood vessel leading from the heart, but this, he added, could not be detected before death. A verdict was returned to the effect that death was due to failure of the heart while under chloroform, and the jury found that the chloroform had been properly administered, and the proper means for resuscitation had been adopted when danger became apparent.
V. Black, Chicago; Paper by Dr. C. E. Bentley, Chicago (subject not announced); "Local Dental Societies," Dr. A. M. Harrison, Rockford; "Details of a Porcelain Crown," Dr. J. E. Nyman, Chicago.


October 18, 1898. Office of Dr. F. M. Rood; essayist, Dr. F. W. Proseus; subject, "Correlation of Fees in Dental Operations;" discussion headed by Dr. J. H. Beebee, Dr. F. A. Greene; office incidents headed by Dr. H. N. Holmes.

November 15, 1898. Office of Dr. B. G. Saunders; essayist, Dr. W. A. Windell; subject, "The Education of the Patient;" discussion headed by Dr. I. C. Edington, Dr. J. S. Turner; office incidents headed by Dr. W. A. White.

December 20, 1898. Office of Dr. F. L. Sibley; essayist, Dr. F. French; subject, "History of Dentistry in Rochester;" discussion headed by Dr. H. S. Miller, Dr. L. D. Walter; office incidents headed by Dr. R. Erler.

January 17, 1899. Office of Dr. P. H. Smith; essayist, Dr. J. H. Beebee; subject, "Cement Fillings;" discussion headed by Dr. R. H. Hofheinz, Dr. J. Requa; office incidents headed by Dr. L. Requa.

February 21, 1899. Office of Dr. F. J. Tarrant; essayist, Dr. R. H. Hofheinz; subject, "Treatment and Preparation of Teeth for Filling;" discussion headed by Dr. J. E. Line, Dr. C. F. Howell; office incidents headed by Dr. F. H. Lee.

March 21, 1899. Office of Dr. D. H. Waugh; essayist, Dr. F. M. Rood; subject, "Method of Treating Septic Teeth;" discussion headed by Dr. L. H. Gilbert, Dr. W. W. Belcher; office incidents headed by Dr. W. H. Barr.

April 18, 1899. Office of Dr. W. A. Windell; essayist, Dr. F. Messerschmitt; subject, "Systemic Treatment in Dentistry;" discussion headed by Dr. C. H. Nicholson, Dr. J. W. Cowan; office incidents headed by Dr. C. T. Howard.

May 16, 1899. Office of Dr. F. J. Woodworth; essayist, Dr. F. H. Lee; subject, "Prosthetic Dentistry;" discussion headed by Dr. B. S. Hert, Dr. W. W. Smith; office incidents headed by Dr. P. H. Smith.

June 20, 1899. Office of Dr. J. W. Cowan; essayist, Dr. F. J. Tarrant; subject, "The Year's Advancement in Dentistry;" discussion headed by Dr. F. L. Sibley, Dr. F. J. Woodworth; office incidents headed by Dr. L. S Goble.
The Importance and Manner of Sterilization of Dental Instruments.*


1. The importance of sterilization of dental instruments to-day is recognized by all progressive dentists as a factor that we owe with a sense of justice and regard to our patrons.

It is our duty as dentists to treat our patients in such manner and with such instruments as we would have used were we looking for like services.

Being prompted with this spirit, and the born necessity for better and more efficient aseptic and antiseptic services, by virtue of which we may triumph in the treatment of the diseased condition of the oral cavity, formerly unattainable.

There is no department of surgery in which the demand for aseptic procedure is more urgent than in dentistry, for the reason that all of our operations are performed upon septic or infected tissues.

We cannot extract a tooth, cleanse the canal of a pulpless tooth, excavate a cavity of decay or lance the gums, or touch any part in the oral cavity without our instrument becoming coated with a layer of infectious material. Therefore it is our duty to cleanse and sterilize our instruments to avoid the transmission of infectious matter from one patient to another.

The necessity of absolute cleanliness on the part of the dentist, of his hands, instruments, napkins, drinking glasses, rubber dam, in short everything which comes in contact with the

*Read before the Wisconsin State Dental Society.
patient's mouth is, as I have said, universally recognized. And yet it is not at all difficult to find persons in the practice of dentistry who neglect this matter to an extent that is revolting to the taste, dangerous to the health, and certainly not creditable to the dental profession.

With regard to the transmission of disease by dental instruments, there have been so many cases reported in our dental and medical journals that the matter should be familiar to all of us. Such disturbances of the human body which have been traced to the action of mouth bacteria, and directly the result of transmission by dental instruments are septicæmia, chronic pyæmia, meningitis, ostitis, syphilis, pyorrhœa, and many other disorders too numerous to mention. I can but refer you to a compiled list of cases by Dr. W. D. Miller, of Berlin, in Cosmos, September number, 1891.

It is most fortunate that the gums in a healthy state offer so powerful a resistance to the invasion of pathogenic germs, although I regard it never safe to trust to the usually pronounced immunity of the gums toward infections, since they under many abnormal conditions lose their power of resistance altogether.

And more than this, the mucous membrane of the mouth appears, under all conditions when slightly wounded, to furnish ready entrance to pathogenic germs.

We can never know what virus may be clinging to our instruments. Nor can we with certainty predict the result of a wound upon the gums, cheeks or lips with an unclean instrument.

It also stands to reason that in all operations within the oral cavity we should, as far as possible, sterilize the parts to be operated upon, since the danger of infection through the germs in the patient's own mouth is always present.

The demand for the adoption by the dentists of the same aseptic measures as observed by the general surgeon has constantly become more imperative.

And I sincerely hope that the performance of any bloody operation within the mouth, even to the extraction of a tooth, will be done with due regard to the principles of aseptic surgery.

Now, as members of a progressive profession, let me earnestly urge you to adopt such means of sterilization of your instruments used in daily practice, and to observe and practice the principles of asepsis in all operations within the oral cavity.
2. The question of sterilization of instruments is one which has given both surgeons and bacteriologists much to think and work upon, and only recently can it be said to have approached a definite solution.

Much credit is due to Dr. W. D. Miller, of Berlin, for work in this direction. And I wish to quote him as saying that boiling water will accomplish in two minutes as much as any chemical agent ordinarily used, in half an hour.

And in conclusion he says that "I regard an exposure of three minutes to boiling water sufficient for sterilizing smaller dental instruments, i.e., excavators, etc., and five minutes for forceps." Now there are many ways that one might adopt to accomplish a certain result. And each may have some special feature by which it merits recognition. After experimenting with several of the so-called dental and surgical instrument sterilizers, of which I have quite a collection at home, I came to the conclusion that the ideal dental instrument sterilizer would be found in some apparatus that made use of dry steam heat, or better still, some powerful gaseous compound.

As necessity is the mother of invention, I am pleased to be able to exhibit this invention, the Schering's formalin sterilizer, which has fulfilled my most sanguine expectation as an ideal for sterilization of dental instruments. (Explanation of working of the sterilizer, etc.)

With this formalin sterilizer you have a method that is rapid, cheap, easy and sure of sterilization of instruments without in any way injuring them.

To verify the foregoing statement, can but state that I have conducted several experiments. By infecting instruments with various forms of microorganisms, and after exposing them to the action of the gas to different intervals of time, and subjecting them to the usual proofs for being sterile or not, have come to this conclusion: That with one pastil or five grains of paraform, used in the Schering's formalin sterilizer, you can disinfect any infected dental instrument by an exposure of fifteen minutes to the formaldehyde gas generated from a five grain pastil.

Another advantage of these pastils is that it insures you with pure 100 per cent formaldehyde gas in definite quantities.

Formaldehyde gas has proven to possess extraordinary power as a surface disinfectant, greater than that of any other known
substance. This factor specially recommends it to us for use in sterilizing our instruments. It also has great penetrative powers in dry, loosely woven substances, as absorbent cotton, gauze, etc.

In the presence of moisture the penetrative power of this gas is materially lessened, and would say practically nil. This necessarily limits its action to surface disinfection.

Further, I claim this method to be an ideal one, as the lamp will burn in the closed chamber long enough to generate more than sufficient gas for its disinfection, and you use a definite amount of paraform and get a definite result in a given time.

Inexpensive, most convenient and absolutely certain in the destruction of all pathogenic organisms in the shortest time, and with a minimum of injury to the object of disinfection.

The following table shows results of experiments. In all cases pure sterilized bouillon and gelatin culture media were used, and incubation watched from twelve to forty-eight hours. Temperature 98° F.

<table>
<thead>
<tr>
<th>OBJECT OF EXPERIMENT</th>
<th>CULTURE MEDIA</th>
<th>NO. OF TESTS</th>
<th>TIME OF EXPOSURE</th>
<th>RESULT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bouillon</td>
<td>Gelatin</td>
<td>Minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sol. decayed teeth on strips of lint, ½ in...</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Sol. decayed teeth. Excavators...</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Putrefactive material from root canals on drills and on instruments.</td>
<td>4</td>
<td>4</td>
<td>15</td>
<td>4</td>
<td>Gelatin, at Room Temp.</td>
</tr>
<tr>
<td>Infected from pyorrhea pus pockets...</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>Gelatin, at Room Temp.</td>
</tr>
<tr>
<td>Lance, infected by opening abscesses...</td>
<td>2</td>
<td>2</td>
<td>15</td>
<td>2</td>
<td>Gelatin, at Room Temp.</td>
</tr>
<tr>
<td>Scraping of dorsum of tongue on small platinum loop...</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

Experiment with mice. Found them to live 30 to 50 minutes, incaged 1 foot space of gas. 3 pastills of 5 grs. each used. 1 percent formaldehyde gas destroys micro-organism in 15 minutes. Credit. 1 in 10,000 inhibits growth, and 1 in 20,000 safe. "Aronson and Trillot" sufficiently powerful to retard bacterial growth.
Of the several ways that formaldehyde gas and its solutions suggest themselves for use for the practical disinfection of instruments, I can but recommend and place reliance upon this method of evaporating paraform by heat in the manner suggested for using Schering's formalin lamp and sterilizer.

Solutions of formalin are not fit for practical use in disinfecting dental instruments, whereas, they may and do prove themselves efficient as disinfectants. The action of formalin and its solutions is such that it blackens and corrodes them. The precipitate you see in the bottom of bottles with test instruments in the various solutions of formalin is, I believe, hydrate or carbonate of iron. Furthermore, formalin is of acid reaction, and also coagulates albumen, even in attenuated solution. (Explains principle of disinfectant by Miller, Germany.) Have found lysol solution—two to four per cent solution—efficient, and better than solution of formalin, as it will not corrode the instruments, it being an alkaline solution.

Now, I have mentioned formaldehyde, formalin and paraform several times, thinking that some of you may not have had access, or your attention called to various literature upon the chemical and its practical use as an antiseptic and disinfectant. Wish to say that it was discovered by von Hoffmann in 1867, and held as a chemical curiosity until 1888, when Loew discovered its antiseptic properties, and Berlioz and Trillot, in 1890, applied this property, and proved beyond doubt its practical use as an antiseptic and disinfectant.

Formaldehyde gas is prepared by subjecting methyl or wood alcohol to oxidation. Formalin is a forty per cent of formaldehyde gas in water, and paraform is polermenized formaldehyde, and may be seen by evaporizing a solution of formalin, as a white precipitate on the bottom and the side of bottle. It is soluble in hot water, and further, by being heated again produces formaldehyde gas. Formaldehyde gas has the property of uniting with sulphurated nitrogenous products of decay, fermentation or decomposition, forming other chemical compounds which are antiseptic and sterile in their nature. To this property is due its great germicidal powers.

Formalin, forty per cent solution of formaldehyde gas, coagulates albumen, hardens animal tissues without causing shrinkage or change in structure.
Since I have conducted several experiments with the formalin solution in the treatment of teeth, I wish to relate a few instances: Have used forty per cent solution in treating pulp tissue in inaccessible root canals, placing a drop on pellet of cotton with solution in tooth from four to twenty-four hours, then filling, leaving pulp tissue in root undisturbed. In experiments on teeth out of the mouth treated in like manner keeping them moist and in solution of formalin, found pulp tissue to be white and hard and unchanged with regard to shrinkage, am not prepared to say at this writing what the result would be, only judging from my experience in preservation of biological specimens, have reason to look for a favorable method of permanently fixing animal tissue thus treated from putrefaction five per cent or ten per cent solution better for penetrating hard tissue, as tooth substance. Have used a five per cent solution of formalin in treating putrescent root canals and report but favorable results so far. One case gives rise to disturbances of an oedemic nature, but quieted down in three days, so I could fill tooth.

Thanking you for your kind attention and I hope you will discuss this paper honestly and courteously.

Pyorrhoea Alveolaris.*


Pyorrhoea alveolaris has, perhaps, existed in the mouths of the human family as long as caries, and it has often been remarked by the older members of the profession that "there are more teeth lost by pyorrhoea than all other causes combined."

If this is so, why are not more of us giving our time and thought to the cure of this direful disease? It will not only enlarge our sphere of usefulness, but we will become greater benefactors than ever to suffering humanity, besides the financial benefit that would result from the extension of, and increase in practice.

Pyorrhoea is as amenable to treatment as alveolar abscess or any other disorders of the oral tissues.

It is not so many years ago since the dental profession thought that the only cure for alveolar abscess was the forceps but what would we think to-day of a man who made such a state

*Read before the Odontographic Society.
ment? I am certain that it will be but a few years when a dentist who extracts a tooth because of pyorrhœa will be as subject to criticism as he who to-day would remove one because of alveolar abscess.

Dr. Younger, to whom we are indebted for the knowledge of the treatment of pyorrhœa, has clearly demonstrated that by the thorough removal of the pyorrhœal deposit, or so-called serumal calculus, and the induction of union between the tissues of the alveolus and the structure of the tooth by the use of lactic acid, this disease can be effectually cured and the parts restored to perfect health. The reason so many of the profession are unable to cure pyorrhœa is because of their inability to always detect the presence of this deposit and secure its removal.

It is due to this inability that many have been led into the error of supposing that pyorrhœa can exist without the presence of the deposit. As the bulk of this deposit is hidden in the remote depths of the socket, the sense of touch is the only thing that can be relied on to detect its presence.

A delicate sense of touch is natural to some, but it can be cultivated, as with the blind. Dr. Younger says, "We must be able to see with the ends of our fingers." For this reason I would advise you to go into special training to acquire this touch, just as we have taken special training for every other branch of our profession. We can no more succeed in removing this deposit perfectly without this training than we could have put in a perfect gold filling at the beginning of our student life.

The majority of the profession consider this disease to be constitutional; but Dr. Younger claims it is purely local, though he says there may be some degenerate condition of the system which will predispose the alveolar structure to acquire the disease, the disease itself being caused solely by local irritation, and, I believe, from my limited observation, that it is no more systemic than is caries of the teeth.

Dr. Talbot claims it may be either constitutional or local, and to prove it is constitutional he cites the effects of syphilis and scurvy upon the alveolus. It is surprising that a man of his learning should make such a statement. It is true that these diseases have an effect upon the alveolus. So have measles and smallpox an effect upon the skin, but measles is not smallpox, neither is small-
pox measles; besides, neither syphilis nor scurvy produce that peculiar deposit which is pathognomonic of pyorrhcea alveolaris.

It is needless for me to recount the various theories that are given for this deposit, because we are all familiar with them. Dr. Younger's theory is entirely original. He claims the deposit emanates from the alveolar structure itself; that it is the lime salts disintegrated during the destructive inflammatory process taken up by the pus and, by force of impact, deposited upon the root, where, by bacterial energy, it is agglutinated. As one proof of this, he states that the amount of deposit upon the root is in proportion to the amount of destruction of the alveolar process, and vice versa.

The profession so far has been handicapped by the lack of suitable instruments; they have either been too clumsy, and thereby unable to reach remote deposits, or too flimsy to exercise the necessary power to detach the calculus; but we can now secure at L. J. Mason & Co. Dr. Younger's set of instruments, which are sufficiently delicate and far reaching to penetrate the remotest pockets, and having all the power necessary to remove deposits.

I take pleasure in exhibiting to you a set of these instruments with the sealing wax upon the handle, giving more power, better control of the point, and ease of manipulation. One is not obliged to grasp the instrument so tightly, thereby interfering with the sense of touch. The different colors enable one to find the instrument wanted instantly, the pairs always having the same color.

Keep your instruments in an antiseptic solution while operating. Always have your hand resting upon the teeth or face in such a way that your instrument cannot slip, using the thumb and two first fingers to control the instrument.

About ninety per cent of our patients have pyorrhoea alveolaris, and the man that is able to cure it is the one who is going to have the largest practice and command the best prices for his work.

If any of us meet with cases we are not able to treat successfully, it is our duty to send the patient to a specialist, and not to say to them, "Nothing can be done, you will have to lose your teeth."

The dental profession in Chicago is fortunate in having specialists in so many different branches. We have Drs. Haskell and Hunt in prosthetic dentistry, Dr. Case in orthodontia, Drs. Nevius and Slonaker in extracting and Dr. Younger in pyorrhoea.
We should take pleasure in referring cases to them, the same as physicians do in sending their patients to a specialist.

In summing up, to cure pyorrhœa it is necessary to have an educated touch, unlimited perseverance and integrity, and the proper instruments to be able to remove the deposit. After the deposit is loosened be sure it is all washed from the pocket. Tar water and witch-hazel, equal parts, are good for this, using a small pointed syringe to force it into the pocket. If any of the teeth are loose ligate with silk ligatures, and dismiss the patients, asking them to return within a couple of days so you can treat the pockets with lactic acid.

SURGICAL TREATMENT OF CONGENITAL CLEFT PALATE.*

BY WILLIAM HOFFMAN G. LOGAN, D. D. S., CHICAGO, ILL.

The causes of congenital cleft palate are not thoroughly understood, yet in the majority of cases its primary cause can be traced to prenatal or hereditary influences, and at times both seem to have been prominent enough to have resulted in the deformity.

Before entering in upon a consideration of the value of the different operations to be employed in the cure of a continuous cleft palate, let us discuss the propriety of surgical methods. Where and how is the line of demarcation to be drawn between the mechanical and surgical mode?

As a result of measurements taken of over one hundred normal palates, I have been led to believe that there exists an almost set ratio in distance between the superior maxillary tuberosities to the distance from the median line on the dorsum of the pharynx to each tuberosity upon said superior maxillary bones. The point upon the dorsum of the pharynx from which the measurement is to be taken should be at a point upon a horizontal line with the palatal portions of the superior maxillary bones in their normal positions, and if after more thorough investigation the above theory proves to be a fact, we shall then be able to state to a greater degree of certainty when success will or will not crown surgical interference.

True success in an operation upon the palate is only reached when the proportions of the surgical velum is sufficient to close the naso-pharyngeal opening during speech, and when a surgeon

*Read before the Odontographic Society.
finds, after exhausting all his skill, that his patient speaks very imperfectly as a result of the shortness of the velum, he should open the soft palate again, under the direction of such skilled and tested makers of the artificial vela as Case or Kingsley, and have constructed an obturator which shall be in length and breadth, to give more perfect results. There is but little doubt in any one's mind who has investigated along this line, but that many patients who have been operated upon for the cure of congenital cleft palate would have been by far more benefited if they had fallen into the hands of the former of the artificial vela, while on the other hand just as grave errors have been made by employment of the artificial when surgical interference was indicated. Such mistakes will probably continue until some well defined principles are laid down, whereby we shall be told the amount of soft tissue necessary to close the naso pharyngeal opening during speech, and if we have said amount of tissue present.

In the year of 1851, the idea of the cure of continuous cleft of hard palate by pressure upon the buccal surfaces of the superior maxillary bones was brought before the profession. That author states, "I was lead to try it upon the body of a dead child which
died three weeks after birth. By means of a pair of clamps the sides of the fissure were brought readily in contact without any fracture or displacement of the bones.” To quote further, he states, “I repeated the experiment on young dogs, removing a portion of the palatal bones by means of a saw and then applying pressure. The animals did well.” He then suggests a plan wherein a horseshoe clamp, with a shelf on its lower border to receive the gums and prevent its slipping, could be used. He did not state or suggest any method for retaining the parts in contact, and as this author does not give us any reason to believe he ever performed this operation upon a living human subject, the only credit which can rightfully be given him is that he was the originator of the idea of pressure upon the buccal surfaces of the maxillary bones as a cure of congenital cleft of hard palate, and not of performing uranoplasty, for uranoplasty was first performed, that is by pressure which results in bringing the superior maxillary bones together in their entirety and maintaining their said relation until union takes place, by Dr. Brophy, of Chicago, and subsequently by the late Dr. Garretson, of Philadelphia, by the following method:
Dr. Garretson forced the superior maxillary bones together by the employment of a modification of the Hoey clamp, which in its natural form was used as an arterial compressor. The parts were retained by the use of compresses placed upon and below the malar bone, secured by adhesive strips applied as in an occipito-labial cravat of Mayo. Dr. Garretson explains another mode of securing the same end as follows:

Compresses placed upon the cheeks at a point so when pressure is brought to bear upon same it will carry the bones toward a common center. To produce the pressure he employed a rubber ring over the pads and around the cervico-labial diameter of the head.

Dr. Brophy performs uranoplasty by passing two silver wires through the superior maxillary bones, one in front, and the other
behind the malar process, while both are above the hard palate. A lead plate having two eye holes is then passed upon the wires. The ends of the wires are then twisted until the parts approximate, the edges of the cleft having been properly freshened in the first step of the operation. When the tension is such as to endanger the breaking of the wire he makes an incision through the malar process above the lead plate which is in direction horizontal.

The objections which have been brought forward by the profession which were common to both the Garretson and Brophy operations are as follows:

That life is endangered by operating so young.
Constriction of the dental arch.
High vault of the palate.
Partial or complete stenosis of the nasal passages when the cleft is extensive.

The main objections to both of Garretson's methods were that the retention employed was unreliable and could not always be depended upon to hold the parts in contact until union took place, while Dr. Brophy was criticised because of passing the silver wires through the maxillary bones at a point which necessitated the destruction of the dental germs.

It shall now please me to describe an operation which was devised and performed in 1897 upon a child six weeks old, for the cure of continuous cleft of hard palate, by the essayist. The patient was anaesthetized by the administration of chloroform while in a recumbent position upon the operating table.

First step: Two strong silk sutures were passed through the soft tissue and hard palate at a point midway between the edges of the cleft and the superior maxillary ridge. These silk sutures when in position passed through the palatal portion of each superior maxillary.

The second step is to substitute silver sutures for the silk, which is quickly accomplished by fastening the silver sutures to the ends of the silk ones and drawing upon said silk will carry the silver suture to the desired position. The ends of sutures are then passed through opening in lead buttons which are made to fit each individual case.

The third step consists in forcing the separated edges of the cleft together by an instrument, which I shall term the uranoplas-
tic forcep, which was made for me by the Truax & Greene Co., of Chicago, and is so constructed that force can be brought to bear upon any given point along the buccal surface of the superior maxillary bones, desired. The uranoplastic forcep is then placed in in position and gradual pressure here is exerted, at the same time tension being made upon the silver sutures so as to bring the palatal portions together on a horizontal line. The last portion of this step is very important, as it will do away with the high vault of palate which follows the other operations and gives contact of the edges of the cleft with the least possible constriction to the maxillary ridges.

The last step before the wires are twisted which shall hold the parts in their proper relation is to remove not less than one line of the edge of the cleft involving bone and soft tissue, including only such areas, however, as shall subsequently be held in contact.

The parts are now ready to be carried to position, which is done by twisting the wire sutures, and pressure upon the buccal surfaces by the employment of the uranoplastic forcep. If the resistance seems to be such as to endanger the palatal tissue or wire sutures perpendicular incisions are to be made through the maxillary bones along their buccal surfaces wherever the resistance seems greatest. It will be found necessary to employ a number of interrupted silk sutures, to insure constant coaptation of the soft tissue and union throughout the field of operation. I feel that the perpendicular incision is to be preferred frequently to the horizontal for weakening the bones in carrying them together, as the former will not separate the periosteum as does the latter. The silk sutures are removed between the fifth and eighth day, the silver ones remaining six to eight weeks. Antiseptic cleansing of the parts daily consists in the treatment of the wound but the patient must have care taken of it which is equivalent to that which is received in our best hospitals. Uranoplasty is a major operation in every sense and must have such attention as is due such operations. It will be found advantageous to administer the same food two or three days previous to the operation which is to be employed afterward, every two or three hours when awake, liquids or semi-solids indicating the form the food should be given.

The advantages of this operation over those which have preceded it, to my mind, are as follows:

The germs of the teeth will not be disturbed to the same degree.
The palatal portions are brought together on a horizontal line, which result is a coaptation of bones in the center with the least possible constriction to the superior maxillary ridges.

The high vault of the palate is decreased.

The liability of the fibrous union between the separated ends of bone along the buccal surface, if fractures should occur, will be lessened as a result of the incisions made perpendicular instead of horizontal.

The amount of blood lost and length of time necessary to perform uranoplasty is certainly and positively reduced by this procedure.

For my ideas as to the time surgical interference should be employed for cure of cleft of hard palate, I am fully and solely indebted to Dr. Brophy, to whom I have been an assistant in surgery for the last three years, and are as follows:

First. Operations for closure of cleft in soft or hard palate can and should be performed between the tenth day and tenth month. The more robust the patient the more near the tenth day the operation should be performed.

Second. At this period the surgical shock will be less.

Third. In proportion to the cleft more soft tissue is present in infancy than at any subsequent period.

Fourth. If not performed in infancy the palatal tissue will atrophy as a result of not performing the natural functions.

Fifth. The tuberosities can be forced nearer together without danger of extensive fracture, and give us the happy result of elongation of velum palati.

Sixth. When the child learns to speak its enunciation is correct and natural, for its palate is normal.

I do not fear dangerous constriction of the dental arch or stenosis of the nasal passage, as claimed by Dr. Marshall in his most excellent work upon oral surgery, which in many ways is the most meritorious book we have on this subject. It has been proven beyond any question of doubt by practical demonstrations that stenosis of the nasal passages will not occur in any case as the result of this operation, and that the occlusion of the teeth will not be destroyed to any great degree.

When continuous cleft of palate is associated with harelip the palate should be closed first.
When inter-maxillary bones are detached from both lateral ones, it should be in every case forced back in alignment and secured by the employment of silver sutures until union takes place, and never excised, as advised by some.

In closing, I shall state that this operation is not indicated in every case, but when it is I feel very sure it will prove of great value.

Surgical Clinic at the Chicago College of Dental Surgery, October 25, 1898.

By Prof. Truman W. Brophy, M. D., D. D. S.

reported by Geo. E. Bratten, class '99.

Operation for excising infra-orbital nerve. Miss B., aged twenty-two years.

Gentlemen: The patient comes before us to-day, having a neuralgic pain in the upper part of the face on the right side. Her local dentist, in making a diagnosis of her case, held that the affection was caused by the teeth, hence he removed all the teeth on right side of the superior maxilla, except the sup. central and third molar. The extraction of the teeth did not alleviate her pain. This trouble dates back about eighteen months. When she first came to me in the early summer the absorption of the processes had not proceeded very far. I denuded the surface of the bone and removed the new formed tissue in the alveoli from which the teeth had been extracted, believing that I might relieve the pressure from the nerve filaments supplying the parts; this relieved her pain for a period of six weeks, but the neuralgia recurred.

During a period of several weeks she was under the treatment of a skillful physician, who employed the usual remedies used in such cases, but her relief was only temporary.

All medicaments known have been used, but to no avail. The only course, apparently, left to pursue would be to excise the infra-orbital branch of the fifth nerve. In most cases this operation has proven a success. Given off as this nerve is through the infra-orbital foramen, and being quite superficial, it may be easily injured by a blow, etc., a hypertrophied condition may be produced, which, pressing against the bone substance, causes great pain; this can be relieved in no other way than by excising the nerve above the hypertrophied point.
Operation. The method employed in approaching this nerve, you will find in examining your text-books, is to make an incision along the infra-orbital ridge, or a little below it, expose the nerve and remove it from its canal.

An external incision in the performance of this operation I regard as wholly unnecessary.

I lift the lip on the affected side, make an incision about one and one-half inches in length immediately over the canine fossa; with a periosteotome the soft parts are lifted away from the bone until I have reached the infra-orbital foramen; then with a tenaculum, pick up the nerve as it emerges from the foramen; dissect the branches out of the cheek, and then carefully draw up on the nerve with hæmostatic forceps, at the same time twisting until the nerve is removed from the canal.

The wound is cleansed antiseptically and allowed to heal. There are no external incisions to care for, nor will there be conspicuous scars left to disfigure the patient's face, as in operations where external incisions are made.

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The Odontographic Society of Chicago.

Dr. Robert Good read a paper on "Pyorrhœa Alveolaris." See page 808.

Discussion.

Dr. E. L. Clifford: I had the privilege, through the kindness of Dr. Good, of looking over the paper this afternoon for a few moments, that is, the most of it. The doctor had not quite finished it and the latter part of it I did not see.

In societies and in meetings of this kind we meet for mutual improvement, to gather and glean from the experiences of each other all the information that we possibly can, so as to be a benefit and assistance to one another. If, during that time, our ideas should differ, we trust that each one of us should feel that we all have the same main object to gain, that certainly no personality, no matter what we say in discussing a paper, should enter, but that we are all after the atom of truth which would help us all to a greater ability to master the difficulties in our daily practice, for our own benefit, and for the benefit of our patients.
Now, with this preface, I call upon the members of the society to bear me out that we are all conscientious in our belief. The idea struck me at the reading of the paper, more especially after having heard it to-night, "what a simple thing pyorrhœa is after all." Here the great lights in our profession have been for the last 200 years almost studying the etiology, the pathology, the treatment of this terrible disease that has afflicted mankind; of this disease, "by which mankind has lost more teeth than all the other diseases of the mouth combined," as the paper states, and if to-day in the midst of all our enlightenment, we can reap any benefit from our current literature, we must acknowledge that there is probably no one subject upon which there is a greater diversity of opinion than there is upon the etiology, pathology, and treatment of what we term pyorrhœa. Now there must be some reason for this. Is it possible that during all these years men have lost so much time, have lost so much study, and that we have stumbled over the fact that all that it is necessary to do is simply to scrape the roots of the teeth, clean the mouth and let the patient go under any and all conditions? I can hardly acquiesce to such a statement. I must give some credit to the great minds of our profession, such men as Magitot, Serran, Rehwinkel, Ingersoll, Black, on down through a long list, and such men as they who have had the advantage of committees appointed for the purpose of studying the pathology of this one trouble that has given our specialists more anxiety than any other one point. I must believe that they have, at least, the ordinary ability of the dentists of to-day, weighing, of course, the advantages of their time with the advantages that we now have.

Pyorrhœa, as stated by the essayist, is an old disease—if we can take the evidence as furnished us by the crania that had been exhumed from time to time as far back as the history of man reaches. These crania have been found which show that the people of that day have suffered with some such pathological condition as the human family now suffers with, and which we call pyorrhœa. But it was over seventeen hundred years before anybody took hold of the subject and before any great enlightenment was thrown upon it. It baffled, as it has on down to to-day, a great many of the profession in some of its different phases. It was seventeen hundred years before there was anything toward an explanation, or success attendant upon any of the treatments of the different phases of it. There must have been some reason for this. The representatives
of the profession of dentistry certainly were not idle during all this
time. There were some efforts being made. Now, if we will trace
back the results of the paper as laid down by the essayist, that it
is a local disease simply, that is, its etiology is a local factor, is it
not strange that almost without any exception the different com-
mittees that have been appointed during the time from the year
1746, about, that had been appointed to study the etiology of this
disease, have all coincided in the fact that there must be something
about it that we do not know, that there must be some general
condition as an exciting cause? And even our own much loved Dr.
Younger, while stating that it is a local disease entirely, admits that
the patient must be a degenerate in some condition and under cer-
tain circumstances in order to provoke the condition that is the
exciting cause of the disease. Now, why does not the accumula-
tion, which he states is invariably present, form in other mouths?
Why does it not form upon our teeth? There must be something
back of all this, back of the fact that this accumulation is found
there, and I hope I will be pardoned if I take up most of the time
in the discussion of the etiology of this pyorrhœa. The paper is
almost all on that, the treatment is simply mentioned in the end
of the paper.

The essayist also quotes another authority in the person of
Dr. Talbot, and criticises to a certain extent the fact that he makes
the statement that it must be a constitutional disease, because in
scorbutus and syphilis, and other similar diseases, we find patho-
logical conditions of the gum or of the alveolus. The reasons
given by the essayist as to why that should not be so, I do not
believe are logical. If those diseases have a destructive influence
upon the alveolus, why do they have it? If syphilis, if scorbutus,
if tuberculosis, if any form of catarrhal affections have a pathologic
effect upon the alveolus, why, if they have it, is it not rational to
suppose that there is an interrupted assimilation, an interrupted
nutrition that prevents the physiological function being carried
out, that the condition of the alveolus at that time—the accretions
that form within the alveolus—is more a result than a cause?
Why was this disturbance? Do not we know that we cannot dis-
turb the mental functions of any of our patients without a patho-
logical effect? Is not assimilation and nutrition disturbed by that
very condition? If so, which becomes the primary and which is
the secondary cause or condition? I do not agree with Dr. Talbot
in all of his conclusions. While I believe the statement, so far as cited in the essay, is completely within the bounds of fact, still at the same time I do not believe the essayist goes quite far enough in the article which has just been quoted. Dr. Talbot, if you all are conversant with his literature, believes that it is a constitutional effect, but he places it in a different locality in the organism from which most of us do. He would take the liver and believe that most of the pathological condition arises from a derangement of that organ. Those who have studied the literature of the different writers, and who have allowed our own experience in practice to be compared with their experience, with their histories, come to the conclusion that it is a matter of defective assimilation and nutrition, greater in some, greater in those points and cases where the whole nutrition is mostly interrupted and where the want of proper assimilation is greatest. It is evident that there is a catarrhal condition existing at some point, or we would not have this effusion, we would not have this pathological condition. There must be some cause for that. Why this catarrhal condition? Our essayist goes so far as to state that he does not believe that pyorrhea is any more a systemic pathological condition than caries of the teeth. Gentlemen, is caries, as we understand it today, a strictly local disease? Do teeth decay alike in all people, in strong, healthy people whose jaws are anatomically correct, whose secretions are correct and whose functions are properly carried on, is it the rule or is it the exception? Why do people's teeth decay? Are not the teeth subject to assimilation and nutrition? Is there not such a thing as defective nutrition in the teeth? Cannot these trophic conditions that we have been speaking about in the other paper probably have some effect, and if they do, even on the structure of the teeth, do they not make them more susceptible to the local effect? I believe that caries of the teeth is just as much of a local manifestation of interrupted assimilation as pyorrhea, pyorrhea being more prevalent and more manifest under certain conditions. I am afraid we do not understand the subject of pyorrhea, or, in other words, that we embrace too much under that one general head. There certainly must be different kinds of pyorrhea, if we can take the experience of different writers whose statements we feel that we cannot doubt. Dr. Rhein, for instance, calls it pyorrhea simplex and pyorrhea complex. Dr. Pierce has his ptyalogenic and hematogenic pericementitis as the complexity arises from the
saliva, or from the blood; he also gives another division as suggested by one of his confrères as gouty pericementitis. Another author gives us gouty contagious gingivitis, which is certainly a different disease entirely. Those of you who have read the last number of the Cosmos must feel that that is not looked upon by the profession as belonging to the pyorrhœal group. It is another disease entirely.

This is a subject in which I sympathize with the essayist in opening, because it is such a large one; it is so hard to embrace all, or do justice to oneself, but my experience teaches me that there is a pyorrhœal condition, as the term is accepted to-day, that has its origin at the gingival border and that pyorrhœal condition may be looked upon as a pyorrhœa simplex, so named by Dr. Rhein. That is certainly amenable to local applications and local treatment. All those conditions, however, are the result of an interrupted nutrition which can be improved by proper hygienic conditions and the properly altered constitution of the blood which is supplied to those tissues. We have our patients complain of elongations, we have them come in in a little while with malpositions of the teeth. That kind of a pathological condition is very different in my mind and very different in my hands and experience from that I mentioned first. I have great difficulty in overcoming it, and I cannot overcome it so far as I have been able to try, by local applications. I find in those conditions that the kidneys are not doing their work, I find the blood is overcharged with uratic deposits, and I also find by proper alterative treatment of the blood, by proper stimulation to the kidneys, proper stimulation of the skin and proper hygienic conditions, that I have lost a great deal of my former revenue, I might say, from continuous treatment of those cases.

Now, to sum up, I want to draw your attention to one or two little articles of constitutional treatment in pyorrhœa that are generally familiar to the profession, the alterative condition of the blood, the presence of serous effusion which is bound to terminate in the formation of pus, as there is often an inflammatory condition existing in the foci.

Now the size of the doses that certain medicines are administered in produce different effects. Under those conditions as an alterative I find extremely pleasant results from calx sulphurata. I give it in large doses, one grain three times a day. I give it
also in catarrhal conditions. I give it in that condition where the different sinuses are congested or engorged with effusion, whether it be the frontal or antral sinuses, and I do not believe that in all my practice I have ever opened up into but one antrum, and I have treated a good many cases of catarrhal antrum. Now, then, if you take these same remedies and administer them in one-tenth of a grain, the same as you do if you wish to produce a different effect in an alveolar abscess, we get different results; and the manner in which we introduce them, and the size of the dose affects the case. Now, then, I believe that when the blood is charged with those conditions, that the deposits of those lime salts along the different joints of the body, the alveolus more particularly, that we are justified in our alkaline treatments. Alkalines have been recommended very highly as the indicated treatment in those cases. I, however, have found a great difficulty in continuing the alkali treatment until I reached the benefit, or in keeping the patient upon it in a renewed attack, for I believe that whatever caused this disease the first time will cause it again; but I have never found anything that has been so pleasant to the patient as the preparation made by the White Rock Springs Company—the Ozonate lithia water. The water is charged with oxygen instead of carbonic acid, and consequently the stomach of the patient will bear it indefinitely. There will be no time when you will have to quit your treatment on account of the stomach revolting.

I will mention a case, just simply to show the effect. I have one lady in particular, who is a good liver, generally lives at a hotel. If I had the time I would like to go into the diet; but I have had that patient under my charge for five or six years, and there has never been a time during this period until the last two years, I think it is now, but what every two or three months I have been compelled to go over that patient's mouth; no cavities, but these accretions would form in the alveolus, the gums would get sore, the rheumatic conditions would be present, the pain would be intense, mastication was almost an impossibility, and she came to me with the history that she knew it was her fault, that she had been in the hands of her former dentist every two or three or four months; and I tell you, gentlemen, after putting that lady on this ozonate lithia water, I have seen her but once or twice since, and I should have known had the results not been satisfactory. I do not assume the cure of the disease by putting her on Ozonate
lithia water. I would not detract one iota from the proper hygienic conditions in the mouth. I believe that is one of the differences between gingivitis and a pyorrhoeal condition, that in cases of pyorrhoea these accretions must be removed before you can get any benefit. Of course, in gingivitis they ought to be removed to get the patient in a hygienic condition, but without the removal of these accretions upon the roots of the teeth you can not do it in pyorrhoea. I would not detract one iota from the proper cleansing and those conditions that are simply mechanical in their operations; but we have those complications and other diseases through chronic pyorrhoea where I get great assistance at least from the proper administration of constitutional remedies.

The sense of touch spoken of by the essayist, I could not put too much stress upon. I believe it is a matter of such evident importance as to need no further comment. Now, in closing, I want to say again, for fear of being misunderstood, that what I have spoken is in the interest of our profession, for the benefit of each one of us, for my own benefit, as well as yours. I like to study these questions. I would like to know more, and wherever I am wrong, no man is more willing to give in than I am; and I certainly feel that I am indebted to the essayist for the privilege of antagonizing him in this discussion.

Dr. A. E. Morey: I am much pleased with the discussion of the paper, because I have been interested in pyorrhoea, along with other general questions, and I am very much pleased to have profited in my short dental career by the scientific way in which the various subjects have been taken up. Dr. Black has set us to thinking along certain stated lines which are really scientific, Dr. Johnson has suggested scientific lines of procedure in operating, and others in the same way, so I believe all these questions should be settled in this manner and that after the various theories have been tested and brought forward according to their values, we can finally arrive at a system which can be used by all of us as a general system, and then after differentiating as we can, go ahead in our treatment according to the idiosyncrasy of the patient and according to our means in hand. It is so in cataphoresis also, and I think the work along these lines is most valuable where it has been followed up in a scientific way. Pyorrhoea has been discussed by so very many who are advanced in the work, Dr. Younger and Dr. Harlan, and a great many of the older members
of the profession that I do not know, all having their theories, and there is, as we see, a general line of procedure according to the disease in hand as it is diagnosed, whether it be local, or whether it be constitutional, whether we look back of the disease, as Dr. Clifford said, to some defect which must be supplied before the disease can be eradicated.

Dr. G. W. Cook: I did not expect to say anything on the subject of pyorrhœa, in fact, I did not get here until after the paper was read, and I did not hear the paper, but a part of Dr. Clifford's discussion; however, I am very much interested in the subject of pyorrhœa, as most dentists are. I am very much inclined to believe that if we find out anything about the etiology of pyorrhœa, that we have got to go beyond the roots of the teeth. I think it is more likely to be a general constitutional difficulty than a local one. I have made some studies of blood and urine for the last two or three years on the subject, and I hope some time in the near future to get some results in that work, so I shall say nothing further about it now.

Dr. Younger: In regard to the treatment of pyorrhœa, as to whether it is constitutional or local, the profession seems to be staggered by merely the simplicity of the cure. The medication as suggested by Dr. Clifford is excellent in its way, but it is only palliative, and does not effect a cure. We all know that any catarrhal affection, rheumatic, gouty or other cachectic conditions, will aggravate any local disturbance, and therefore pyorrhœa, but none of them cause pyorrhœa. The same disturbances may provoke a pimple into a serious sore, but will not be the cause of the pimple. There may seem to be different kinds of pyorrhœa, but they are all modifications of the same disease and are cured by the same means; that is, by the complete removal of the deposit.

I have had now at least thirty years' experience with pyorrhœa alveolaris, and therefore my opinion is entitled to some weight; and I tell you I have yet to see a case that was not amenable to treatment, if not cured by the removal of the deposit, and the treatment by lactic acid, etc., that I have already given you. Sometimes the deposit cannot be removed, and the tooth is lost; but that is rarely the case. The great difficulty, as the essayist says, lies in the detection and removal of the deposit, and for this great delicacy of touch, patience, perseverance and strength of finger are required. I had a case sent to me by a dentist of New
York, who claims to make a specialty of curing pyorrhoea by my methods; he assured me in his letter that he had thoroughly removed all of the tartar, treated with lactic acid, etc., but the teeth remained loose and the flow of pus persisted. On examination I found a quantity of the deposit that he had been unable to detect, and so the mystery was solved.

There are a great many points that Dr. Clifford brought up in his able opening, and I wish I could remember them. If there is anything Dr. Clifford would like to ask about I would be glad to answer.

Dr. Clifford: I would like to ask if you wish to be understood as saying that there is but one kind of pyorrhoea alveolaris, as we understand the disease, and that every phase of that disease can be removed by removing the deposit of the tooth?

Dr. Younger: Exactly.

Dr. Clifford: Is that what you intend to say?

Dr. Younger: Yes. I say there are modifications, but they all arise from the disease of the alveolar structure. The tartar itself is not the incipient cause of the pyorrhoea, there has been an irritant before as an initial. There are hundreds of things that produce pyorrhoea; the little flakes that you sometimes find in beer; the husk of oatmeal and other cereals; the minute fragments of the skin and core of fruit; in the little seeds from berries—strawberries, for instance—the little sand particles taken up with different kinds of food; the bran in Graham bread. All those things are liable to produce pyorrhoea in this way: That one of those little flakes, or a grain of sand lodging in the cervix, between the gum and neck of the tooth, and retained there, produces destructive inflammation of the alveolus, then the pus formation takes place, bearing a minute portion of the disintegrated alveolar bone, which, by force of impact, is deposited on the root; then that deposit becomes the aggravating cause.

Dr. Clifford: All aggravating causes are mechanical. Does pyorrhoea ever commence at the apex of the root without any breach in the tissue at the cervical margins?

Dr. Younger: It may, as the result of embolism, or the formation of a thrombus on the root, or from some traumatic cause or injury.

Dr. Clifford: Is a tendency to the return to this disease usual or not?
Dr. Younger: Not when the second step is accomplished, which is the union of the soft tissues with the root of the tooth. This has to be produced; the removal of the tartar extirpates the irritating cause of the disease, and the application of the lactic acid induces a union between the tissues of the alveolus and the tooth structure. It effects this by opening up the mouths of the canaliculi on the one side and exfoliating the lining tissues of the pocket and removing the necrosed surface of the alveolar bone on the other. In that way a granulating surface is set up from both sides, and you have then a perfect union. There is no more tendency to pyorrhoea after this healing is done than there was before the disease was initiated.

Dr. Clifford: In any case where there would be a return, what would be your diagnosis of the cause of the return?

Dr. Younger: Another irritation.

Dr. Clifford: And that irritation would be mechanical?

Dr. Younger: Mechanical.

Dr. Clifford: The condition of the patient, then, you put no importance on it at all?

Dr. Younger: Oh, yes, as to its affecting the progress of the disease, but not as originating the disease. You may have a lot of combustibles, but you will have no fire until a spark is applied.

At the clinic of this society last February a woman came up with a central hanging out of its alveolus. In consequence of her persistence I undertook to treat that tooth, and in attempting to remove the tartar the tooth became entirely detached. I caught it before it dropped out entirely. I tied that tooth into position and when the calculus was removed, treated it with lactic acid. Two weeks later I saw the case and the tooth was attached to the socket. I applied the lactic acid perhaps half a dozen times and I have now a complete union.

A Member: Is there a tendency to the forming of a false membrane after the using of the lactic acid?

Dr. Younger: No; the lactic acid exfoliates the membrane already formed on the healed surface of the soft alveolus and you have a granulating surface as a result.

A Member: Do you consider pyorrhoea hereditary, doctor?

Dr. Younger: No; no more than measles or mumps.

Dr. Good: Dr. Clifford seems to want to carry his point by claiming the lights of our profession disagreeing on the cause of
pyorrhoea. I would like to ask the doctor how long the lights of our profession were disagreeing about what caused caries of the teeth?

I think the doctor misunderstood me. I did not say that it was necessary for the system to be in a degenerate condition in order to have pyorrhoea. I said there might be in some cases a degenerate condition which would predispose the alveolus to pyorrhoea, that is, the irritation would be faster and quicker than it would be in a perfectly healthy person; and I have noticed in the mouths of the people that seem to be enjoying the best of health that they have pyorrhoea, and they often do not have caries of the teeth, and when they have caries very badly they do not have pyorrhoea.

In regard to the constitutional treatment of it, or the local treatment, we might have a bad case of alveolar abscess and we might give some constitutional treatment after we have given our local treatment and hasten the recovery; but we would not think of treating it constitutionally without locally treating it. I do not believe that pyorrhoea, in fact, I know it cannot be cured by constitutional treatment; it must first be treated locally, then, in systems that are run down, of course, with any disease, caries of the teeth or alveolar abscess, if we can build up the constitution, they will recover quicker than if the constitution is not built up. That is so with pyorrhoea, I believe.

Dr. Clifford: As a matter of explanation, the stenographer's notes will bear me out that I made the statement that I would not detract one iota from local treatment, or from the importance of it, but in certain kinds of pyorrhoea that I found a great helper in certain kinds of constitutional treatment and as a preventive of it returning. Now, I trust you understand me. I would not detract one particle from the importance in pyorrhoea of the thorough cleansing of the roots and the hygiene of the mouth being thoroughly attended to afterward, but I do believe, contrary to Dr. Younger's idea, that in those cases where that tendency was developed, that those patients will have pyorrhoea in a very short time again, and when they do, they will suffer very materially. I also believe that with the proper constitutional treatment I can make those periods longer and longer until, if I can see any curing of the trouble, which is seldom the case in this disease, and they had kept up the hygiene, they would have no more pyorrhoea.

After some informal discussion the subject was passed.
Dr. W. H. G. Logan read a paper entitled "Surgical Procedure in Correction of Cleft Palate."

DISCUSSION.

Dr. C. N. Thompson: The paper, as read, has pleased me very much, and although I am not a surgeon, I should like to say a word or two with reference to Dr. Logan's method. To begin with, measurements are something that we have never had advanced before, and I am glad some one has taken the initial step in this direction, because I think we stand in need of some well defined method for getting at the amount of tissue that we have to fill the space for the cleft. Absolute closure is necessary for perfect speech, and unless the parts can be brought together to close the nares in speech, the operation is a failure. Dr. Logan's operation is in advance of anything heretofore presented, for the reason that the sutures, as they are placed, going directly up through the hard palate into the nares, and across and meeting in the center over the palate bones, are bound to make a more direct union or horizontal position of the palate bones than as though they were drawn from below. The forceps is an advantage over the clamp, because it is more direct and immediate. The incisions being made perpendicular instead of horizontal, I am not so sure about, because I think if I were going to bend a piece of bone and had to make incisions to assist me in doing so, I should cut across the grain instead of lengthwise. The human voice is dependent upon the vocal cords and the size, shape and position of the parts making the oral cavity; and unless they can be brought together in pretty nearly normal shape, the operation is not successful.

Dr. C. S. Case: The paper is certainly an interesting one, and I am more particularly interested in it because it offers certain opportunities in an operation which seems to me is eminently superior, at a certain age, than anything in the artificial line. About three years ago I read a paper before the Chicago Dental Society, in which I advocated surgical treatment for congenital cleft for very young children, believing it to be quite as imperative for the surgeon to operate for cleft palate upon babies, as any of the important things that are demanded of surgeons, such as operations for lacerated perineum, etc. I have seen some of the cases that have been operated upon by Dr. Brophy during babyhood, and I feel that I ought to go out and swing a red flag, and say to the whole
world that in every case where a little child is born with a cleft of the palate, and they do not have it operated upon at once, they are committing a great sin; because I believe that in nine cases out of ten, if not more, if these operations are properly performed during very early babyhood, the parts will develop properly to produce perfect enunciation and perfect tone of voice. But if after five or ten years of age a surgical operation is performed, as it is all over the country by all kinds of surgeons, I believe in nine cases out of ten it will be a failure. The parts, as a general thing, do not grow and develop as they should or would have done had an operation been performed earlier. A mere surgical closure of the cleft is not a successful operation unless we have sufficient palatal tissue to close the naso-pharyngeal opening, because the velum palati is nothing more nor less than a valve which, when completely closed, enables us to forcibly expel air—which is the vehicle of voice—through the mouth, producing certain interruptions, sibilants, explosives, etc. Consequently it is very desirable that a patient should have the power of completely closing that opening.

It has been remarked that if the surgical operation is not a success, all that is necessary is to open the cleft again, and then resort to artificial means. I do not know that all of you are aware of just the difference between congenital cleft that has never been operated on and one that has. There is a great difference, even in those that open immediately after operation. There was a patient in my office to-day for whom I intend to insert an artificial palate. The patient was operated on surgically when quite young, at Ann Arbor, and soon after the operation, union not taking place, the entire cleft opened. And I am very glad it did, because it was a patient upon whom they ought not to have attempted to operate at that time. It was a wide, double cleft, extending forward on both sides the intermaxillary process. Although disunion occurred soon after the operation there was the usual contraction of the cicatricial tissue along the border that makes the remnants of the velum entirely different for me than it would have been if the tissue had not been operated on, and the soft palate was left in a flexible, pendant condition that we only see with the bifurcated uvula hanging down on each side. In order to make an artificial operation it is necessary to have the parts in as natural a condition as possible, because it is by the power and natural activity of
the muscles of the bifurcated velum palati that we are able to make an artificial palate a success.

I have brought with me to-night a few models of palates that have been operated on surgically late in life. Here is one that was operated on by a noted surgeon of Philadelphia, earlier than five years of age. The palate is perfectly united, but as you see, there is quite a large anterior opening. I thought at first I would cut that united portion, as I have commonly done in a number of cases and put in the best thing I could in the shape of an artificial velum. Instead of doing that, however, I made a palate that can be doubled up with the fingers and slipped through the opening, leaving a veil like portion of the palate on the posterior part of the natural united velum palati.

The specimen I have now in my hand is the model of a case showing a surgically united palate, but with nothing like enough tissue to close the naso-pharyngeal opening. I opened the united cleft and inserted an artificial palate, and the patient is speaking to-day quite distinctly. But I think in the ordinary case, this cicatricial condition of the tissues on either side makes it difficult, if not almost impossible, for the patient to arrive at anything like perfect enunciation.

Here is the model of another case on which an operation was performed by a prominent surgeon in this city; there is a complete closure of the cleft, and union of the parts is perfect; but as you can see with an inadequate amount of tissue for purposes of speech, the operation as it stands would not assist the patient at all in vocal enunciation.

I wish also to present a patient who was operated upon surgically when quite a boy, and who has kindly consented to be present this evening and let those who are interested in the subject examine his mouth. The closure of the cleft in this case is complete, and it gives you an idea of the common condition that frequently comes to me after surgical operations at the age of ten or later.

In operating for this patient for the insertion of an artificial palate it will be necessary for me to completely open the united palate.

Dr. T. W. Brophy: I have been much interested in the paper that has been so well prepared and so well read by Dr. Logan, and also in the remarks that have been made by Drs. Case
and Thompson. There is very little criticism I have to make of the operation, except to question the advisability of longitudinal incisions, on the same ground that Dr. Thompson criticises them. I doubt very much if they would enable the operator to gain space; and then another feature is the fact that when force is applied to the sides we must keep in mind that there is an attachment sometimes of the vomer, either on one side of the cleft or the other, but not always.

I have some models which Dr. York kindly brought over from the office. Reference was made to the point that the lateral walls of the nasal passage must be divided in forcing this over. The external wall of the bone, the portion immediately below the malar process, may be separated and carried over partly, but that is not always sufficient. In the case I have in my hand, upon which I operated about ten days ago, I used an extraordinary device. I think it is very nearly three-quarters of an inch wide throughout the entire length, except possibly a little at the anterior part, and there force was applied by means of forceps first suggested by Dr. L. C. Borland, of Chicago, but caused to be made by Dr. Logan. It was not possible, however, to approximate the sides with them. It became necessary to divide the bone, that is, separate the nasal walls. When this division was completed, the bones were carried over, so that I succeeded in getting absolute approximation of the two sides. This is a case where I do not expect anything in the way of tooth development that will be of any particular account and it was so understood by the parents prior to the operation. There was an extremely wide fissure, as you see by the model; and in order to approximate it, I was obliged to carry the bones over a long way. If the child has a set of teeth that is of any value it will be better than I anticipate. It would be far better if the child never had teeth than to go through life with such a deformity as that. The application of the forceps is admirable in such cases as will admit of the parts being brought or forced into contact without absolutely separating them, as I did in this case. In this case I was forced to pry the parts over and leave the edges separated and crowd them up and the borders of the fissure would not approximate until I had divided them on the inner side. The child is still in the hospital with one other patient upon whom I have just operated. The operation was done when the child was eight weeks old. It is doing well, but to show what chances some-
times may be taken by a surgeon in operating on any patient, this little child has been from the time of birth subject to colic. It has had a great deal of pain from time to time, but it made an excellent immediate recovery from the operation. One week later it was taken seriously ill, when its pulse was 160 and temperature 104 ½°. Its bowels became constipated. Finally it began to have a green vomit and the next day we succeeded in effecting a passage from the bowels, which was green in color, but by the use of chalk mixture, and active laxatives, we succeeded in getting the child in good shape. The bowels were distended to three times their normal size and if the child had died from the enteritis which it had, many would doubtless have said it was the result of the operation. But it was not. It was a condition that came on independent of the operation. The child is now in the best of condition and is likely to make a good recovery.

I want to thank Dr. Case for what he has said. I have become enthusiastic on early operations for cleft palate, because for many years I stood alone on this point in the presence of some of the most distinguished surgeons in this country, advocating this operation and they opposing it; and in my earliest operations, had my patients died following the operation, no one knows what I would have been obliged to suffer. It would have been an easy matter to have brought me into court, following my early operations, and proved beyond the question of a doubt that such surgical procedures were not advocated by good surgeons, and I would have been severely punished. Fortunately, I did not have any such results. I did not lose a child from the effects of an operation, and so I have managed to keep out of jail. But if any of the children upon whom I operated had died the parents might have gotten any amount of testimony from the best surgeons that my operation was not warranted, and I might have suffered the consequences. But everything in connection with this operation seemed to come my way, and now I am very glad to see that our most celebrated surgeons in Chicago and elsewhere are making these operations. Dr. John B. Hamilton, of this city, has made the operation within the last ten days. Dr. Murphy has made several, as has also Drs. Steele and Ferguson. I was honored by an invitation from Professor Roswell Park, formerly of Chicago, but now a leading surgeon in Buffalo, to go to that city the first of January and make the operation for cleft palate before the medical class in the medical depart-
ment of the University of Buffalo. I did so, and left the patient in their care, and the child made a nice recovery. Surgeons all over this country must come to these early operations for cleft palate. There are thousands and thousands of children in the United States to-day suffering from the deformity of cleft palate and harelip that have not had any attention except to have the lip closed.

I show you now by these models one of the results of allowing such conditions to go. Here is the palate of a child. The teeth are so expanded for want of something to hold the parts together that there is absolutely no occlusion. I succeeded by artificial appliances in forcing these together, and I intend to operate on this child. What has happened is the result of lack of union of the bones in the median line. This child was unable to masticate food. If the parts had been forced together in early infancy, and held there, they would have united and the present deformity would not exist. This plan of sewing within is a good one, holding the parts together. The plan of forcing the parts inside was practiced by Dr. Warren, of Boston, and the plan mentioned in the paper of Dr. Logan of wiring these together is an excellent plan, but not new. In cases where it is applicable, it is an excellent plan, and has in some cases an advantage over the adjustment of plates, because the plates, where the parts go over a long way, interfere with the formation of granulations and in the repair of the injury which has been caused by forcing the parts together. As the tuberosities approximate each other, the palate lengthens. There is enough tissue to make for the patient, a model of whose mouth I present, a good palate, if the tuberosities were an inch nearer than they are. Here is another specimen. The child still has deciduous teeth. This is a broad cleft, the anterior part being nearly as wide as the distal. This might be brought together so as to bring the teeth in proximity. Here is another case in which the teeth do not approximate each other. The lower teeth occlude inside and on to the hard palate. An obturator would help the child somewhat to articulate, but it would not restore the occlusion. The only way to throw them together is to adjust an appliance for the purpose.

Here is a beautiful case for operation. There is enough tissue for a good palate, because there is an abundance of it.

This society should feel a great interest in regard to matters like this. Every member of the dental profession should be inter-
ested in this work, because it has so much to do with the condition of the oral cavity, and of the patient all the way through life. If every dentist in America would do a little something toward informing physicians and surgeons in regard to this important matter, and impress upon them the value of early operations, he would accomplish a great deal of good. It is a difficult thing for a dentist to say, after the most celebrated surgeons of Europe and America have given an opinion about a particular case, that those men are wrong and that he is right. It takes one with a good deal of assurance to make such an assertion, for he is apt to put himself in a position of ridicule; yet, there are people in this city who have traveled the world over, and sought advice regarding this kind of surgery, and have been impressed with the opinions of different surgeons, and these opinions have been the same with reference to early operations in cleft palate. They have all regarded surgical interference in cases of cleft palate as unjustifiable. This is what we have to contend with. It is gratifying to me that the little work I have done in this direction has had the effect of changing the minds of celebrated surgeons, and I trust that this work will be extended, so that all may learn that early operations in cleft palate are imperatively needed in cases in which surgical operations are expedient. If the child is fortunate enough to get into the hands of a skillful dentist, and have an artificial palate made, it would be better than nothing; but still the child would be like a man with a wooden leg, it will be tied down to an artificial appliance all its life.

Dr. C. S. Case: Just a word or two more. In my previous remarks I neglected to say what I intended to when I arose, and that is, to compliment Dr. Logan on the ingenuity he has displayed in this operation. I do not know how successful it will be in a practical case, and what the results will be, but there is certainly a great deal of ingenuity in his method of operating, and, as I understand it, it is not the mere sewing up of the borders. He places lead pieces on the palatal side of the cleft, in order to get a base for the sutures. He passes the silver through the parts, and then he puts the lead pieces in place, as a base for his force to act upon. At that time these forceps come into play, and the parts are brought forcibly together, relieving the great strain that otherwise would be necessary upon the ligatures in bringing the edges together. There is no breaking down of the borders on the inside between
the cleft and the ridges. The whole border is brought together in the same way as Dr. Brophy brings it together, and the only difference is that Dr. Brophy places the lead pieces upon the buccal surfaces of the ridges and Dr. Logan has them upon the lingual surface of the ridges; and if the operation can be performed in that way skillfully, I should think it quite an improvement in many instances, if not in all. What injury the Brophy operation does to the germs of the teeth I do not know.

Dr. George B. Perry: I would like to ask Dr. Brophy whether there is any possibility of lead poisoning from the use of lead plates?

Dr. Brophy: I have never known of a case. It would no more cause lead poisoning than a bullet would cause poisoning by passing into the body of a person, and we know that many soldiers are going around to-day with bullets in various parts of the body.

Dr. Logan (closing the discussion): I wish to thank the gentlemen for their kind and complimentary remarks on my paper, and if it were for no other reason than to excite the same complimentary words and fair criticism, I should be tempted to appear before you again with another paper in the near future. I thank you for your kind attention.

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Wisconsin State Dental Society—Twenty-eighth Annual Meeting.
[Continued from page 790.]

Dr. L. A. Meyer read a paper on "The Importance and Manner of Sterilization of Dental Instruments." See page 803.

Dr. B. C. Campbell: I was very much pleased with this subject as it has been presented to us this afternoon. I am glad to see the essayist go into the scientific methods, and detail his experiments with some of these different antiseptics and disinfectants. It seems to me this apparatus, doing what he has told us it would do, and what he has demonstrated to us here this afternoon as having done, is practical. It may appear to us that we have not time to go through with this preliminary at every operation, but with the great importance of antiseptic surgery we want to find time for anything that is going to better help us in any of our operations. This formaldehyde, or formalin, when it has been
reduced forty per cent, calls to my mind an article I saw, I believe it was in one of the Dental Reviews a short time ago, as having been presented by Dr. Peck, of Chicago. Most of you know that Dr. Peck has been performing a number of experiments with different antiseptics and disinfectants during the past year, and among these he has been using formaldehyde or formalin, as we have had it presented here this afternoon. He tells us of one experiment he performed upon himself: Placing this upon the tissue of a limb and leaving it there for some days he experienced a great deal of trouble from it; so much so that it caused him to go upon crutches for a time, if my memory serves me rightly. He removed this before the formalin had exerted its strength. I believe he states that he was glad that he did so, otherwise the irritation and trouble that he received from that would perhaps have been more serious than it was. He closes his paper by saying that he does not think that it is a safe drug to use in dentistry. I take it from what the essayist has said here this afternoon that he does not approve of the use of that in the solution, but rather in the gaseous state. This being the case, it seems that we as dentists should obtain one of these instruments, if it is within the reach of our finances, for the benefit of our practice. I would like to ask the essayist what the price of this instrument is.

Dr. L. A. Meyer, Oconomowoc: I do not term that an ideal thing at all. I think every dentist has some inventive genius of his own, and that he should make what he wants. That simply shows you a can with trays, being a little less than a cubic foot in size. My idea would be for every dentist to have somebody make a cabinet with compartments in it so that the different instruments can each have different compartments. You might then have this lamp disinfect the whole thing, or the different compartments containing the different instruments, as you liked. The can shown was obtained from Schering & Glatz, of New York. I think anybody could go to a tinsmith and tell him just what he wanted. I am having one made much larger than that, and having different compartments. I will place the lamp in those different compartments and sterilize whatever part I wish. The cost of one of those is six dollars and a half.

Dr. Reinhold Maercklein, Milwaukee: I want simply to substantiate that which Dr. Campbell has said about Dr. Peck, of Chicago. I happened to be in Chicago at the time Dr. Peck read
the paper and exhibited the sore which it produced on his limb. Quite an argument was brought out by it. Dr. Harlan first spoke upon it; and speaking about the treatment of putrescent pulps, Dr. Harlan stated there that he had treated pulps with formalin and finally filled the teeth; but that in a few months he found that the teeth had run into abscesses, and the pulp had become putrescent; so that he concluded that there was not much value in it. Even at the time Dr. Peck had made some experiments in that way, and, as I say, he exhibited the sore that it produced on his limb. It made quite an ugly sore there. It had been there quite a while, and did not seem to heal very well.

Dr. G. V. I. Brown, Milwaukee: I have had some work done for me by a pathologist along this line. It so happened that at the time I read my paper Dr. Peck was there, and repeated one he had read in Chicago, and described his condition. Now, the experiments which I have made were made for the purpose of determining the value of certain remedies as disinfectants in the mouth. That was the principal reason for the experiments, and they were made with that principal object in view in this manner: Teeth that were extracted, that had putrescent pulps, the apical foramen was sealed, and the various cavities were also sealed with gutta-percha, and into the pulp chamber was injected, with a sterilized syringe, the fluid that was to be tested. There were only a few of them. I did not care to have them cover a great deal of ground, because I considered that unnecessary. There are so many remedies tried that one becomes confused; so he used oil of cassia, oil of cloves, hydrogen dioxide, bichloride of mercury and formalin. I think the result was interesting in a practical way. The teeth that had the oils of cassia and cloves injected into them remained septic for about three days, but the growth of the bacteria, while they never were probably in a completely sterilized condition, was inhibited in them so that the result, from a practical standpoint, was very satisfactory. After three days it was extremely difficult to get any growths at all. In less time than that is was possible, with varying conditions, to get growths from the teeth—these pulp chambers. The hydrogen dioxide was found to have a most powerful influence, a sudden and immediate effect, but left in the pulp chamber it lost its effect very quickly and returned to a septic condition. The dioxide did not seem to retain its property of sterilization such as
it had, for any length of time. That would be natural enough, because the first effect of oxygen soon passes away. The bichloride of mercury, 1 to 1,000, had a much more powerful immediate effect than the formalin. It, however, seemed to lose some of its power also after a number of days. The formalin acted slowly. In half an hour I think it had hardly any effect. After an hour it had scarcely any effect. After two hours it did have more or less marked effect, and it was difficult to get growth from it. After four hours the sterilization was almost complete, and after one to two days they were completely sterilized. Now I think a good deal of the trouble has come in the use of this remedy in expecting it to act too quickly. It does not act quickly. When treating a pulp chamber they simply fill the septic pulp chamber. If they had left it in there any proper length of time it would have produced complete sterilization. The difficulty and danger of doing that were apparent when Dr. Peck came to the front with his experiment. After having this rag saturated with it on his leg for just a few hours the pain became so intense that he was unable to leave it there very long, and when he removed the bandage he found the whole surface just as white as if it had been frozen. That surface afterward sloughed away, and he had a sore there which was very slow and ugly about healing up. More than that, he had a kind of blood poison. The effect upon his whole system was so great that he did not recover for a long time. He had formations of pus in different parts of his body, indicating distinctly a case of blood poison. The result of our discussion out there in Denver before the American Dental Association was that for immediate use it was practically useless; and to leave it there any length of time it was dangerous. That, of course, is formalin. That has nothing to do with the formaldehyde gas as a sterilizing agent, which, of course, is valuable. It seems to me the society is to be congratulated on having it brought forward in this way.

President R. G. Richter: I will ask Dr. Meyer to close the discussion.

Dr. L. A. Meyer: I only wish to say that my talk on the formalin solution was merely incidental, that I had satisfied my curiosity as to its action on teeth. I have some teeth now that I have treated that are under observation, as I stated in my paper, but at this writing I do not know what the result will be. What turned my mind in this direction was simply this: I had occasion
to use sterilized instruments, and I set about finding out which way would be the most convenient, required the least time and be the most efficient. I have tried the Arnold steam sterilizer — two kinds of steam sterilizers — and one I made myself with a pan and tray and cover. I placed my instruments directly into the live steam during the time of boiling the water, and from there dropped them into the boiling water, and from there into an alcoholic solution. That set me to thinking about the gaseous compounds. I got a cake box similar to that, and made some wooden trays, but got entirely contrary results from what I had expected. I think it was due to my box not being tight, and a certain amount of moisture being present. I did not get the results I was looking for. I then began with these experiments, and found that they were practical and efficient. I would recommend a device of that kind, especially the lamp. You may make the cabinet or box to suit yourself.

On motion, adjourned.

DISCUSSION ON DR. HOLBROOK'S PAPER. SEE PAGE 729.

President Richter: Gentlemen, this paper of Dr. Holbrook's is now open for discussion. It is a very strong, healthy paper, and ought to bring forth a lot of discussion.

Dr. C. C. Chittenden: I would like to hear from Dr. G. V. I. Brown.

Dr. G. V. I. Brown: I think that Dr. G. V. I. Brown has been talking too much to-day; but this is a subject that I am particularly interested in. I have just been over that ground lately, and I am glad to have the privilege of talking on the subject. The question is one that is not commonly appreciated, I think, by the members of both the dental and medical professions. As a matter of fact it is the one particular central idea that is demanding attention just now, in spite of everything that can be done. It is all very well to consider it an old subject. It is, and it is not. The crying need just now is a better system of education of dentists and physicians in common. Now I understand that sounds like an Irish bull, but it is only so because, as the doctor has pointed out, there is no adequate system of education at present that is popularly suited to the needs of the profession. I chance, of course, to be connected with a school in which dentistry and medicine are both taught; and in association with some of the professors in the
University of Michigan, dental department, I have been trying to lay out a course of study which would fit in between the requirements of the National Association of Medical Faculties and the National Association of Dental Examiners, without interfering with either. We tried to cover that ground. It is still a debatable question whether it is better for a man to take his M. D. degree first, and then take special studies in dentistry afterward, or whether he is the better dentist to be first a dentist and afterward an M. D. That is a matter which is open for discussion; and yet it is a matter that does not necessarily cut any real figure in the case at all. I think the studies should be so dovetailed into each other that a man can carry them out together during the four years he will spend, so that at the end of that time he will be fit for both degrees. I think that is what we are coming to. I can see no reason why a man cannot give his time to the medical course during his first two years of the dental course. A large proportion, particularly of his freshman year, is taken up with studies which he takes in common with the medical students; therefore, he can put in that year without very much alteration in the regular course of study he would be required to take. He would only have to add to the medical student's course his operative and mechanical technique and his dental anatomy, and then he has covered everything he can cover in those two years. In most colleges they do not allow students to go to the chair to operate until after January in his junior year; therefore, he has not lost anything in a practical way up to that date. The plan I have been trying to work out is this: To have the student give the winter months of his twelve months' course to medicine and his summer to the infirmary. That will give the man the two degrees. Whether opposition will be raised to it or not is a question we do not know at this time. No school has yet had the courage to undertake to do that under the present rules. It does not conflict with any rule at present in existence, but whether one may be made is a question; therefore, the time is not quite ripe. But in five years the man can very easily take the two degrees. I called attention, in my chairman's address to the section of stomatology, to the fact that the life of that section depended on a man's having two degrees. That working independently the two associations, one of dental college faculties, and one of medical college faculties, were ever trying to raise the standard, and yet carrying men farther away from having the two degrees.
That something would have to be done. I laid that down as something for the members to think of this year; to try to do something toward bringing those two associations more in harmony. The medical course is lengthened through four years; the dental course to three years, and they even talk of four years. The dental student is only entitled to a second year in medicine, requiring two years additional study. That, of course, is offset, in a measure, by allowing him to take up, during his third year in his dental course, one course in medicine, and in that way get it completed in five years. We ought to be able to graduate men in four years who will be both good dentists and have a thorough knowledge of medicine. There is no question in the world but they will be better dentists. You take the dentists throughout the country who have the two degrees, and I think their position everywhere will substantiate the fact that the additional education is an advantage to them. Of course, individual instances will be referred to where men have made a failure of medicine and taken up dentistry, and then may not have been a success; but they have not been unsuccessful because they had the two degrees, but because they would have been unsuccessful anyway. I am sure the future of dentistry depends on its closer relation to medicine; and I think we all ought to work for that end. I believe the proper plan for men to be educated in dentistry is where they will have every possible advantage that the medical student has, without loss of time and without unusual effort; and if their bent is in the direction of some of the other specialties of medicine it is a blessing to dentistry to have them take up some other specialty rather than be a failure in dentistry.

Dr. Reinhold Maercklein: I beg to differ a little from Dr. Brown’s idea. I do not think that four years is long enough to give them both courses, or both degrees. I have found that there are quite a number of students that have worked very faithfully over three years simply to accomplish the dental degree, and they had not got any more knowledge or proficiency in all of its branches than was really necessary. Now I think it would be pretty hard for that class to finish up the medical studies which they would have in addition in an extra year. They would not have time enough. It would require at least five years to take both degrees, to be of any benefit or any use to the student.

Dr. G. V. I. Brown: For fear of a misapprehension I would like to state that the doctor is referring to a three years’ course of
five or six or seven months each year. I spoke of a four years' course of twelve months each.

Dr. Reinhold Maercklein: That is just about the view I have taken of it. Those that I have seen did not take a six months' course, but took very close to a twelve months' course, with the exception of a week or two taken out for a vacation. I think a student should take that much vacation. If you work him twelve months for four years you would find that you would break up the class, and break it up very badly. There are very few men so constituted that they could get their minds right down to a lot of hard work, and keep at it for twelve months each year for four years. I made special reference to students who have spent every summer right in the dental infirmary.

Dr. B. G. Maercklein: I desire to speak on the able manner and large amount of research that the essayist has given the subject, and the review in a general way that he has given us to-night. The subject of the relation of dentistry to medicine is a most vital one. It is not altogether a subject of educating students, but it is rather the relation that we sustain to one another as a profession; the relation of the dentist to the doctor and the doctor to the dentist, and both to the laity. As the dentist stands to-day, the laity has no idea that the dentist is qualified to do anything else except extract teeth, or probably plug one; and they almost invariably resort, for all sorts of troubles, to their physician, instead of their dentist. All cases of so-called oral surgery properly belong to dentists; and in the majority of cases the dentist has a deeper and more thorough knowledge of the subject than the physician. But the laity, at the present time, will resort to the physician. The treatment that the dental profession receive at the hands of the average physician is such that it discourages the patient from going to the dentist with anything of that kind. I think our separate degrees are largely to blame for that. Our separate education is also largely to blame for it. The subject of educating a man to two degrees, in my mind, is a mistake. I think when it is sifted down more thoroughly and more clearly we will all agree that one is sufficient for the practice of medicine or dentistry, or any other specialty of the healing art. I, for my part, would like to see the time—and I hope to live to see it—when there will be only one degree conferred, and that will be the degree of "M. D." You may take a coeducation for dentistry
and medicine as it exists at the present time—and I have had a little experience in it as a student, and a little as a professor, dean of a college. In spite of the coeducation, the intimate relations, the harmony, the feeling of equality does not exist between the medical and dental students. There is constantly, and always has been, as I have perceived it as a student, and as I have seen it as a professor, a sort of feeling of superiority among the medical over the dental classes. They are looked upon as a sort of inferior grade—only "dentists." Of course, they have to take a few studies in common, but beyond that it does not amount to anything, and they go on plugging teeth, and they are treated in that manner afterward in their professional life. Now we cannot get rid of that feeling until we get rid of the two degrees. One degree is sufficient to cover it all. Letters add nothing to a man's knowledge. Teach him the knowledge necessary, educate his hand, let him acquire the skill necessary, and simply let him be one of those practicing the healing art. Does a man who makes a speciality of the nose and throat, the eye and ear, the lungs, gynaecology, or orthopedics have a special degree for his calling? Does he need one? Does not his degree of M. D. cover everything necessary for his calling, and is it not as diversified as it can possibly be? Even the obstetrician does not require a special degree, why should we as dentists require one? The time has come when the thinking men of both professions have come to about that conclusion. It has been rather harassing to a large number of the medical profession to think that the dentist could be his equal; but the sooner we make a curriculum, and establish colleges that will give nothing but the M. D. degree, and let the graduate practice stomatology, as Dr. Fillebrown has said, the same as another man practices gynaecology or obstetrics or orthopedics, the sooner we will have a friendly recognized relation between the two professions, and the laity will act accordingly. They will go to a specialist in that line in which they are afflicted.

President R. G. Richter: We would like to hear a few more expressions of ideas. I will call upon Dr. Stephen.

Dr. L. J. Stephen: I know we all feel very grateful to the essayist for his paper this evening. I, for one, certainly have frequently felt very much humiliated at the relations existing between the two professions, medical and dental. I have had frequent occasion to come in contact with medical men and converse
on dental subjects. It is just as Dr. Maercklein related a moment ago, we are not recognized as specialists, and I doubt very much if we ever shall be. Our special branch naturally requires a certain mechanical skill. We are considered mechanics in our special line, and whenever it becomes necessary to treat a disease of the mouth, however simple it may be, the laity, as a rule, seem to call upon the medical specialist. We are not called upon to do anything in that line except the plugging of teeth; the mechanical part of our work. I have often wished that I had a knowledge of medicine. However, I realize the fact that had I that knowledge I should possibly have very little opportunity to make use of it; and I should, in the course of time, possibly become rusty, commonly speaking, on the subject. It is a question in my mind as to whether the majority of dentists, men that are willing to make dentistry their calling, would be willing to spend the additional number of years necessary to attain the knowledge of medicine, for the simple reason, as stated before, that I doubt very much as to whether we shall ever be recognized by the laity as specialists, simply because our calling is based more on mechanical knowledge than scientific knowledge. I certainly should feel more than gratified if this should ever be accomplished, and I hope to live long enough to see it accomplished; but, as Dr. Brown mentioned before, it certainly can be done, and particularly by making it cover a course of four years of twelve months each. We have so little opportunity to practically do any work in that particular line that we should possibly become rusty on it in a very short time, and feel ourselves that we were not in a condition to be capable of treating diseases beyond our calling. Socially, I think that we would naturally take a better position in life, and possibly that, in itself, would elevate us in our calling. Aside from that I do not know that we would gain a great deal of benefit from it, although I look at it from a practical standpoint. Certainly I should want nothing more, and nothing would gratify me more than to see that very object carried out.

Dr. J. W. Boisol, Black River Falls: I would like to ask Dr. Chittenden his view on the subject.

Dr. C. C. Chittenden, Madison: I do not feel competent to discuss this matter in the way it seems to me it ought to be discussed, and as these gentlemen who have had experience in the matter of dental education, and had opportunities to inform themselves
about it, have been able to discuss it. The relation between the
dentist and the physician is growing more intimate. It is getting
more nearly to be a "blood relation" than it was only a few years
ago. I remember when it was always with a sense of regret—when
given the title of doctor with the supposition that I was a physi-
cian—that I was obliged to admit and make the explanation
that I was only a dentist. There was always that little
sense of inferiority that has been spoken of here to-night.
There is no inferiority, provided a man is properly and fully
equipped for the practice of dentistry. He is not that to-day, in
the light of the demand, without being practically an educated
physician; because an educated dentist must necessarily have the
same foundation of knowledge, both in its anatomical direction as
well as its physiological, pathological and therapeutic. The
whole thing, as the essayist has so very ably told us, is exactly
and identically one in the two callings. I should be very glad, and
hope to see the consummation of the suggestions here. I prob-
ably shall not live to see it completed; but the suggestion of the
paper that dentistry should be, and will eventually become,
like the other specialties, is a true one. Dentistry should be a
specialty under the general name of "medicine."

This paper has been to me of great personal interest, by reason
of my relations with the essayist, and his respected father, who
was one of the charter members of this society, and one of the few
who are now alive, Dr. Arthur Holbrook, of Milwaukee. He is a
man to whom the Wisconsin State Dental Society owes a great
deal in many ways. He is a man advanced in years, and in such a
state of health as not to permit of his meeting with us as fre-
quently as would be very gratifying to us to have him. His son,
who has given us this essay, is eminently qualified, from his asso-
ciation throughout his early life with the dental profession in his
father's office, and afterward adopting the profession of medicine
direct—medicine and surgery—to treat this subject; and I feel very
grateful to him for being here with us, and consenting to give us
this paper to-night.

I have a suggestion to make which it may be permitted me to
make now. The father of this young man is a member of this
society. It will be impossible for him to become an active mem-
ber of this society, and I wish to make the motion at this time that
our essayist, Dr. Arthur Holbrook, Jr., be unanimously declared
an honorary member of this society.

Seconded and carried.

President R. G. Richter: I hereby declare Dr. Arthur Hol-
brook an honorary member of the Wisconsin State Dental Society.

Dr. A. T. Holbrook: I wish to thank you very deeply myself,
and I assure you that my father, who feels very warmly toward the
Wisconsin State Dental Society, will also thank you, because he
will feel that the honor comes to him, too. If you will excuse the
personality of it, my father would have been very glad to have
been here to-day, and he would have been here if his health had
been such as to permit him. I want to thank you for the discus-
sion you have given this paper that I have presented, and I want
to pick up a few lines of thought that have occurred to me during
the discussion. One of them is that I feel that I did not make the
reason for my going into the history of surgery perfectly clear.
By that somewhat extended review of the history of surgery I
meant to show that the surgeon, a long time ago, no more than a
century ago, was considered further out of the field of general
medicine than the dentist is to-day; that those feelings of relation-
ship which Dr. Maercklein and Dr. Stephen have stated do not
exist very intimately between the doctor and the dentist, will only
become close, and the dentist will be considered a doctor with the
full deserving of the claim only when he has given to his school
and to his study the rational course that the dentist should, it
seems to me, be given. Perhaps the specialty of orthopedics is as
analogous as any to dentistry. Orthopedics, as you know, con-
sists in the straightening of clubfeet, bowlegs and that sort of
work. Now, that requires a very intricate knowledge of mechanics.
The mechanical appliances which the orthopedist uses are, per-
haps, not so delicately constructed as those which the dentists
use, but they are relatively delicate, and require a great deal of
study and skill. The orthopedist, in applying splints, clubfoot
shoes, and cutting tendons, has to apply a knowledge of pathology
and a knowledge of physiology just exactly the same as does the
gynæcologist and eye and ear specialist or the dentist. Why not
give the orthopedist a separate degree just the same as the dentist?
The physiological conditions are just exactly the same in the mouth
as in the orbit of the eye. Why not give the oculist or the ophthal-
mologist a separate degree? These theories which I have advanced,
and the result which I have spoken for, certainly cannot be changed in the next year, or perhaps in five or ten years from now; but they are things that must be kept in mind, and the revolution and evolution must be kept to that end, else there certainly will be a breach between the doctor of medicine and the dentist.

Dr. G. V. I. Brown: I would like to say that in the American Medical Association there is absolutely no difference that can be recognized by anybody between the section of stomatology and the section of orthopedics, the section of obstetrics or surgery, or any other section. The privileges of the stomatologists are just the same as those of members of other sections. We are all members of one great association, and in that association the majority of its members have passed beyond the stage of quibbling about degrees. If any of you will attend the next meeting, which is to be held at Columbus, we will be very glad to show you that you can meet with physicians of the better class upon a common ground, and without any thought as to whether you are a dentist or anything else. You are a stomatologist, that is sufficient.

Dr. B. G. Maercklein: Have the requirements been changed? Does that section admit an ordinary D. D. S.?

Dr. G. V. I. Brown: The members are supposed to have the two degrees. I do not think that is very strictly enforced, however. I think the recommendation of the State association—I think the members of your association coming as delegates would be accepted without any question to that section; but I am not positive of it at this moment.

Dr. B. G. Maercklein, Milwaukee: I asked that question because at the time I attended and was a member of the section it was necessary for a man to have the "M. D." degree. In that case it made him the equal of any other member of the medical association. He had the same qualifications, or was supposed to have received the same instruction, and be possessed of the same qualifications. He was simply an M. D., with an additional D. D. S., practicing another specialty. At that time we were not admitted as D. D. S.'s. I have not been able to attend the last few meetings, and the rule may have been somewhat changed. The treatment of those that were in that section was, of course, exactly equal to that in any other section; but they were all men who had received equal instruction, and were supposed to be equally qualified with the other medical men.
President R. G. Richter: Gentlemen, I do not feel as though we ought to pass this subject so soon. I think there are others here who would like to express their views on this subject, and I would like to hear from them. I will call upon Dr. Carpenter.

Dr. Carpenter, Chicago: I do not think I have anything very special to say on this subject, except that I feel very much pleased with Dr. Holbrook's paper. I think one thing that many members of the profession do not appreciate is the fact that there is a growing tendency on the part of the physicians, generally speaking, throughout the world, to look with more kindly eyes and with more respect to members of our profession; and I think that that is amply demonstrated from the fact that there are a great many cases where the physician will wish to coöperate with the dentist. I know it is not at all an uncommon thing for me in my practice to have a physician want to coöperate with me in a case of neuralgia, for instance. There are a number of other cases, syphilitic cases, and things of that kind. In going about among physicians I notice a growing tendency among the better class of them to think more kindly and more highly of our profession.

President R. G. Richter: Dr. Palmer, would you not like to say a few words?

Dr. H. A. Palmer, Janesville: I do not know as I have anything to offer, only I wish to say that I have enjoyed the paper very much, and also the discussion. I was just thinking, as you called upon me, that I know of a few physicians down our way that do not look cross-eyed at us, while perhaps one or two in town do. We have quite a number of them that are friendly, to say the least. I know some of them that seem to take a great deal of pains to send their patients, under certain circumstances, to the dentist. I know this has been the case with myself, and with others in town that I have known of. The laity have somehow or other got things mixed up, and the doctor has straightened them out, and told them that they had come to them for treatment when they ought to go to the dentist. This has proven to me that there is a growing tendency in the right direction. I am glad to see it, and I think that it is simply, you might say, an outgrowth of not only the feeling existing between dentists and physicians, but the fact that dentists themselves are beginning to quarrel less, and look less cross-eyed at each other; and we begin to realize that it is one thing to be a quack, and another thing to be a man; one thing to try to
do the best we can in whatever our chosen profession may be, and be recognized as doing such by others.

Dr. J. W. Boisol, Black River Falls: I think Dr. Holbrook's was one of the ablest papers that it has ever been my pleasure to listen to. I, for one, certainly thank him sincerely for the efforts he put forth in giving us that paper. In regard to the dental profession being considered a little inferior to the medical profession, I think it has been largely due to the dentists themselves. They have not realized the calling which they were practicing; they have not realized the importance of that calling. They have not realized what they were doing for humanity. They have looked upon themselves as merely dentists; as one who could pull a tooth, make a set of artificial teeth, or perhaps plug a tooth. They did not look upon the scientific side of dentistry. To my mind the scientific dentist is a little more than the ordinary physician. He is superior to the ordinary practitioner of medicine. He must, of necessity, have the knowledge that the ordinary practitioner of medicine has as well as knowledge of his own specialty. If the dentist will only consider himself as being a member of a learned and honorable profession he will command respect in the community which he is in, and of the medical profession as well as the laity.

President R. G. Richter: Before asking Dr. Holbrook to close the discussion there is one thing I would like to speak of, and which I hoped some of you would have noticed, that in one of these discussions we were referred to as "mechanics." While it is necessary to have a great deal of mechanical ability, I think our artistic ability far outweighs it.

Dr. L. J. Stephen, Milwaukee: I think the party you referred to is myself. I believe my remark was misunderstood. I said that in the eyes of the laity we are considered purely and simply mechanics. I am sorry to say that that is the case. Now let us take the bull by the horns and blame those that deserve the blame, that is the colleges of to-day. I happen to be a graduate of the University of Pennsylvania. My friend, Dr. Carpenter, was a classmate of mine at the time. The University of Pennsylvania is considered, I believe, one of the leading schools. It is the colleges that are to blame for our conditions, greatly. They make mechanics out of us. They promise us a great deal upon matriculation. Their curriculum calls for a general college course in chemistry, in oral surgery, and what not. I know this much, that
when I graduated, while I was not one of the most ignorant students, and received an honorable mention at the time, I knew very little about pathology, oral surgery and the like. I know that during my entire course there was not a single case of oral surgery demonstrated to us in the clinics. There was not even a case of simple gingivitis that was demonstrated in the clinics, and I doubt very much whether there is one dentist out of fifty who is able, when leaving college, to recognize and diagnose a case of syphilis, syphilitic patches in the mouth, or even a case of salivation. I think if we were properly educated up to the needs in this direction we would naturally take a better position among professional men in general, and we would naturally be looked upon in the eyes of the laity as being professional men, and not mere mechanics. I think there are very few dentists to-day who are able to write a prescription properly if they were called upon. I think we ought to be very frank about these matters. The dental colleges can be largely improved upon. If they only did what they promise, give a course of stomatology and oral surgery, they would go a great ways toward bettering our condition. I think before trying to leap over the high gap that Dr. Holbrook's paper speaks of this evening we ought to go by degrees. Let the colleges be improved in that direction, and eventually we will gain our point. I assure you I would be one that would appreciate it highly, perhaps as much as any one, if that time would ever come; and I should be willing to-day to sacrifice two or three years of my time to take that course over, and be one of them. As I said before, I think the dental colleges are to blame greatly for the conditions that exist to-day.

Dr. W. H. Carson, Milwaukee: This subject has been pretty thoroughly discussed, but I do not feel like letting it go by without complimenting Dr. Holbrook on this able paper. I think this society is to be complimented from the fact of his coming out here and reading this paper, he being a member of the medical profession. He has taken a broad and a high ground. It is simply in keeping with the age. We, as dentists, must get on high ground if we expect this recognition that we are craving for. We are craving for recognition as a profession, and yet while we believe with Dr. Holbrook that this is logical ground, that this is where dentistry belongs, in the medical profession—and I think the time will come when it will belong there—yet at the same time I am not of
the opinion that because we are not recognized as high professional men it is because of the fact that we are not M. D's. It is not because we do not belong to the medical profession, but because of the fact that we are not educated as professional men. You take Dr. Holbrook's father, I believe he does not have the honor of being an M. D., yet he has a broad professional mind and stands high with the medical profession in the city of Milwaukee. Why? Because he is broad and liberal. The community in which he lives knows that he is an educated man, his ideas are all along that line, elevated, and consequently he gets the recognition that he deserves, and so will we get that recognition we deserve, whether we are M. D's. or D. D. S's. It is simply getting up on higher ground, and the laity will take care of us, just as much as we deserve to be taken care of. There have been remarks here to-night that the members of the dental profession as a rule are more competent than the medical profession to perform surgical operations in the mouth. I do not believe it. I do not think the dental profession is competent to perform surgical operations in the mouth. That is one reason the medical profession does not recognize us, and the laity does not recognize us, because we are not competent, and we do not show ourselves competent. We do not show ourselves competent on a great many lines. You take the M. D's. as a rule. They educate themselves for this profession. Before entering the profession they get a broad, solid foundation to build on. Do dentists do that? It has been alluded to here to-night that the colleges are responsible largely for this. It is true they are, but not altogether responsible. We cannot get this recognition unless we show to the laity that we are educated men, broad in our ideas. Then we will get that recognition. I have never yet been ashamed of the day that I belonged to the dental profession. Some one said here to-night, Dr. Palmer, that down his way the medical profession recognized them. They deserve to be recognized, no doubt, down that way. In some other localities they probably do not deserve to be recognized. Let them look out for their laurels, and get up on higher ground.

President R. G. Richter: I will call upon Dr. Holbrook to close the discussion.

Dr. A. T. Holbrook: I have nothing particular further to say, except to approve the trend of the discussion, and particularly what Dr. Carpenter has said. If you will examine the catalogues
of our institutions themselves, of any of the large hospitals in the larger cities throughout this country, you will find they have an attending or a consulting oral surgeon and a dental pathologist. Now, I have seen surgeons whose names are known to you all, who stand at the head of their profession, call in dentists in consultation in necrosed conditions in the jaw, in severe conditions in ptyalism, and in conditions of broken jaws. They brought these men in, not alone because they were dentists and had a degree of D. D. S., or were practicing any one specialty, but because they were men who could help them. That is just exactly where the position of dentistry should be, if it is going to be in its logical position as a specialty of medicine. They must understand the conditions that cause ptyalism; they must understand the conditions at work in the necrosed jaw; and those conditions are just exactly the same, whether the man is practicing ophthalmology, dentistry or the specialty of the throat and chest.

President R. G. Richter: Gentlemen, this closes our evening programme. If you have all enjoyed it as much as I have you will be well paid for coming over in the rain.

Dr. C. C. Chittenden, Madison: I want to say a word about the clinic in the morning. As master of clinics, I would like to have them understood, so that they may be as instructive and beneficial as possible. I hope all the dentists will present themselves here at 9 o'clock, just as if we were going into executive session for the discussion of papers. You will find upon consulting the programme that there is a line of clinics there that will be very interesting, and which covers a very broad field.

To the clinicians themselves I would say that we would like as many as possible to present themselves to-morrow morning that we may start promptly.

Another thing: Our local member of the executive committee is not present, and I would therefore announce that the Madison Odontological Society—which, by the way, is an auxiliary of the Odontological Society of Chicago—invites the dentists, and those called here by reason of this meeting, with their ladies and friends, to accompany us on a little excursion, something like we had last year, with perhaps a little variation, to-morrow afternoon, if the weather is propitious, immediately following an early adjournment of the convention's session, not later than 4:30 o'clock. If the weather should be unpropitious we shall have to plan some other
way, and fix some other time for it; but to-morrow afternoon con-
sider yourselves all specially invited. We shall consider it a
grievance if you do not come and accept what little courtesy we
are able to offer you.

WEDNESDAY, JULY 20, 2:30 P. M.

The roll was called and a quorum responded.

Dr. C. C. Chittenden: Mr. President: Dr. Carpenter, who
was to have given a clinic, is ready to give a demonstration with
reference to the method of applying the clamps in difficult cases,
through the gingival margin of the gum, where it is often very
painful.

President R. G. Richter: Dr. Carpenter did not have an
opportunity to demonstrate this this morning, so I think we will
take it under the head of miscellaneous business.

Dr. E. R. Carpenter, Chicago: The application of the rub-
ber dam to gingival cavities is often painful, and it was suggested
to me by a prominent oculist to use cocaine in the dry form. If
thoroughly macerated to the condition of pulverized chalk it can
be used very nicely. The method of procedure is very simple and
covers the ground of local anæsthesia very fairly. I have no doubt
there has been a great deal of pain inflicted on patients in apply-
ing the rubber dam in these cases, because the operator has in
reality anæsthetized simply the gum tissue at that point, whereas
I think it is quite necessary to anæsthetize the cementum, or peri-
cementum. I take the crystallized cocaine and macerate it in a
small mortar until it is of the consistency of powdered chalk. I
then put the rubber dam on with one finger, and draw it down
clear below this (indicating on diagram) so as to form a crescent,
and hold it there. I then take a little of the crystallized cocaine
ground up fine and place it along this gum. There will be enough
exudation from the gum tissue to moisten it, and produce absorp-
tion. Then having placed a little there I begin to work, with the
back end of the spoon, the fine powdered cocaine under the free
margin of the gum, and work it down until I can place the exca-
vator clear down onto the pericementum and not cause any pain
whatever. The reduction of the cocaine to powdered form takes
thirty to sixty seconds; seldom over a minute. A minute holding
the rubber dam down will not cause tiredness of the fingers,
especially if you do not use great pressure. After I have, with
my excavator, tested the gum and pericementum, and found them absolutely anaesthetized, I put the clamp on, and put it where I have a mind to, because the patient is the same as under the influence of chloroform or ether.

Where the tooth structure is so broken down that it requires great dipping down of the points of the clamp, if it is necessary I let the clamp, if it insists on it, grip a little of the tissue; but I do not cut that tissue off, because there is trouble afterward in an irritation being established, which causes a sloughing away or disintegrating of the tissue, leaving a line at the cemental line of the tooth, or root exposed. Instead of cutting that off with a lancet or sharp instrument I take a pledget of cotton saturated with a ninety-five per cent solution of carbolic acid. It cuts it off and allows a healthy healing and granulation afterward. Even where I have removed quite extensively the free margin of the gingiva it is very seldom that I have any trouble with the gum coming back.

Dr. C. C. Chittenden, Madison: On what theory do you expect to get reduction with the carbolic acid when you would not get it with a clean cut excision of the gum pinched above the clamp?

Dr. E. R. Carpenter: Because I think, as a rule, where you reduce the tissue and eschar it at the same time you have a healthier condition afterward, and you will have a condition where you will not have absorption of virus or aseptic matter taken into the mouth. That is my theory.

President R. G. Richter: Anything further under the head of miscellaneous business?

Dr. C. C. Chittenden: I want the opportunity for one more little inroad. Dr. Campbell has given us a very interesting, enjoyable and instructive clinic this morning, and he has to go away and cannot be here to-morrow at the "round-up" of the clinic report. I do not want to have him go away without making some sort of a report here.

Dr. B. C. Campbell, Lake Geneva: Without taking very much time I can tell what I did, and what I endeavored to accomplish. I endeavored to give Dr. Younger's method of treatment of pyorrhœa alveolaris, using Dr. Younger's instruments. To go into the history of this case a little, the patient was one that came under our observation a year ago. Dr. Chittenden has had the case under his supervision for the past year, and the patient has been
wearing an appliance to bring back into position the protruding superior left central. This appliance, he tells me, was removed about a month ago. After removing that appliance the tooth has taken on again the same direction that it had prior to the application of the regulating appliance. When I found it this morning there was a very free flow of pus from the tooth. I opened up the pockets and removed the deposits from the root; not entirely, not to my satisfaction, but I worked upon them as long as the patient could endure the operation. I am very sorry that I was not able to remove all the particles, so that I might be able to say that I felt quite sure that it was thoroughly removed. The case will be here again to-morrow morning, and I have asked Dr. Good, who will be here at that time, to remove what portion there is left. There is but very little. There are two or three points upon the roots where there is still a slight deposit. At that time it will be presented to the society for observation. If there is any question that any one would like to ask in regard to this I would be glad to answer it if possible. It was not my purpose to demonstrate anything of my own, but in presenting this case I felt that it was a subject of great importance to the general practitioner. There are no doubt ninety per cent of our patients who are troubled with this disease; and the eminent men of the profession tell us that more teeth are lost by this trouble than are lost by caries. If that is the case it behooves us as practitioners to be able to cope with it. I felt that if there was anything that I might be able to demonstrate or give to the society that they did not already know along this line, that might excite new interest and new zeal in this line of work, the time would be well spent.

Dr. W. C. Wendel, Milwaukee: I wish to call attention to the duties of the board of censors. There has some controversy arisen in regard to applicants as members of this society. Irrespective of whether they hold a diploma or not, it is their duty to make their appearance before the board of censors, as I construe this section. If the applicant is absent, I do not see that he can become a member of this society until he comes before the board, and they do their full duty and examine him; not alone make a general examination, but examine him in regard to his moral character. I do not think this society has any right to vote upon a member unless he has been examined by that board. You elected a man a member of this society yesterday that was not present,
and never came before that board. He is a reputable man, and ought to become a member. I do not object to him, and yet there is another name appearing at the same time, and there is some doubts of whether he ought to be taken into this society unless he is examined. He is just as much entitled to become a member of this society as the other man. You will avoid a great deal of unpleasantness and controversy and censure by following your "Section 6" here.

Dr. C. C. Chittenden: The board of censors, of course, have their rules to follow, but I would suggest that they remember one thing, which will, perhaps, expedite their work: That there is a standing resolution on our books that all persons holding diplomas from reputable schools will not be required to appear for examination. Also, all persons having passed the examination of the State Board of Dental Examiners will not be required to appear for examination. Of course, the board also has it in charge to see that the applicants are entirely reputable.

Dr. W. C. Wendel: Yes, and that is just as essential, and more so, perhaps.

President R. G. Richter: I think the board of censors know the constitution. It has been brought to their mind freshly again, and I hope they will act upon it. Is there any further miscellaneous business? If not, we will listen to Dr. H. F. Dean's paper. See page 753.

DISCUSSION.

Dr. W. C. Wendel, Milwaukee: I am very thankful for your courteous invitation, but I am not familiar with hydronaphthol, and could not add anything whatever.

Vice President Boisol: I would like to have Dr. G. V. I. Brown say something to us on this subject.

Dr. G. V. I. Brown: I thank you very much. I have learned a good deal from the paper, but I have also learned something from Dr. Wendel. I think his excuse is a very good one, and I will have to employ it. I do not know much about it practically, and would only have time to listen to those who have had some practical experience.

Vice President Boisol: I wish the gentlemen would not be at all backward about expressing their views. If you have had any experience with hydronaphthol I would like to have you get up and express your views on the subject. The main points in a
paper are always brought out by the discussion. Dr. Fee, have you had any experience with hydronaphthol?

Dr. Fee: I have not had any experience.

Vice President Boisol: How about you, Dr. Meyer?

Dr. L. A. Meyer, Oconomowoc: Mr. President: I at one time was quite enthusiastic over hydronaphthol, and thought I had found the ideal antiseptic or disinfectant in the treatment of putrescent pulp canals; but I finally, after possibly six months or more, dropped the use of it. I will agree with the essayist that it is non-irritating. I always used the alcoholic solution; at least I made no other; but I thought it dissipated very rapidly, and that I obtained better results with oil of cassia, and the essential oils, and therefore dropped hydronaphthol.

Vice President Boisol: I will call upon Dr. B. G. Maercklein.

Dr. B. G. Maercklein: I am sorry to say that I have not the least idea what hydronaphthol does, or what it does not. I have never used it, and have not looked into its merits sufficiently to know anything about it.

Vice President Boisol: Dr. Moon, what has been your experience with hydronaphthol?

Dr. O. D. Moon: I have had very little experience with it. I have used it to a certain extent, and so far like it very much.

Vice President Boisol: Dr. Carpenter, what have you to say with reference to hydronaphthol?

Dr. E. R. Carpenter, Chicago: I am in the same position as Dr. Maercklein. I have had no experience with it.

Vice President Boisol: It appears that no one has had very much experience with this drug, and I will call on Dr. Dean to close the discussion.

Dr. H. F. Dean: I do not know as there is very much to say. I am not in a position to be positive or dogmatic in regard to hydronaphthol, myself. It was a sort of experiment with me; but so far as I have used it I am quite favorably impressed with it, in the treatment of abscessing teeth especially. Of course, in treating abscessing teeth we were taught at the college to be very careful in opening into a tooth that had a putrescent pulp, and that may be one reason why the other treatments have been more slow in their action. Of course, with this I have followed Dr. Stowell’s advice, or suggestion, somewhat. It would be absolutely impossible, if you
thoroughly saturated the contents of a pulp canal with the alcoholic solution, to have any bad effect; so I was more careless in the handling of it than any other drug I have ever used. With this new treatment I have waded right into them, opened them and dried them out as far as possible with cotton on a broach, cleaning them out thoroughly and using the antiseptic immediately. I have been, perhaps, what would be reckless with any other treatment, but I have never seen any bad effects from it. There has always been an improvement from the beginning. Of course, a year from now I might look at it a little differently in some respects. I am not very much of an enthusiast over anything new. I am rather conservative. Still, I was quite favorably impressed with Dr. Stowell's article. He had had so much experience that I thought it would be certainly worthy of consideration. When I was notified that I was expected to do something for the society this year I knew nothing that perhaps would fit my case any more at that time, at least, than this new antiseptic.

Dr. Robertson read a paper on "Specialism in Country Practice." See page 756.

Vice President Boisil: Dr. Robertson's paper is open for discussion. I will ask Dr. Owen to open the discussion on the paper.

Dr. Owen: I agree with the author of the essay. A man that is a "Jack of all trades is master of none." I have seen this demonstrated a number of times. All sciences are being divided up into branches, and each branch requires a specialist to follow it. The expert bridge worker has all he can do, if he follows out his line scientifically; and if he did follow it scientifically there would be less bridges made than there are now. The dentist has a great many things to look at; he has a great many things to know. He ought to be a medical man; he ought to be a mechanic; he ought to be a psychologist; and in fact he ought to be the great "telescope" that the reader has pictured out to us, seeing and observing in every point and every particular of his profession. The expert gold worker is not a very good plate maker usually. He does not give his attention to it. He has got enough for one mind to be proficient in, if he understands the manipulation of gold. Another man starts out, and he has a hobby of soft fillings; Dr. Flagg, for instance. He never will get over it as long as he lives. Another man is an expert at plate work;
he has got all he can do. So it is, brethren of the profession, if you pick out one particular line you cannot be too proficient in it. If you dabble around in every other branch of it you have got the work of the big telescope, that I am afraid most of our minds are not capable of.

Dr. W. H. Chilson, Appleton: I feel that the ground has been very well covered; in fact, so much so that it leaves but little for discussion or issue. I can agree with most every proposition laid down, and yet I think that a dentist may be like any other individual in life, and if he is well balanced in his profession that he must have knowledge of all of these subjects and capable of applying them all. I do not believe that one faculty of the mind and body can be developed so conspicuously but what the other faculties of the mind and body will be dwarfed thereby. Hence the best practitioner is the one that is general; one that has a thorough knowledge of all the various branches upon which we are called to treat. Such persons pursuing their calling I believe give to the profession the very best results. In a given case perhaps the execution of plate work, or gold fillings, or amalgam fillings, crown and bridge work, there is no doubt but one of those specialties could be brought out a little differently, and perhaps a little more conspicuously than a general practitioner could bring them out; so that at least they would appear better; still, I believe through the course of life that the practitioner, if he is a general practitioner, and has knowledge upon all these subjects, and practices upon all of them, he is better prepared to serve in his profession than a specialist is.

Dr. W. C. Wendel, Milwaukee: I hardly know what to say, although I wish to congratulate the essayist on his very elaborate paper, and to say that he has covered the subject very thoroughly. There is one thing that we ought always to take into consideration, that a specialist that is too narrow-minded and too much imbued with the pecuniary idea ought never to be allowed to practice. A specialist ought to try and do the very best that possibly can be done for his individual patient, irrespective of whether he is of high or low degree. As a general thing the patient ought to be brought to the specialist by a general practitioner. There are very many cases in which a general practitioner can do just as well for the patient as to turn him over to a specialist, who would be obliged to charge five or ten times more than the general practitioner would. It is in these special cases of irregularity and
bridge and plate work where the specialist finds his greatest field. How many mechanical dentists, or in fact, general practitioners, study the features of an individual, or pay any attention to them? Now a specialist will understand the features, and study them thoroughly, and by so doing restore the face to its natural contour and bring out the features in proper form. Any practitioner that will cut a tooth off and crown it for the sake of the few dollars in the crown ought to be expelled from any society that his name is brought up before. A man ought to be a man wherever he is placed, and whether a child is brought to him or any one else, he should treat the child or the individual the same, and give him the best advice that he can, according to his ability; but there are so many that would simply say, "Well, I will fill this tooth with gold; I do not care how long it will last." The result is that he gets five, eight, ten, twenty or thirty dollars for putting in a gold filling, and the tooth is lost. Then a great many will reverse that, and where there is only a small cavity put over a gold cap. The physician as well as the dentist ought to have the confidence of his patients, and ought to be responsible to the family, from a moral as well as an intellectual standpoint. He ought to be a man every time capable of judging between right and wrong.

Dr. B. G. Maercklein, Milwaukee: I desire to compliment the writer of the paper. I think he has brought out some points that are very essential to every practitioner; but I think the specialist has no more place in the city than he has in the country practice. As has been remarked by other speakers, specialists become narrow-minded. They see only one line. They get into a rut, and they are crossing other lines and other ruts, and in that way doing more injury than good. One becomes a specialist in crown and bridge work, and every tooth has to come to crowns and bridges. I have myself built up with gold teeth that have been crowned six times unsuccessfully. They were perfectly alive, healthy lower molars. Now that man is either decidedly in a rut, or he is not capable of practicing dentistry as we understand dentistry to-day. A tooth that is alive, and has a good, large portion of it still remaining, can always be filled, and successfully filled with gold, if the operator will take the time, care and trouble to do so. It has been remarked by the last speaker that the professional man should at all times be able to judge of all conditions correctly, and give the patient the benefit of that judgment. He
has also said that all members ought to be expelled from the society that simply see things by the dollars. I believe if that was done in this society there would not be a member left. We would all be out, every one of us. Who is to judge whether my judgment is correct in the treatment that I give to a patient? Am I the sole criterion by which everything is to be ruled? I say not by any manner of means. I may give my own opinion, the best I have at my command. But is it the best? It may be far from it. That very question was brought up this morning when I was filling a tooth. I was asked how many practitioners, in a general way, would fill that tooth, and how many would cut it off and crown it. I believe I gave it as my opinion that about ninety per cent would cut it off and crown it, and probably ten per cent would fill it. Now, as I have remarked before, I have always had an inclination toward gold filling all my lifetime; yet I have not got into a rut. Now it is my opinion that that patient is best served by filling that tooth. Somebody else's honest opinion is that he is best served by cutting it off and crowning it. Who is to condemn us? Are we to call a meeting of a society or authorize the board of censors every time to pass upon a given operation the country over, before a dentist is allowed to do a thing? I yesterday remarked to some individual here that I have a patient who has a right upper cuspid which is in contact with the right upper first molar, the two bicuspid having been extracted by a very reputable and eminent dentist in order to make room, and to remove a crowded condition of the upper arch. The upper arch has so contracted that the teeth at the present time drop entirely inside of the arch of the lower. That man gave his best opinion, and the best results of his judgment to his patient. Is it a correct one?

Speaking about specialists, and a man running in a line or into a rut, I think there is one element that we fail to recognize in dentistry; and it is an element that Dr. Kingsley, of New York, once called attention to in regard to people speaking before a society. That element is known by the one single word "laziness." I think we all have a large share of that, and if we could eliminate laziness from our persons, and get to work, we would soon cease to be specialists in one line. The human body and the human mind is not so constituted, as a general thing, that we are capable of only fulfilling work in one line. If I can fill a tooth well, by the application of industry and study I can soon acquire the knowledge of
how to make a good plate. If I can and do know the forms of the face so as to have a correct judgment so far as orthodontia is concerned, I can apply that same principle in making a plate and giving a correct expression to the features of one of my patients. There is no material difference. As Dr. Holbrook pointed out last night, there is no difference between medicine and surgery and dentistry. They run in the same channel. Our laziness, as Dr. Kingsley has said, is responsible for a large amount of the trouble. Speakers before our society are lazy. They get so without knowing it, and they do not use their tongue and their lips and the muscles of their face in order to give mold and form and expression to the words that they are intending to convey to their hearers. I have seen it time and again here on this floor, and even in this meeting, that parties will speak without moving their lips. They will say a dozen words in succession without moving their lips, and it is just about impossible for their hearers to know what they are saying. They get into that habit. It is an unconscious habit. They get into the same habit in their work. They do a certain kind of work without moving. They do not create any wind, and they get into a certain method of saying and doing things, and go no farther. Now if we would all strive to get rid of this one feature of laziness—and it has got a strong hold on me, too—we could do very much better.

Dr. W. C. Wendel, Milwaukee: Dr. Maercklein either misunderstood my remarks entirely, or has misconstrued or distorted them into his own idea and conception. I did not mean to say, in regard to a specialist, that you could dictate and expel any one from the society. I simply had reference to where a man had a patient brought to him, and from a money consideration should take advantage of the individual, and crown a tooth that he thought ought to be filled. I said that that should be equal to expulsion. That was my idea. It was not that one man might say, "This tooth ought to be filled with amalgam," and another say with cement, or that it ought to be saved or crowned. I am not dictating to that gentleman at all. If a patient comes to me it is according to my judgment whether I ought to fill that tooth with cement, or whether I ought to fill it with amalgam, gutta-percha or gold, either cohesive or soft. Dr. Maercklein says he has not run into a rut. Perhaps he does not realize it. A great many men do not, when they run into a rut. I will say this much: No individual ought for a money
consideration to sacrifice a tooth. When a patient comes to a
general practitioner he ought to treat him the same as his own
child, or one of his own family. If he has not the ability as an
ordinary practitioner to treat the case fairly, then it is his duty to
take the patient to a specialist and consult him in regard to it, or
ask other members of the profession to come in and consult with
him in regard to the case. There is a time comes to every individ-
ual when it is hard for him to decide whether to fill the tooth with
gold, or whether to cut it off and crown it. Certainly, if the tooth
is all broken down, and there is nothing left of it, he would have
to resort to crowning. Any one would do that. But there is a time
when it is hard for a practitioner to decide what to do exactly;
and when he reaches that point, rather than punish his own con-
science, let him call in another practitioner and take his opinion.

Dr. Reinhold Maercklein: When a patient presents him-
self for operation if the operator will simply ask himself what he
would do if that operation was to be performed in his own mouth,
or the mouth of any member of his family, and he decides to oper-
ate and do for the patient as he would do for himself or a member
of his family, he is giving that patient the best that he has at his
command. But he ought not to vary from that rule. If a patient
presents himself and he cannot fill the tooth with gold let him fill
it with the next best thing. Let him say, "Well, if that tooth was
in my own mouth I would fill it with amalgam; I cannot afford to
have gold." If he gives that kind of treatment to his patients he
is giving the the very best at his command. I think it is the duty
of every practitioner to ask that question of himself. It is impos-
sible to get an equal skill in all lines of our work. I might see an
operation, no matter whether in a plate or a crown, or a bridge or
a gold or amalgam filling, that has been performed as well as the
practitioner could perform it. I might think it a very poor piece
of work. Now it is impossible for us to get our skill and profi-
ciency in all lines down to the same basis. We have got to make
allowances for that. While I may think it was a poor operation,
and ought not to have been done, he probably served that patient
with the best ability and judgment he had at his command.

Dr. Nielson, Madison: I did not intend to say anything on
this subject, except that I do not quite agree with the remark that
a specialist has no more place in the city than in the country. I
think that there should be a distinction between "fakirs" and
specialists. We have "fakirs" who claim to be specialists, who simply prey upon the people. They come out with a bold advertisement of some kind, but they are simply after the dollar. They advertise as specialists but they are not specialists. I think that the few specialists in our profession have a place. People come to our offices who must have all kinds of work done. A man may find that he cannot do all that work himself. He feels an inclination to do a certain kind of work. He feels that he is fitted for that certain kind of work in his profession. He selects that certain kind of work, and he tells certain of his patients that he cannot do the other work, and does not want to establish a sort of a practice where he has eight or ten chairs and supervises them all; consequently he is a specialist. He selects this certain kind of work and he does it very thoroughly. I think that if we had more specialists in our profession, and would recognize them, and would not recognize the fakirs, there would be more good done to the public in general. I simply wanted to state that I think that the specialist has a place in our profession.

Dr. G. V. I. Brown, Milwaukee: Before the subject is passed, since I am attempting to be a specialist, I think perhaps it would be just as well to give some of the reasons why I believe in what I am doing.

In the first place the question raised by the essayist, as referred to by others, is correct. The danger of specialism is narrowness. There is no question about that. The thing that a man has to be most afraid of who attempts to be a specialist is the danger that he himself will become narrow. Now the proper check upon that is the answer to the question: "Who shall decide about these things?" I am surprised to hear that question raised. Why, the general practitioner is the man to decide. If, for instance, I am a dentist, practicing, we will say, in a country town, or the city, it makes no difference where, and I have a case that I think properly belongs to some one who is working along some special line of my profession, and I take or send that patient to him, I do not lose that patient. That is my patient. It is this broad foundation which I am supposed to have that enables me to take the telescopic view, if you please, of it, and that enables me to decide, when the question in issue arises as to what it is best to do. It is my judgment all the time. If I use that judgment which I should have as a general practitioner, with a broad education,
which we all have, and all who are educated in the future I think will have; then there can be no danger at all. Now so far as the knowledge of the specialist is concerned, I think that it is like attempting to stop a mill wheel for a man, in this day and generation, to undertake to say that there is no place for the specialist, and to undertake to say that specialism means laziness. There is no such question to be raised. If a man has demonstrated that in his profession he has been capable of mastering all of the operations generally performed in that profession, he will still have some natural bent; because you might just as well try to struggle against the will of heaven as to struggle against your own natural bent. There is not a man living, perhaps, who does not have some particular faculty, which enables him to do some things better than he can do other things. Now to keep the whole down to the level of the average man's faculties is something which is not to be considered at this time at all. The tendency of specialism is something that is constantly going on. It perhaps may be overdone, and may have been overdone; but the idea in medicine, and in dentistry as a branch of medicine, is to specialize. To make that safe we must have a broader education for the general practitioner, and the general practitioner is the man who should govern this thing. Just as has been suggested by Dr. Wendel, the proper way for the specialist to receive his patient is through the general practitioner. The general practitioner should consult with the specialist. He should have the advantage of the specialist's skill, and the advantage of the knowledge of both. Then you may say your patient will get the best treatment that it is possible for him to receive. That will apply to medicine or dentistry. The general practitioner will be the man who will decide these things, and he should be to-day. I do not believe that the general practitioner should undertake to claim that he, in addition to all the other things he is called upon to do, can perform operations in gynaecology, in the higher order of surgery, in brain tumor, or cancer. Or, speaking of our own profession, to claim that the man having his time occupied with all the other things can take up any one of these branches which are calling for special service. I do not think one man can know it all. There is a limit to a man's ability. Some men's abilities are more limited than others; but I do not think those propositions are to be thought of in considering this question. It is the average of the whole which makes the
standard; therefore, in speaking of the capacity, we must speak of the average capacity. The dentist stands at his chair all day, meeting cases of all kinds, and putting in his time on long fillings which require a good deal of the day. I do not think he can know as much about some particular thing as the man who is doing that one particular thing all day. Perhaps you all remember of the young man who went to Agassiz to study nature. Agassiz gave him a fish scale. The man brought back the fish scale and said that he had written up about all there was to it. Agassiz sent him back again, and sent him back again, for a number of weeks or a month, until the man finally learned that there was more in that fish scale than he could learn in a lifetime, let alone telling all about it in a few hours. Now, when we come to a condition where we realize there is in each one of the departments of dentistry more than any one of us can compass in a whole lifetime, then we have reached a point where we are ready for the specialist.

Dr. Reinhold Maercklein, Milwaukee: Dr. Brown says that there is more to dentistry than any one man can learn—that is, is more to one particular specialty of dentistry. If that is the case, and we are to master the entire dental profession, how much do we know as general practitioners? If we know very little about one specialty, how can we know about the whole field?

Dr. G. V. I. Brown: I think the doctor has supported my statements in about as powerful a manner as possible. It is simply because we have a broader view, and because we cannot know all about it, that we are obliged to have specialists.

Dr. Reinhold Maercklein: If that is the case, why we, as general practitioners, ought to have a very wide knowledge of the field, to be able to diagnose, and be able to send our patients to the various specialists. Now, if we know very little about the general field, and one specialty takes up more than a man's capacity to hold, why, our knowledge of the general field must be very limited, and we are very uncertain then whether our diagnosis is correct on that subject or not. We then send up to a specialist, and he, as has been stated, is in a rut, and we are not certain whether we are giving the patient the best service we ought to give him.

Vice President Boisol: Any one else have anything to offer on this subject? I will ask Dr. Robertson to close the discussion on the paper.
Dr. Robertson: I am very much pleased to hear the discussion my paper has brought out, and I think the points which I wished to bring out have been put forward in a very forcible manner in the discussion. I did not wish to take the position and state that there was no place for a specialist; neither do I wish to state that a specialist is not authority upon his particular subject. But the danger in specialism is for a man to pretend to be authority on one subject, and at the same time be working on different lines. In cases of that kind a man has got into a rut; he has become narrow and contracted in his ideas. I treated of the subject more from the standpoint of a country practitioner. The place for a specialist, if there is a place for him, is in the city, no doubt. My idea is that in order to be authority upon one branch, which ever it is, he has got to work upon that exclusively, and he should receive his patients, as Dr. Wendel has said, through the advice of some general practitioner. If he is allowed to choose his own patients it appears to me that he is quite likely to fall into that channel, and take a case and use it to further his ambitions, whereas probably the requirements were entirely in another direction. A general practitioner, if he undertook to do many of these jobs, probably could not do them as thoroughly as the specialist might in that particular line; but there are certain underlying principles in dentistry as well as every other profession, and we must not lose sight of those. The dentist should perform that work which he can do on that particular case in the most satisfactory manner, if he is a general practitioner, in order to give his patient the best service he possibly can. In this way he is fulfilling the requirements of the general practitioner. The knowledge of the general practitioner must be broadened. The field is constantly widening all the time for his work; while on the other hand with the specialist it is constantly, it seems to me, narrowing down to a finer point all the time.

Vice President Boisol: Gentlemen, the programme for this afternoon is finished; and the dentists of Madison desire the members of the society and their friends to join them in a boat ride and picnic to leave the foot of Carroll Street at 4:30. They earnestly request that all members and their ladies and friends join us in this excursion.

On motion adjourned.

[TO BE CONTINUED.]
Matrices.

At a recent meeting of the Chicago Dental Society the question of using matrices was discussed to a slight extent by some of the members. Surprise was expressed by one gentleman that an old practitioner had adopted the matrix at this late day. Matrices have been used in filling teeth for many years, especially when using the plastics. In regard to the use of the matrix in gold filling there is still a division of opinion. Some contend that a matrix may prevent the perfect joint on the long axis of a tooth, but we believe that a little careful practice will soon make the indifferent operator a more careful and painstaking worker. The matrix reduces to a minimum the subsequent polishing of the filling, and if a matrix is carefully and firmly adjusted the contour is more easily made than without its use. The interproximate space is always better protected by the use of a matrix at an expense of less labor for the operator. We are in favor of matrices as time savers and as useful adjuncts in contouring of molars and bicuspid with gold, tin and amalgam, as well the various cements.

Are You a Reader?

In looking over the issues of this journal for the year we often wonder if the subscriber is a careful reader. In conversation with many men we are inclined to doubt if the majority read the long and laboriously written papers which are so evidently padded as to make them long and tiresome. Are you a reader with a desire to increase your stock of knowledge? The papers we have published
during the year are for the most part all devoted to practical or semi-practical subjects. Do you read them? Will you read those of future issues with the thought uppermost that they will serve to refresh your knowledge on specified subjects? We fear that the tendency of the times is to run to paragraphs and hints. While these are useful and many times helpful, do they increase your stock of knowledge? We are inclined to believe that many long articles should be read more carefully and closely in order to start the thought processes of the reader. Will you be a careful reader?

**Domestic Correspondence.**

Letter from B. H. Catching, D. D. S.

Editor Dental Review:

I am glad to see that editorial comments on the Omaha meeting are conservative. Several things conspired against a large attendance. Among them may be named distance, location, temperature, war and financial depression. A lesson, repeatedly given, should be learned once for all. It is the holding of important meetings at the place and time of expositions, or other distracting occasions. State meetings are sometimes ruined by holding them at the place and time of State fairs, etc.
The National Dental Association will not disappoint its supporters after the machinery is all properly adjusted. A few minor changes may be found necessary at times, but such should not cause friction. Builders of such organizations are not those who would have everything their own way, but those who are willing to take as well as give.

The success of a meeting, even where all else is favorable, depends very largely upon the presiding officer. The largest and most enthusiastic gathering may be foiled in good work by having an indifferent presiding officer. The indifferent and easy-going chairman will fail, and so will Tom Reedism. It is a peculiar faculty, the managing of a body of men, and not one man in a hundred possesses it.

I suggest that each active member of the National write to the new president offering his best services and support for the Niagara meeting, which will not only encourage our leader, but will immediately set the wheels in motion for next year.

And now, sir, let me say that upon the editors lie a duty. That duty is to keep the National prominently before the profession. They should not wait until the month before the time of meeting to speak. Well do we remember the work of the lamented Henry W. Grady, who, as editor of the Atlanta Constitution, kept the attention of the public riveted on the time of the opening of the great Cotton Exposition held in this city in 1881. One year before the opening day, he arranged headlines to a certain column in his paper, which one day would say, "It is just 365 days before the opening of the Cotton Exposition." The next day it would read, "It is just 364 days before the opening of the Cotton Exposition." He ran the date down until it came to the morning of the opening, when it read, "It is just six hours and thirty minutes before the opening of the Cotton Exposition." His message was daily. Yours is monthly; would that it were weekly. You have but twelve calls before we gather at Niagara. Take the suggestion, Mr. Editor, and keep the date and place prominently before your readers.

Our method of communicating is too slow. If this appears at all, it will be a month hence. A time in which a war may be fought, and victory won. By the time some one else could offer a suggestion, three months will have passed. Wake up, Mr. Editors.

Atlanta, Ga.

B. H. Catching.
MEMORANDA.

There is a good opening in Calcutta for a first-class dentist.

It is stated that there is an opening for a good dentist in Hyderabad.

Dr. D. E. Coulson, of Galesburg, was a visitor in Chicago in October.

Dr. F. M. Shriver, of Glenwood, Iowa, was in Chicago attending the Peace Jubilee.

Dr. Louis Ottofy is located at 87 Main Street, Yokohama, Japan, where letters will reach him.

Among the numerous accomplishments of Peter the Great it is stated that he was a dentist. See "Peter the Great" by Waliszewski.

A member of the medical profession is "forninst" artificial teeth for the aged because it enables them to eat meat, when they should eat vegetables only.

One of the enthusiastic speakers at a recent meeting of a dental society called it "celurion" deposit on the roots of the teeth. This is a new one on the editor.

The dental bill of New South Wales has gone to a second reading. It is expected that the board will comprise two medical men, four dentists and two laymen.

Dr. John H. Spaulding was married while in the United States the past summer. The happy couple have gone to Paris, the home of the bridegroom for many years.

Information is a new journal intended for the dentist and the public—mostly for the public. It is edited by L. P. Bethel and published by him at Kent, Ohio. The first number is very attractive. The price is $1 per year.

The authoress of "Ground Arms" says in going to a battle field in 1866 that the odor of carbolic acid and other medicines was so intense that she was nearly stifled. Was carbolic acid used in 1866 as a disinfectant?

It seems probable that a very good attendance may be looked for at Niagara Falls next August, as the president of the N. D. A. has already begun his work in getting papers, etc. Get a good paper ready and go to the meeting.

THE OHIO STATE DENTAL SOCIETY.

This society will meet in Columbus December 6, 7 and 8. A good programme has been issued, and a cordial invitation is extended to all progressive dentists.

Northern Illinois Dental Society officers for the ensuing year are: President, C. W. Cox, Batavia; G. B. Dillon, Vice President; Secretary, J. W. Cormany, Mt. Carroll; Treasurer, M. R. Harned. Next place of meeting Elgin, the third week in October, 1899.

In the well-known novel, the "Deluge," Vol. II., it is stated of one of the commanders that he wore a "silver palate," which gave to his voice a peculiar twang. As the time must have been about 1654, we would like to know if "silver palates" were made at that time. Can you tell?
A new edition of Harris Dictionary for dental students and practitioners is out. The work is edited by Dr. F. J. S. Gorgas, and all the new words of recent coinage are to be found within its covers. Harris is the old standby of the dentist and student for definitions. Published by P. Blakiston Son & Co., Philadelphia. Cloth, $5; sheep, $6.

A pamphlet called "Preventive Medicine as Applied to the Mouth, and Care of the Teeth," has been issued in Baltimore by Douglas Malcolm, D. D. S. This is supposedly for the information of the public, but the inside cover has a list of references to persons in Baltimore, showing that it must be used as an appeal for patronage by the author, which, to say the least, is in bad taste. If the author would discard his references we think the brochure might do much good.

FOR FACIAL NEURALGIA.

B. Tinct. aconite root, 
Chloroform,
Alcohol .................................................. 5 iv.
Oil peppermint........................................... 5 i.
M. S. Apply with a camel's hair brush.

CINCINNATI, OHIO, October 29.

Dr. A. W. HARLAN, Chicago.

My Dear Doctor:—Read, reflect, observe:
"How doctors, dentists, pharmacists, competent undergraduates, can soon graduate. Box 106, Chicago."

The above from the Cincinnati Enquirer and other city papers. Can such be the case? 

Yours,

Wilbur P. Lindsey.

TRI-STATE DENTISTS ORGANIZE.

CARMII, ILL., Oct. 24.—The dentists of Indiana, Kentucky and Illinois met in this city to-day and organized the Tri-State Dental Association. The following officers were elected: President, C. M. Meade, Carmi, Ill. Vice presidents, S. F. Gilmore, Princeton, Ind.; Lloyd A. King, Henderson, Ky.; W. Chi Brosman, Albion, Ill. Secretary, R. H. Burke, Shawneetown, Ill. Treasurer, Alvin J. Hovey, Mount Vernon, Ind. Purchasing Agent, M. M. Haas, Evansville, Ind. Editor, F. J. Raymond, Evansville, Ind. Executive Committee, C. Chandler George, Evansville, Ind. The association held two sessions to-day and listened to interesting papers. Evansville, Ind., was chosen as the place for the next meeting. The session closed to-night with a banquet to visiting dentists.

A VALUABLE DISINFECTANT.

The disinfectant recommended by Krönig and Paul, discovered in the course of their painstaking tests of various disinfectants by the light of the new physico-chemic theories of solutions and electrolytic dissociations, is a mixture of potassium permanganate and hydrochloric acid. This solution kills the most resistant spores from extremely virulent anthrax bacilli in a few minutes, while it is cheap, nontoxic, convenient and fully-equal to a five per cent solution of sublimate. They ascribe its remarkable microbicidal power to its extremely active ions. As a disinfectant for the hands, for instance, they recommend the formula: 45 c. c. of pure hydrochloric acid; dilute with 1,600 c. c. of water; add 500 c. c.
of a five per cent solution of potassium permanganate. The solution also stains the skin, but the latter stain is easily removed, with a one and three-tenths per cent solution of oxalic acid.—Ann. de la Soc. Méd.-Chir. de Liège, June, from Ztschr. f. Hyg., xxv.

NOTICE.

The next annual meeting of the National School of Dental Technics will meet on the 28th and 29th of December, 1898, at Cincinnati, Ohio, beginning promptly at 10 A. M., with the address of President G. V. Black. The partially made up programme is as follows: The Value of a Graded Course of Study and Uniformity among Dental Schools, by G. V. I. Brown; Reports of Syllabi Committees; Operative Technics, by T. E. Weeks; Prosthetic Technics, by N. S. Hoff; Symposium of Teaching Methods, by W. H. Whitslar, C. M. Wright and H. H. Burchard; Steel Technics, by G. H. Wilson; Teaching Cavity Preparation, by C. N. Johnson; Master of Exhibits, Grant Molyneaux. Discussion on the papers will be opened by prominent teachers. It is hoped that all interested in the newer methods of teaching in dental schools will be present. A profitable time is promised. Exhibits of class work will be interesting. The profession is cordially invited to attend. Meeting will be held in the club rooms of the Grand Hotel.

D. M. Cattell, Secretary-Treasurer.

904 Stewart Bldg., Chicago.

ACUTE PHARYNGITIS.

B Codeinæ............................................gr. v.
   Extr. catechu.......................................gr. xxx.
   Extr. glycyrrhizæ....................................3 iiss.
M. ft. mass. et in trochisci No. xxx. div.

Or:

B Potassii chloratis.................................gr. vi.
   Ol. menth. pip....................................gtt. ij.
   Extr. krameriae...................................gr. xv.
   Extr. glycyrrhizæ....................................3 iiss.
M. ft. mass. et in trochisci No. xxx. div.

Or:

B Ammonii muriat....................................gr. xxx.
   Pulv. ipecac.......................................gr. ij.
   Pulv. capsici......................................gr. ss.
   Extr. glycyrrhizæ....................................3 iiss.
M. ft. mass. et in trochisci No xxx. div.

The first is used in cases with moderate soreness; the second when there is cough with raw and irritable throat; the third when the secretions are thick and tenacious.—Lefferts.

PRELIMINARY NOTICE.

The New York Odontological Society will celebrate its thirty-first anniversary on Tuesday, January 17, 1899.

On this occasion the society will hold an afternoon and evening meeting, and J. Leon Williams, L. D. S., D. D. S., of London, has prepared a paper for each session, and will be present to read them.
Afternoon Paper: "On Certain Controversial Questions and Unsolved Problems in Dental Histology and Pathology."

A criticism of the recent paper on the structure of enamel by Dr. Otto Waldkoff.

Further researches on enamel structure with a critical review of the paper on tubular enamels recently presented before the Royal Society of Great Britain by Mr. Charles S. Tomes, F. R. S.

An examination of the special forms of acid forming bacteria found attached to the approximal surfaces of teeth.

A brief review of the work of Dr. Filandro Vicentini on the fructification of leptothrix buccalis.

Illustrated by numerous photographs.

Evening Paper: "Which Shall It Be, the Scientific or the Empirical Method?"

An examination of the present scientific status of the dental profession in America as shown by its recent literature.

The results not altogether flattering.

Indifference toward scientific research.

The empirical spirit and method.

The scientific spirit and method.

Are we to have a trade or a profession?

The question not yet decided.

The duty of the colleges.

The duty of the societies.

The duty of the individuals.

The question of patents and secret preparations.

The French Academy of Medicine.

A plea for the formation of a new national organization with an established fund and State branches whose function it shall be to promote original research and all scientific work connected with the profession, and to examine and pass judgment upon all inventions, formulae for remedies, etc., etc. Such an organization, if properly formed and managed, certain to prove a wonderful stimulus to progress in all directions, and, at a single blow, to destroy all quack remedies and useless inventions. An advance of twenty years at a single step.

The unification of the State laws regulating practice.

Shall we go forward or backward?

W. W. Walker, B. C. Nash, F. T. Van Woert. (The Executive Committee.)

FAILED TO PASS.

Fifty-fifth Congress, 2d session. S. 4531.

In the Senate of the United States, May 4, 1898. Mr. Mason (by request) introduced the following bill, which was read twice and referred to the Committee on Military Affairs:

A Bill to provide for the appointment of a dental corps in the United States Army.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Medical Department of the United States
Army of America be increased by the addition of a dental corps consisting of thirty members.

That the President of these United States of America be empowered to appoint one dentist, with the rank of brigadier general, to be at the head of such corps.

That he be further empowered to appoint one colonel, two lieutenant colonels, and two majors, dentists, who shall act as an examining board to examine candidates to fill the remaining vacancies.

Further, that each one of the foregoing dentists shall be graduates of reputable dental colleges, and shall have been in full practice of dentistry continuously for the past five years.

The remaining places in the corps to be filled by dentists who are graduates of reputable dental colleges, said dentists to receive the rank of captains and first lieutenants, according to their standing in the examinations.

That the time of service, promotions, pay, allowances, retirements, and so forth, be governed by the rules now in force in the medical corps.

That all supplies be furnished the dentists by the same board and in the same manner that supplies are furnished to the medical corps.

A SONG OF A TOOTH—WITH PYORRHŒA ACCOMPANIMENT—DIED OF GOOD TREATMENT.

(With apologies to dying words of Cleopatra and Noble Prentis.)

"Oh, sad fate! Oh, cruel serpent! Oh, false lover! Oh, Antony, Antony! Oh, my asp, my asp, my asp!"—(Tread of Roman soldiers resounded without, whilst the tooth's last words were heard from within.)

I am dying, dentist, dying!
Even now my heart strings break!
Thus to die! The queen of molars,
From not knowing "what to take."
Were it a thousand times more fatal,
There's a deadlier venom still
In the hearts of those who "cure" true pyorrhœa
And send the enormous bill.

To specialists three, I've been;
They have scraped and treated me;
They have gouged with their scalers
And hypodermics jabbed in me!
Thirty gallons of lithia water I have taken,
With greatest care and skill.
The specialist still is smiling,
But pyorrhœa I have still.

One doctor said, "I needed
Bands to hold me firm."
Another said, "Kill that pulp
And you need have no concern!"
Another said, "Uric acid,"
And for three months I had no meat.
Still another said, "Only bacteria.
That's all you have to treat!"

Tell the husbands of the patients
Who are tramping far from home,
They should meekly grin and bear it,
Till the day millennial come,
You are "curing" pyorrhoea
In its worst forms to-day,
But how about to-morrow,
Has the treatment come to stay?

Antiseptics by the dozen,
Yards of silken cord,
Four hundred visits to the office,
Prescriptions!—Good Lord!
I've been probed and prodded
And necrosed bone removed!
The parts been freshened up to suit,
And yet I am an awful "shaky" tooth.

When I am dead, let not pseudo doctors
And sure pyorrhoea cure men gibe and jeer,
Or the ogress of pyorrhoea heroes
Blow their bazoo in my ear.
For the process 'round me is absorbing and gums are falling 'way,
The pus is still exuding, the pain is still "protruding,"
And I am only waiting for the forceps
To clasp me to its bosom and drive my cares away.

I am dying, dentist, dying!
As yourself one day must die;
But your crazy present pyorrhoea treatment
Is a deader thing than I.
May the would-be dentists, tramps and bummers,
The fool killers numbers swell.
May the profession still cling to thee—
But glorious treatment, fare thee well!

Note—Tooth then dropped from socket, "entirely dead!" Cleopatra is now wearing a nice gold plate.

Ashley M. Hewett.
Chicago.
Before attempting anything like a history of the St. Louis Dental Society, it might be well enough to briefly sketch the dental profession as it existed in this city before this society was organized.

From the best information attainable, it appears that a Dr. Paul was among the first, if not the first regular practitioner of dentistry to locate here. He published a card in the Missouri Gazette, December 1809, as follows: "A well bred surgeon dentist, Dr. Paul, has the honor of informing his friends in particular and the public in general, that he is prepared to practice in all the branches belonging to his profession, viz., extracting, cleaning, plugging and strengthening the teeth, also making artificial ones." In 1830, a Dr. D. T. Evans informed the citizens of St. Louis and its vicinity that he had established himself in this place for the purpose of devoting himself to the practice of dental surgery. In 1837, when Dr. Isaiah Forbes located in St. Louis, there were ten dentists in the city, including himself. The following year there were but three of these remaining—Dr. R. B. Brown, Dr. E. Hale, Sr., and himself. Dr. Brown moved to California in 1849 and died in Sacramento in 1875.

Dr. E. Hale, Sr., remained in practice until 1864, when he removed to New Jersey. He died in March, 1879, and his
remains were interred in Bellefontaine Cemetery, the St. Louis Dental Society attending in a body.

In 1840, Dr. A. M. Leslie, who was active in the organization of the society, and its first secretary, came to the city. Within the next few years Drs. Aaron Blake, Isaac Comstock, H. J. McKellops, J. S. Clark, Dr. Edgerly, C. W. Spalding, Dr. Potts, Dr. S. B. Fithian and a little later Dr. H. E. Peebles and Dr. Dunning located here, while others came and went.

That the dental profession of our city at this early day was made up of active and representative men is shown by the fact that it had representatives in the societies then in existence. Dr. John S. Clark was a member of the American Dental Convention at its organization in 1855; Drs. Forbes, McKellops, Blake and Perine at the second meeting; Drs. Forbes, Spalding and Leslie in Boston, in 1857; and at the fourth meeting, Cincinnati, Ohio, 1858, Dr. Isaiah Forbes was elected president and Drs. Charles Merry, A. M. Leslie and S. Dunham were in attendance. At a meeting of the Western Dental Society in Chicago, in 1856, we find present Drs. Spalding, McKellops, Blake, Barron, Dunham and Hale.

I have hastily sketched the make-up of the dental profession of St. Louis up to the time of the organization of the St. Louis Dental Society that we might better understand its composition and then more readily accept the statements so often made that at one time, if not at all times, the St. Louis dentists and the St. Louis Dental Society were great factors in advancing the dental profession throughout the country.

I wish to state here that in 1874 the records of the St. Louis Dental Society from its organization up to April 16, 1872 (some sixteen years) were stolen or destroyed so that during this period, and in my opinion a most interesting one, the means of ascertaining the names of the officers of the society, the composition of its membership and the work accomplished are very limited. From April, 1872, the records are in the hands of the secretary and for the most part complete and very valuable.

The dental profession of the city after preliminary meetings on December 9, 1856, met and adopted a constitution and on the sixteenth of the same month an adjourned meeting was held at the office of Drs. Dunham and Hale for the enrollment of members and the election of officers. The following gentlemen signed the

The following were elected to fill the various offices: President, Dr S. Dunham; Vice President, Dr. A. Blake; Secretary, Dr. A. M. Leslie; Treasurer, Dr. G. H. Perine; Executive Committee, Drs. H. Barron, Isaiah Forbes and G. H. Perine. The society decided to hold their regular meeting on the first Tuesday of each month, the members to give their views on any subject brought forward. The Executive Committee was instructed to consider the propriety of renting a furnished room for the society's use. Dinner was then announced by the president and was discussed by all the members present.

The subjects discussed during the year were of interest and of much benefit to the members. On January 5, 1858, the second annual meeting was held at the office of Dr. Blake. The following were elected: E. Hale, Jr., President; H. Barron, Vice President; H. E. Peebles, Treasurer; I. Forbes, A. M. Leslie, J. G. Nichols, Executive Committee; and A. M. Leslie, Secretary.

Drs. E. Hale, Jr., H. E. Peebles, Fairbank, J. Campbell, C Knower, Chas. Merry, C. M. Forbes, W. A. Cornelius and W. A. Jones were added to the membership during the year 1857. Among subjects discussed during this year we find "The Treatment of Teeth with Exposed Pulps," "Atmospheric Plates for Partial Sets," "Lancing Children's Gums," "Ulcerated Teeth," "Filling Teeth," etc.

January, 1859, Dr. L. Levitt was made president and in his address referred to the death of Dr. Chas. Merry (who it appears committed suicide by opening a vein in his arm and afterward threw himself under a train on the Iron Mountain R. R.) as follows: "He was modest and retiring in disposition, sober and moral in habits, seeming to seek solitude rather than society." I call your attention to the instrument which I hold in my hand, the invention of Dr. Merry and known as the Merry drill stock. It is the practical beginning of the dental engine, and this instrument, the original Merry drill stock.

The St. Louis Dental Society records from 1860 to 1865 I have been unable to find in any of the works of reference at hand. In 1865 I find a notice that the St. Louis Dental Society meets
monthly and in the *Cosmos*, 1868, that at the annual meeting January 10, Dr. W. H. Eames was elected President; Dr. I. Comstock, Vice President; Dr. G. A. Bowman, Secretary and Treasurer; Executive Committee, Drs. Isaiah Forbes, Homer Judd and H. S. Chase.

Dr. Chase read a paper at this meeting on "Diseases of the Antrum," discussed by Drs. Homer Judd and others. We also learn from this notice that Drs. Homer Judd, Wm. H. Eames, Henry S. Chase, George A. Bowman, R. J. Porre, Edgar Park and W. N. Morrison had become members of the society since 1859. The record for '69, '70 and '71 I have not been able as yet to find. Beginning with 1872 the records in the possession of the society are practically complete. Without taking too much of your time, I will give the list of those who have filled the presidential chair: 1872, Wm. N. Morrison; 1873, Geo. A. Bowman; 1874, C. W. Rivers; 1875, Edgar Park; 1876, W. H. Eames; 1877, C. W. Spalding; 1878, A. H. Fuller; 1879, H. J. McKellops; 1880, Wm. N. Morrison; 1881, Edgar Park; 1882, Henry H. Keith; 1883, John G. Harper; 1884, J. B. Newby; 1885, J. W. Whipple; 1886, Wm. N. Conrad; 1887, M. C. McNamara; 1888, Henry Fisher; 1889, A. J. Prosser; 1890, J. G. Harper; 1891, Wm. N. Morrison; 1892, Geo. Robitoy; 1893, DeCourcey B. Lindsley; 1894, J. B. Newby; 1895, Walter M. Bartlett; 1896, F. F. Fletcher; 1897, J. H. Kennerly; 1898, J. G. Harper.

I have no doubt but that the meetings of the society were interrupted during the war of the Rebellion, and the notice which I have copied was about the beginning of the regular work of the society.

While I may be mistaken, I think that should notices of meetings be found they will inform us that Drs. C. W. Spalding, H. E. Peebles, Henry S. Chase, R. J. Porre, Homer Judd and H. J. McKellops were among those who represented the society as its presiding officers. Probably Dr. A. M. Leslie and Henry Barron represented it in 1860 and 1861. Dr. A. M. Leslie died sometime in the '60's.

Of those mentioned, Dr. Peebles (H. E.) died on February 14, 1871; Dr. A. W. Morrison, July, 1875; Dr. C. W. Rivers, Atlanta, Ga., November 15, 1877; Dr. I. Comstock, November 27, 1876; Dr. C. Knower, October 8, 1878; Dr. I. Forbes, July 15, 1885; Dr. H. Judd, May 20, 1890; Dr. Edgar Park, August 12, 1892; Dr. Henry Fisher, August 2, 1893; Dr. Wm. H. Eames,
March 28, 1894; Dr. J. J. R. Patrick, April 10, 1895; Dr. C. W. Spalding, June 9, 1896; Dr. Wm. N. Morrison, December 20, 1896; Dr. Henry S. Chase, January 11, 1898.

This society has furnished the American Dental Association three presidents, two vice presidents, one recording secretary, one corresponding secretary and one treasurer. Also, representatives in the Southern Dental Association, and numerously in the State society.

The improvement in dental chairs was the result of efforts of the Morrison brothers. Among the first practical dental engines was the Morrison engine, and the beginning of gold crowns comes from the same source. The rubber dam clamp was the conception of Dr. Isaac Comstock, and first made and used by him and by members of this society. The use of gutta-percha and chloropercha for filling root canals, while first advocated by Dr. A. Homer Trego, of Louisiana, was taken up by the profession through the efforts of Bowman, McKellops and Patrick, of this society, and is more largely in favor at this time than any other method; at least, in my opinion, this is the case.

Of the original members of the St. Louis Dental Society, Dr. Henry J. McKellops is still with us, and still a member of the society, enjoying the results of his active interest in professional matters, both in the respect in which he is held by every member of the dental profession throughout the country, as well as in a competency which makes it possible for him to live nicely, to be respected, and thus add to the standing of every member of the profession.

Your essayist has been personally acquainted with every gentleman mentioned that has been a member of this society within the past thirty years, and with many whom he has been unable to mention in this short résumé of its history.

It would be interesting, were it possible, to refer to the many things of interest, and many of great interest, that have been brought out through the efforts of members of this society. It would be a history in itself to recite the many, many wrongs against the profession it has righted, and many others that it has mitigated.

In conclusion, I would say that we have every essential that will make the future of this society equal any period of its past, and that within the present year we have had some better work than in any previous year of its history.
The only possible chance of falling back is the desire of those in the profession to succeed, even if it becomes necessary to barter their time and skill, rather than to make it something to be sought by perseverance, by study, by self-denial, and by every means that in other professions makes the successful succeed.

Cocaine.*

By J. B. Dicus, D. D. S., Chicago, Ill.

When the chairman of your committee asked me to prepare a paper on cocaine, for this meeting, I remonstrated with him and called to his mind the remarks of an active member of this society during the discussion of a paper which had just been read, when he said "That he was glad that they for once had a new subject to discuss, instead of a rehash of the old ones." You can readily see from the announcement of my subject, that my "kick" registered was of no avail. I have gracefully submitted to the inevitable and shall endeavor to give you a few ideas which I have been able to collect upon this subject; but if the one should chance to be present who would like to throw stones at the reader for his acquiescence, please to direct them at Dr. Fox, as he has taken all responsibility as to the subject.

I shall endeavor to restrict my remarks to the matter of hypodermic injections. In the beginning I shall say that I am not at present a user of the drug in my practice, nor have I ever been an extensive user of the same, because in the majority of cases as we may figuratively say, the cure is more serious than the disease; or, plainer speaking, the after results from its use, and the pain accompanying the same are far worse than the first pain. I admit there are many who make cocaine their hobby, much the same as many do cataphoresis, but I believe the cocaine to be worse than the cataphoresis, because the number of abscesses to result from the use of cocaine upon the tissues of the mouth are greater than the number which are and will be produced by the death of pulps in teeth filled by the painless method, as well as the number of abscesses which result from the improper cleansing of root canals, when the live pulps have been attempted to be extirpated by cataphoresis.

*Read before the Odontographic Society.
Let me take you for a few minutes into the field of science and investigate my foregoing statements. We will direct our attention here to the physiological effect of cocaine upon the tissues in general. Here we find that as soon as the tissue is subjected to the cocaine solution, the cocaine enters into a chemical combination with the nucleo-albumens or lecithin of neurous body of nerves, and when these compounds are eliminated by the liver and urea, the nerve which before had been very much stimulated, becomes exhausted or in a worn-out condition. Therefore we have the habit or craving for the cocaine developed.

When its use is continued, the result is perverted activity of the neurons, together with a destruction of brain activity, resulting ultimately in insanity. We also find that the more highly organized the neurons the more susceptible they are to cocaine, which fact explains that the higher neurons having to do with the intellectual or ethical qualities, moral faculties and judgment, are the first to suffer in chronic cocaine users. Such patients also have no sense of propriety.

Again, we find the neurons of least resisting power, or those which are unstable, to be more easily attacked. Therefore, the more nervous the patient the more susceptible to the cocaine habit.

We are again confronted with the fact that the cell body has a trophic influence over the axones and dandrones or branches of cells. In using too strong a solution, the effect is to unite the cocaine with the cells themselves, and in this way destroying the trophic function the same as if the nerve were cut. The sloughing of the tissues being the resultant from the destruction of the trophic function and not from the infection of the needle, or we may, the infection is secondary while the killing of the tissue is primary.

When the nerve is attacked peripherally, we have the same disintegration of tissues as before mentioned.

It is said many times that the pressure causes the sloughing of the gum tissue, but upon the investigation of this statement I found that it was the universal clinical experience with surgeons that the injection in other parts of the body very seldom gives sloughing, while it will give such results, when used upon the gum tissue, this, I think, disproving the above theory.
It is a fact that a very strong solution may be used in other parts of the body, notably the skin, without any bad results, while a much weaker solution will give very grave results when used upon the gum tissues.

I am, therefore, persuaded to believe that in the mouth we have highly organized nerves, and the tissues being of a lower resisting power, the cocaine inhibits their vital activities.

Many are the cases on record which come from the evil effects of the injection of the cocaine into the gum tissue. In conversation with quite a noted surgeon a few days since, I was told of one case in particular which had come under his care within the last week, where a lady who had had a root extracted a few days before by a very reputable dentist of this city, before which extraction, at her own request, cocaine had been injected into her gums. The surgeon informed me that he found a very large abscess developed in said gum tissue when the patient applied to him for relief. He gave it as the patient's testimony for cocaine, that she had had all she cared for for the remainder of her life. This is only one of the many I might mention, if time would permit. Many cases of abscess, accompanied by necrosis of the process, are on record.

In talking with dentists in the outlying districts, I find they have many more cases of these bad results to come under their care than does the average down town practitioner. I can only account for this in this way: The majority of these people, looking for painless methods, run up against one of the many painless "factories," or so-called dental parlors, and they, taking this as a sample of the down town dentist, declare they want nothing more to do with them, and apply to the man on the corner when the abscess has developed. They look upon the "factory hands" they have run up against as a fair sample of the down town dentist much the same as many do the dental colleges—as is evidenced by an article in a recent English journal, in speaking of the Union College of Dental Surgery, at Van Buren and Wabash Avenue, as being a typical college of America, where the painless methods of dentistry were instilled into the young men who had chosen the noblest profession for their life's work.

I do not wish to be understood as saying that I would obliterate the drug, cocaine, from the pharmacopœia, although I believe it to be one of the most dangerous if not properly used. There are some things which may be used in cases where local anaesthesia
is required; for example, using endermic injections of a normal salt solution. This will produce a pressure upon the nerves and blood vessels which will for the time being produce a local anaesthesia which is as perfect as may be produced by any drug, but which will of itself, owing to the affinity between it and the blood for each other, be taken into the circulation, and in a short time the normal conditions be reestablished. This method is recommended very highly by Dr. Kelly, in his recent book on gynaecology, he stating that he uses this method almost exclusively in most of his minor operations.

Sterilized water may be used in such operations, but it is not quite as good as the salt solution on account of the lesser affinity of the blood and sterilized water than the blood and salt solution. The length of time for the normal conditions to be reestablished is greater in the sterilized water than the salt solution.

The evil effects of the cocaine in the injection may be lessened by the addition of sodium chloride and morphine, using up to one-eighth of a grain of the latter at each operation.

As to the matter of local anaesthesia, it is no longer a great factor in the painless extraction of teeth, as in this enlightened age the best practitioners do but very little extracting of teeth, but instead of extracting, he will treat if necessary, and then fill the troublesome member, or if perchance the mighty destroying microbe hath carried his operations to such an extent that a filling is impossible, a good, well-fitting crown is adjusted, which will serve the patient for years to come. In some few instances where a root or two remains in the mouth which cannot be utilized in the above mentioned ways, and its removal is necessary for the placing of a bridge, then if a local anesthesia is necessary, the normal salt solution will sufficiently suffice.

There are many other things which might be said of cocaine, and many other phases of its use might be considered; but it cannot be done in one evening. About as important a phase will be its connection with cataphoresis. I have endeavored to lay before you a few of the facts as I find them for your consideration and discussion.
We have met again to-day for our annual convention, for the consideration of topics of interest to us in our profession and to see the practical demonstration of operations, to exchange ideas and derive the mutual benefit which is sure to come to each of us from such a gathering as this. After leaving our dental college we depend principally on two sources for advancement in our profession, the dental journal and the dental society; and while the journal is our constant teacher and companion, there is nothing which broadens and betters a man professionally like the dental society.

This society of ours, which has been in existence eleven years, has already accomplished much good. Organized without a code of ethics, one of its original intentions was to take in a class of men who would not, or could not on account of their methods of practice become members of State or other societies. In this respect it has not entirely fulfilled its mission, for where will you find a more ethical set of men than the members of the Northern Illinois Dental Society? It has simply proven that the men for whom it was necessary to form a code of ethics are not the men who attend and support dental societies. Men who have no conception of the golden rule, which is the corner stone of all ethical codes, will not accept the benefits of a fraternal organization of this kind, no matter how wide the doors are opened. But it has proven of inestimable value to the members of the society in smoothing over many of the rocky roads in our practice, and reducing many of our individual mountains to mole hills; by mingling together, talking over methods; by watching the little peculiarities, devices or methods of different operators. It may be that few of us have learned of any great or wonderful new thing here, but by an accumulation of the little things which we could not have learned in any other way, that has made this organization so valuable to us, and so it is about some of these little things and a few little reforms in regard to these meetings that I wish to speak, that we may still better this society and thereby better the individual members. Each of us as a member of this society is or should be a teacher as well as pupil in this school from which we

*Read before the Northern Illinois Dental Society.
expect in so short a time to derive so much benefit. Each one should make an effort to contribute something for the betterment of this school and not depend entirely on the few willing ones to furnish all the teachings. Those of us who have not the happy faculty of clothing our thoughts in beautiful language, and who hesitate on that account to get up before so many to express ourselves, should remember that it is the idea we are after and you may possess the diamond in the rough for which we are all seeking.

The history of this society, like that of many others, shows that the programme is made up year after year largely by a few who contribute freely and willingly for the enlightenment of the large majority. This is not right. None of us should be satisfied to attend these meetings year after year simply to absorb what we can. We should each contribute something, and thereby broaden ourselves, as well as benefit others; for "that it is more blessed to give than to receive" applies as much in this case as in giving food and clothing to the needy, for every man grows by his efforts to help others.

In casting about for the advancement of the profession at large during the past year, I have been struck not so much by any great inventions or startling theories, no wonderful new line of treatment, or prevention of disease which comes under our care, but the immense amount of study, experimental work and scientific research brought to bear on the more common branches connected with our everyday work. Never before have we known so much about the much abused material, amalgam, while the various articles on the preparation of cavities have brought the mechanical principles so forcibly before us that nearly every one in the profession has given more or less thought to the conditions and forces which tend to dislodge fillings, and as a result is doing better work. Much has been said about what we have considered the minor details of our work, like the more perfect annealing of gold and many other little things, the lack of attention to any one of which may have been the cause of many failures and detracted much from the reputation of a skillful operator. The steady improvement in porcelain art shows that much study and experimental work is being given to that branch; and while it is not new, it is the little details that are becoming more familiar to us that are making the usefulness of the work much more extended. And so it is in many other branches of the work. Many little details
which are familiar to us, little things which we have stumbled onto, perhaps by accident, perhaps by study or experiment, which we have deemed too insignificant to present to a meeting like this, may, if given, remove a stumbling block in the way of some professional brother, and pave the way to success in some branch which, to him, has been difficult in the extreme. So in the clinics. We are all working for the same end, striving for perfection in the various operations, a thing which no one ever quite attained. No two of us use exactly the same methods in our work to attain the same result; so in performing an operation before the society, no matter how simple it may seem to us, there may be some method, some little detail new to some member, which will be of inestimable value to him. We have all seen little things, new to us, and wondered why we never thought of them before, or perhaps it is something we have known about but never given it much thought or a trial, the practical demonstration will point out the usefulness to us, and we wonder why we have never given it the attention it deserves.

It is not necessary for us to produce something unheard of before, something that will shake the profession to its foundation, to make a paper, discussion or clinic interesting. Any of us would be proud to give to the profession some great thing that would be a lasting monument to our name; but if we cannot do this, let each contribute his mite, and by so doing help make an interesting and profitable session.

Dental Hygiene and Care of the Teeth.*


There is perhaps as little mention of this subject in dental literature as any other subject in which we have a common interest.

I may say truthfully, that by far too little instruction is given, by the average dental practitioner, too little thought given to this subject in the professional relations sustained between dentist and patient.

It is then with this in view that I ask your attention to a short consideration of the subject introduced. Perhaps it would be well to classify the remarks under two heads:

*Read before the Northern Illinois Dental Society.
First. The duty of the practitioner, more particularly in regard to that part which he is to perform himself. I believe it to be the best practice, that when a patient comes to us for the purpose of having the mouth and teeth put in good order, as it is termed, that the first step should be to thoroughly clean the teeth, before any other operation is performed; remove every scale of tartar, every stain, and polish every accessible portion of the crown of every tooth, and do this in the most thorough manner. I fear that too many times the tendency is to whiten the anterior and let the bicuspids and molars get on the best they can. Note if there be any inflammation about the gums and sockets of any of the teeth; if so, at once begin the proper treatment to restore them to a normal condition.

Every practitioner of to-day ought to know, and has no excuse for not knowing, what should be the best course to pursue in cases of this kind; and it is one of the greatest sources of gratification when the dentist has done his duty in this direction and feels that the patient appreciates it.

Second. The duty of the practitioner toward the patient. He should at all times suggest to the patient better care of the teeth whenever, in his opinion, the condition of the patient's teeth requires it. Many people who desire and do try to give their teeth the best of care fail in so doing, because their efforts are not intelligently applied. It becomes then the duty of the dentist to show such a patient the proper way to care for the teeth, and to correct any erroneous views the patient may have concerning the care of the teeth.

I wish to refer you to an excellent paper written by Dr. J. W. Wassall, and read before the Chicago Dental Society, also published in the April Review, in which he expresses himself in such a manner regarding the care of the teeth and mouth in the way of brushing, brushes, dentifrices, etc., that entirely coincides with my views on that subject. His idea of having two to four brushes is a most excellent one and more economical in the end for the patient. As to a dentifrice, I know a good tooth powder like Dr. E. L. Graves', or one equal to it, to be more effective than any tooth soap, paste, or what not. I would use this once every day, the other time some of the good antiseptic solutions like formalid, borolytol or euthymol, etc. This should be done once a day, so that the teeth receive a cleaning twice daily, and this is, as a rule, sufficient.
Now a word about the toothbrush. The best form of brush is the prophylactic, or those copied after that model, because the shape and curve of handle and arrangement of bristles are, in my judgment, best adapted to the proper cleansing of the teeth.

Instruct also as to handling the brush; not brush with the lateral motion but up and down so the bristles pass between the teeth.

Much may be said upon this subject. My intention is to merely introduce it to you. That there is need of more thought and care on the part of the profession in this matter is very evident, and I am quite sure that we do not exert the proper influence on the public that we should. In our public schools there is to-day greater attention given to physiology than ever before, particularly in that part that relates to the health; and as the teeth are so important a factor in the good health of our respective communities, I referred to a text-book on physiology used in our public schools, I find a short paragraph devoted to the teeth. The author says: "Teeth are prone to decay. We may inherit poor and soft teeth." In reference to cleansing the teeth he says: "They should be thoroughly cleansed night and morning with a soft brush and warm water." He refers to the dentist in this way: "Dentists say we should always cleanse the teeth before going to bed." Farther on he says: "Metallic toothbrushes, gritty and cheap tooth powders, hot food and drink, often injure the teeth." You will note how much the author refers to the dentist. Why? Because the dental profession has not developed force sufficient to cause the school book publishers to turn to us for information, but rather to an M. D.

In conclusion, let me say that we should be the educators on all matters pertaining to the teeth, rather than the medical profession. If we do our duty we will enhance our success as practitioners, and the public will cease to measure our excellence as a dentist by our expertness in extracting a tooth.
A Few Remarks on Prosthetic Dentistry.*

By G. O. Kerfoot, D. D. S., Batavia, Ill.

The object of this paper is to draw attention to a few pertinent facts regarding the carelessness (I will call it, because I do not believe it a lack of skill) that is found in our prosthetic dentistry, especially the rubber denture.

We boast of our education, of our colleges of dentistry, that they are not to be compared with those of a few years past or with those of any other nation—and, in fact, they are not—yet, with all this teaching, this study and practice, we find a tendency all over this broad land of ours to slight our rubber work, the main object in some cases seeming to be to get the denture in the mouth and the fee collected. Now, I feel that is not as it should be. We dentists of to-day, with our education, our dental journals circulating the best thoughts of the land, and with our modern appliances, ought to do superior work.

Suppose we have a patient wishing the teeth extracted and an artificial denture made to replace them. We extract the teeth, paying little attention to their size, shape or shade, make a temporary set, if wished; if not, we wait until the change has taken place in the alveoli and the gums are in proper shape for the permanent set. We then take the impression, select a set of teeth that we think suitable, repair to our laboratory and make the set.

When the patient returns they are put in the mouth. If a snug fit, occlusion is satisfactory and plate sets firmly during mastication, we call it a success, when in reality the teeth were selected without a thought of the originals extracted, from four to six months before, and their size, shape, shade and special peculiarities forgotten.

About a year ago, I met a lady with whom I had been acquainted in childhood. Her natural teeth were large, centrals prominent, laterals depressed, cuspids very prominent and bicuspid and molars extending backward and outward in nearly a straight line from the cuspids, gums rough and uneven.

During the previous year she had had her teeth extracted and an artificial denture made. The operator had selected a set of teeth about the proper size and shade but they were set very even and in a perfect arch, making the mouth broader. The gums were

*Read before the Northern Illinois Dental Society.
smooth and also thick, making the lips full and prominent, thereby changing the expression of the face very much, and making the fact known at a glance that an artificial denture was worn.

Another case worthy of mention came to my notice some time ago. A lady had had the upper incisors removed and replaced by an artificial denture. Her natural teeth were dark, and large at the neck; those selected to replace them were very light, about No. 1, and with a small neck, which made the denture very noticeable and annoying.

We should be exceedingly careful about the shade of the teeth used, especially when making a partial denture, as related above, because the color of the teeth match the complexion, and if a different shade is used an inharmonious effect is produced, giving a shock to the sensitive optic of the critical dentist similar to that felt by the finished musician listening to the harsh discords of the amateur. I do not deny that there are exceptions to this rule and that there are cases where we can change the position of a tooth here and another there, so improving the appearance of the originals. But in the majority of cases, the closer we adhere to, and the better we understand nature, the better the result obtained.

There are different reasons for this carelessness on our part. First, in the country we have difficulty at times in securing teeth exactly of the size, shape and shade which we would prefer, and in order to keep our engagements and not disappoint our patients, we decide that they are very nearly what we want and that they will do.

Second. In the city there are the "cheap" or "advertising" places to work against. These are especially harmful to the young dentist, who finds the building up of a practice up hill work, and when he states his fee to the patient for first-class work, is met with the remark, "I see by the papers that they are advertising the best teeth on the best rubber plate for $2.

Of course, he makes the best explanation he can, but he wants to keep the patient and thinks that perhaps in this case he would better make a reduction. So he makes the plate at a reduced rate; but while finishing it he remembers his small fee, and passes over the work in a careless, shiftless manner, saying to himself that he cannot afford to put much time upon it, thereby gradually forming the habit of slighting his work.
The Application of Comparative Dental Anatomy to Dentistry.*

By C. E. Bentley, D. D. S., Chicago, Ill.

That the dental profession is beginning to recognize the importance of a broader knowledge of comparative dental anatomy is evinced by the fact that the leading dental schools throughout the country are rapidly adding that particular chair to their curricula. The dental schools of England have long since realized the importance of this subject. This interest is responsible for the splendid museums that are maintained by them for the study of crania and kindred subjects pertaining to comparative dental anatomy.

That our students who have a taste for the cognate sciences should be taught the rudiments of this science in our schools must be clearly apparent when one considers the many causes for irregularities of the teeth, the philosophy of tooth forms and the explanation of supernumerary and undeveloped teeth.

The foundation upon which this science rests is evolution. Its elaboration and application depend upon the knowledge and acceptance of that doctrine. In any discussion, then, of the present subject it is impossible to avoid a cursory glance at the claims of the doctrine of evolution.

Within a decade this doctrine has so persistently advanced that to-day it ramifies and impregnates the great thought centers of the civilized world. Markedly suggestive is the fact that the chairs of the physical sciences in all the great universities of Europe and this country are filled by evolutionists. Its comparatively untrodden path has been illumined by such lights as Haeckel, Darwin, Wallace, Huxley and Spencer, of Europe; and Fisk and Powell and a number of lesser lights in this country. It is not now, nor can it ever become a fad. It has not the elements of fadism within its constitution. A fad is the child of fashion, whose gorgeous array attracts the frivolous and unthinking, who scarcely consider what the tinsel may cover, and desert their idol as easily as they become its insincere votaries. Evolution is a scientific and philosophical growth, which, when engrafted on the mind, becomes a religion. The study of evolution is a life work. To know evolution in its completeness is beyond the powers of the ordinary student.

*Read before the Chicago Dental Society.
For the purposes of this paper the following brief statement will suffice: Evolution postulates that life is a process; that all life is dependent upon a preexisting life, which in turn has its origin in a simpler form of life; that life began as a simple organism and proceeded through countless æons, to a complex form, and that man is the highest exponent of that complexity.

Now, the assumption of the comparative odontologist is practically the same. His claim is that teeth are derived from a series of simple cones out of which have grown the various forms met with in the animal kingdom. He would be a rash man who would claim to have a full knowledge of all the causes that produced this wonderful change. Of some of the operating causes, however, we have a pretty clear idea. Variation and natural selection or survival of the fittest are two laws well known to scientists, and are responsible for many conditions that are to be found in the mouth.

**Variation.** There are countless evidences throughout the animal and vegetable kingdoms of the struggle on the part of the individual to adapt itself to its environment. This is called the struggle for existence. In this struggle the law of variation is highly operative. That is to say, whenever the environments are inimical to an organ or set of organs of an individual, an effort—unconscious if you please—is made to modify the organ or organs to meet the requirements of the environment. This tendency is intensified in its transmission. The world is filled with striking examples of the operation of this law, but two will suffice here.

There is no greater anomaly than a bird that cannot fly, yet there are several in this condition, notably the long headed duck of South America and the ostrich. Squirrels, in countries devoid of trees, burrow and lose their power to climb.

**Natural selection** is an enlargement of the law of variation, operating directly upon the life of the individual in that those who are thus able to adapt themselves, live and propagate their kind. Those who do not, or cannot, perish. Darwin says, "It may be metaphorically said that natural selection is daily and hourly scrutinizing, throughout the world, the slightest variation, rejecting those that are bad, preserving and adding up all that are good; silently and irresistibly working, whenever and wherever opportu-
nity offers, at the improvement of each organic being in relation to its organic and inorganic condition of life. We see nothing of these slow changes in progress until the hand of time has marked the lapse of ages, and then, so imperfect is our view into long past geologic ages, that we see only that the forms of life are now different from what they formerly were."

Now these two laws—variation and natural selection—have a direct bearing upon our subject, and through their operation we can see the causes that were operative in the forms of teeth found in man. Comparative dental anatomy will tell you that all teeth are derived from the simple cone of the cetacean. It became necessary in order that fishes should live and propagate their kind,

![No. 1. Jaw of Common Dolphin.](image)

that some apparatus for seizing and dividing their food should be given them. The history of this effort bristles with interest. There are about 13,000 different species of fish and about as many different dental formulaæ—fishes with but the slightest elevation of mucous membrane up to the more specialized tooth forms met with in the shark. The dolphin, however, forms a striking example for the illustration of this paper. Here we meet with the simplest form of tooth, a simple cone. Its function is first to tear the food with no attempt at mastication; second, prehension. This prehensile function in the lower animals is characteristic. The single conical tooth is devised for this purpose. Says an authority: "The single conical tooth is the earliest type in vertebrates and is found all the way down through succeeding forms, even to man, although very much reduced on account of the prehensile function being usurped and performed by the hands. In the carnivora it is largely developed for seizing prey and tearing flesh, while in the herbivora it is reduced to an incising tooth or is absent altogether."

In the carboniferous period when the earth was teeming with huge animals and plants of all kinds, there came into existence the
species known as amphibian—an animal that could either live in water or on land. It became necessary for this animal to have a different food, and a different dental apparatus from that of the fish. The character of the food an animal was compelled to live upon has had more to do with the variety of tooth forms than any other factor. Indeed, comparative dental anatomists claim that from the teeth of fossil animals they can tell their habits. Thompson says: "If food selection has therefore dictated tooth forms, it follows that the teeth have been specially accommodated to the various kinds of food employed; i.e., the teeth have been adapted to the food, and not the food to the teeth. The food was made first and the teeth afterward. Function has developed structure; tools have been adapted to material. Therefore the teeth are,

![Diagram of the lower jaw of Amphilestes](after Owen)

functionally, tools made to reduce food as their primary purpose, although they often perform secondary offices for which they are specially developed; as in the tusks of the elephant, walrus, wild boar or musk deer and others."

Now, there do appear at this stage of development animals with teeth like the picture on the board. Instead of single cones we find one tooth composed of two or three cones coalesced, and, mark you, a corresponding inflection of the lower jaw. This Cope calls the tribubercular stage of tooth development. Associated with these teeth is also always a pentodactyl foot.

The drawing represents the lower jaw of Amphilestes. (After Owen.) This attempt on the part of nature to shorten the jaw anterio-posteriorly and develop a ramus is most significant. We find that by a shortening of the jaw the dental fold, or embryonic fold, from which each of the numerous tooth caps is budded off in the course of development, may be supposed to have been brought
together in such a manner that the cusps which were originally stretched out in a line, would be brought together so as to form groups of a variable number of cusps, according to the more or less complex pattern of the crown. Now, as we travel up the scale of animal life we find that as this ramus has its angle made more acute and as the food becomes more varied, we have a greater variety of tooth forms. The object of the development of the ramus seems to have been to give the lower jaw a rotary motion.

Many special forms of teeth have been developed, to which the limits of the paper will not permit even an allusion. Indeed, upon the cuspid tooth alone an entire evening could be spent. Hastening to the order of mammalia, we find a number of forms adapted for various uses: The incisors for prehension and dividing; the cusps—a degenerate tooth—its functions having been usurped by the hand; the premolars for crushing; and the molars for grinding. The ramus in mammals, especially in man, is nearly at right angles with the body of the jaw. An examination of each individual tooth reveals the fact that the incisors are made of four cones, three in front, one on lingual aspect; the cusps, four cones like incisors; premolars, four cones each; five cones on first molars; four cones on second molars; three to four cones on upper, and four to five on lower third molars. At least 136 cones can be accounted for. The dolphin has 220. The conclusion is forced upon us that the force referred to and the food have been the factors that have produced in man his present dental apparatus. While Magitot and Rose have done much to establish this thought, I have failed to see in the literature on the subject an explanation of the effect of the influence incident to the development of a ramus. Osborne has advanced the theory of differentiation regarding the genesis of tooth forms, but I have a preference for the thought outlined above.

The tendencies in the human jaw are toward a diminution of the present dental formula. The cause for this is the same cause that has been operative through all the ages—the food.

Fowler has shown as regards the length of our molar series, that the American, ancient British and Egyptians belong to a small toothed or "microdont" race. Many races, including the African, belong to a "mesodont" or intermediate type, while the Adamese, Malaynasians, Australians and Tasmanians are "macrodont."
With the first or "microdont" race, the tendency is to eliminate the third molar, while in the last or "macrodont" race, they not only have large sized teeth, but in the first and second molars are found two intermediate cusps, which are variable or absent in us, and sometimes a fourth molar is developed. What has been gained in the culinary art by the diligence of the good housewife or zealous chef has been at the expense of the integrity of man's present dental formula. The third molar and the lateral incisor have evinced a tendency for years to absent themselves from the dental arch. Talbot says in forty-six per cent of 670 patients the third molar was missing and fourteen per cent of laterlas in Caucasian races. A corresponding decrease in the depth and width of the arch has been manifest, according to the testimony of those best able to speak on the subject. If there is no need for an organ, nature will get rid of it and transfer the energy to some other part of the economy. The brain of man, throughout the ages, has persistently increased, while his hearing, eyesight, smell and jaws have decreased.

Referring again to this influence which produced a ramus in the lower jaw—may it not be one of the causes that produce some of the irregularities that are met with in our practice? We definitely know some of the immediate and remote causes that produce irregularities, but may we not reasonably reckon with this force in our calculations as among the causes?

Supernumerary teeth are due to reversion. What reversion means can be best explained by an example. In all vertebrate animals above the level of the fishes, the number of the digits of fingers and toes is normally five on each extremity. It is evident that this pentadactylic character of the vertebrate extremity was instituted almost immediately after the development of the series above the level of the fishes, and that inheritance has fixed it firmly in that gnomon of the species which led to the human family. Yet, now and then an extra digit occurs among these five fingered forms. These duplications occur more frequently in the lower animals—especially the carnivora—than in man; but frequently they are found in human beings. These extra digits commonly occur on the side of the hand and foot next the little finger or little toe and are provided with a system of bones and muscles, in the manner of the normal digits. That these extra digits are not
merely redundant growths or matter of chance, is shown by the startling fact that when they are cut off, they grow again. The normal finger or toe have no power to renew themselves after being destroyed, as we all know. The accepted explanation of these facts is thus clearly put by Shaler: "When the fishes began to pass upward into the groups where limbs and their extremities attained a more definite and elaborated organization than we find in the fin, the first steps toward this higher state of the extremities probably took place in a series of creatures which have disappeared from the earth, and whose history is now lost in our paleontological record, where the digits were more numerous and well defined than they are in the elevated vertebrates. In this lower and conjectural realm, the habit of having fingers and toes to a greater number than five was firmly impressed on the organism, and thus became the subject of somewhat obstinate inheritance. When in the course of advance, by natural selection or other process, the number of digits was reduced to five, there remained in the body to be handed on from generation to generation a latent and, so far as we can conceive, utterly unprofitable tendency toward the production of the old lost fingers and toes. From one species to another onward through millions of generations this ancestral impulse has survived, never strong enough to prevail over the forces which lead the fingered body, that it could give rise to six fingered species, but ever trying to assert its power, and here and there marking the obdurate continuity of the effort in occasional temporary successes." This is reversion.

Now, it is only reasonable to suppose that such inherited impulses are not confined to the digits. It seems perfectly clear that the human body has passed through thousands of forms, each sending down the current of life some token of itself, which is transmitted from species to species until it has reached the existing state of man or the higher animals. It seems to me, therefore, that supernumerary teeth are reversions. They are the actual manifestations of a latent potential force that has escaped the vigilance of a more powerful force transmitted impulse.

The practical worth of this subject, aside from its scientific value, has its highest expression in explaining many conditions met with in a professional way. Thus prognathism has its fundamental explanation in the comparative study of the jaws and the teeth of
animals. A larger interest and attention should be given the subject. A decided and determined effort should be made to create a museum—to which all students should be admitted—for the comparative study of crania and teeth of the lower animals. Such a museum does not exist in Chicago. Such opportunity for study would naturally lead to a larger comprehension of the doctrine of evolution—the basis of the whole subject—for as Kant says: "Man cannot think highly enough of man. I can readily feel pride in my ancestry when I see them, by the power in their brain cells and their hands, forcing their way upward, through the most antagonistic conditions until from a primitive anthropoid they reach the dignity of Caucasian masters of nature and rulers of the world."
The Odontographic Society of Chicago.

A regular meeting was held June 13, 1898, with the President, Dr. G. W. Schwartz, in the chair.

Dr. J. B. Dicus read a paper on "Cocaine."

DISCUSSION.

Dr. A. F. James: There is very little that I can say on cocaine. I am very glad to have the doctor's views on the subject, and feel that he has about expressed my opinion of the uses of cocaine. I have had a great deal of experience with cocaine, and I may say successful experience; but I am very careful about the use of it, studying the patient's nervous symptoms or physical conditions, and never using the drug under nervous excitement of any kind. I never have had the trouble of an abscess arising from the use of cocaine. That is a new feature to me. I can only say that I am very careful in the use of it.

Dr. C. P. Pruyn: Nothing especially new has developed in the last three or four years in regard to cocaine. I think perhaps the pendulum is swinging to the other extreme, and a less amount is being used than formerly. The number of abscesses formed I think are more due to the operator by carrying poisons on the points of his instruments than to the cocaine itself.

I was a little surprised to read an article by G. Lennox Curtis, of New York, stating that he was using it almost recklessly, a four per cent solution in the mouth, and found an antidote called volasem, a drug that is not mentioned in the pharmacopoeia, and a drug that Gale & Blocki, the druggists, know nothing about. I presume it is a cardiac stimulant, and perhaps a respiratory stimulant as well. I think I will write the house in New York who handle it and try it. But those who have never experimented on the lower animals, and intend to use cocaine on the human, I would advise to use it on the lower animals first. It will be a bad thing for the animals, but a good thing for those who operate.

Perhaps some of you know, and perhaps there are some here who do not know, that some years ago, or rather, when cocaine first came into use in this country and we had no literature on the subject, I instituted a large series of experiments, and I must say
the first dog I killed with cocaine made me shudder all over, and as I killed other dogs from time to time, it opened my eyes to the horrors of this drug—a good drug, perhaps, but capable of much evil; like many other good things in life, capable of abuse and misuse. When teaching in college it was my custom to spend one long evening during the term demonstrating the evil effects upon dogs. We would take twenty-four dogs and pair them off in twelve pairs as to size and weight. One dog of each pair I would fortify with the use of morphine and give him a certain amount of the drug; his mate I would give the same amount of the drug without having fortified him. You would see the physiological effects produced on the two dogs; then you would see the toxicological effects on the dog not so fortified and death would ensue. You pity the poor struggling animal as he fights for his breath, for it seems, as near as you can find out, that it paralyzes the centers of respiration first and most essentially. And you who have been unfortunate enough to see unpleasant experiences on the human subject will have noticed and remember how almost universally the patient wishes to have his clothing removed from his throat; he wants his collar open, that he may have less difficulty in breathing.

It is one of the most unreliable drugs we have. Some patients seem to be susceptible to it; others seem almost immune to its effects. But a great many evil effects such as have been spoken of, in the way of abscesses, are due to the poison being carried on the point of the needle more than to the cocaine itself. Carelessness in handling the needle I am convinced causes these untoward complications.

Dr. W. V-B. Ames: I do not know why I should be called upon to say anything about cocaine. I never injected cocaine in my life. It just so happens that I never took kindly to the process of producing local anaesthesia by hypodermic injections. As stated, it always seemed to me that for minor operations the patient would be punished almost as much by injection of cocaine as in the performance of the local operation?

I am interested in knowing something more about this normal salt solution. I wish Dr. Dicus would tell us what this physiological salt solution is. What is the percentage?

Dr. Dicus: I do not believe I can give the percentage now.

A Member: Six-tenths of one per cent.
Dr. Ames: I have had occasion to look up the percentage in the normal blood and find that it is about five parts in a thousand. Thus it seems to me, if we can accomplish the results Dr. Dicus speaks of for these minor operations, there is almost no need of hypodermic injection of cocaine.

He refers to cataphoresis along with this subject, and I suppose that is the reason why I have been called upon. The amount of cocaine really introduced into the pulp tissue, or into the substance of the organic fibrils connected with the pulp tissue, it seems to me is so infinitesimal that we need have no fear at all of the evil results which might follow hypodermic injections of considerable quantities.

I have taken some pains to watch the behavior of pulps after being thoroughly anæsthetized by cocaine and electricity in my own mouth and some of my patients, and I am satisfied that if we go at this process moderately, introducing only such amounts of cocaine as are necessary to produce the result we are looking for, that we need not look for any bad after results. If we anæsthetize pulps which only have about one chance in ten of surviving anyway, I suppose we would have a great many dead pulps following such a process, and the same results as if it had been handled by any other method. All I can say in regard to cocaine is from my experience electrolytically, that I have no fears if I use it with what I consider proper judgment.

Dr. C. N. Thompson: I have used cocaine very little, and, from what I know, I think I shall use it less from this date. Relative to Dr. Dicus' method with the salt solution, I think we can get just as good results as we can with the four per cent solution of cocaine, relying principally on displacement for pressure of the liquid displacing the blood. It seems that is what it does, relieving of the blood, as it were, and I find it to answer the purpose as well as the cocaine.

Dr. E. J. Perry: I have a few words to say in regard to a peculiar case I had not very long ago. In my opinion, the temperament of a person should be carefully studied before a hypodermic injection of any sort is attempted. This patient that I operated upon I studied for some little time, and in the examination of her mouth I found she had a serious cavity in the canine fossi, which necessitated an ether operation. She was given ether, and made one of the best recoveries that I have ever seen. I
thought her taking kindly to any anesthetic, either local or other, would be a matter easily considered in her favor. After making the opening I did not immediately insert the plug, and in a few days' time it closed so much that I found it necessary to reopen it on the surface. I took one of the tablets manufactured by Parke, Davis & Co., and known as the compound cocaine, morphine and aconite, made the solution after the directions given in the printed matter which accompanies it, giving me a solution of about two per cent. I made three punctures in the gum and injected about nine drops—nine minims of the solution. Almost immediately after withdrawing the syringe from the third puncture she began to complain of feeling very strangely—very queer—and said that she felt cold and numb from her head to her feet. I knew there was no time to be lost, that a radical remedy must be applied immediately, and I first used brandy, giving it to her by the mouth. After swallowing the brandy, that seemed to have a recovering effect at once, and brought her to her senses, which I improved upon by rubbing her head and increasing the circulation in the brain to its normal condition. Suffice it to say that I did not attempt anything more at that sitting, after seeing that she was safely brought out from the deleterious effect. The next day I thought I would try ethyl chloride. I had a tube, and threw a spray upon her gum until it became white, and almost immediately she complained of the very same feeling after that had been applied. However, she recovered from that without anything necessary to be done other than just simply giving her fresh air.

The literature, as far as I have seen it on cocaine, has differed in its results in the hands of different practitioners. In my own hands, I seldom use a solution stronger than one or one and one-half per cent for injection, and from four to eight per cent for topical application. I have found in most cases in using these tablets mentioned, that they give rather better results than cocaine in other forms which I have had, but it seems to me that too much cannot be said in regard to the caution to be used in applying this drug. I have had one or two other cases where the patient began to show the symptoms which have been described as being dangerous, which I was fortunate enough to overcome.

Dr. Frank N. Brown: There is one point that has not been touched upon, which I think is one of the important points in the use of cocaine hypodermically, and that is, the cocaine should be
mixed fresh each time you use it. If you mix your cocaine and leave it in the vial for a few hours, the water decomposes and you have a solution which is not fit for hypodermic injection. It should be used fresh and mixed with distilled water. I have never seen an alveolar abscess from the use of cocaine proven to be directly from the cocaine. I think, though, that very frequently it happens from the instrument used being improperly cleansed, and also from the fact that the water in the solution is in a decomposed state.

One other point I wish to make is this: Having used cocaine a great many times since 1886, I have almost discarded it, and in a very few cases, in which I needed an anaesthetic in the extracting of a fang or root, I find that the use of peroxide of hydrogen hypodermically is very much better. You cannot get a bad effect. The reaction of the peroxide strictures the circulation and gives you an anaesthesia which is very pleasing.

Dr. Zinn: I used cocaine at one time almost entirely on every patient that I had. I extracted for a year in Rush Medical College, and used it very extensively there. I had a patient at one time in my office and injected five minims of the four per cent solution, and I worked over that patient about three hours and sent her home in a carriage. Afterward, the same patient came back and I gave her then a good big drink of brandy and injected thirty minims, and did the extraction without any trouble. I have not used cocaine for seven or eight years, and I would not use it in a case where I could not apply the rubber dam for a $10 bill.

Now, speaking about peroxide and other harmless remedies, Dr. West, I know you all know him well, was telling me of his experience that he had with a patient who was quite familiar with cocaine, and she wanted a tooth extracted, but instead of giving her cocaine he injected simply hot water. She thought that she was having the cocaine and had every symptom of cocaine poisoning, dilation of the pupils, difficulty in breathing and everything that goes with the cocaine poisoning, although she had not had any.

Dr. Perry: I would like to add to the few remarks I made that I have one hypodermic syringe that I use for nothing else but injections of cocaine. I always keep it in a sterilized condition and I never permit it to be used for any other purpose. I also mix my cocaine fresh at each using.
Dr. F. B. Noyes: There was a case of cocaine poisoning which came to my notice during the winter that is of such interest from its illustration of the physiological action of cocaine in toxic doses that I want to speak of it for a moment. We almost always hear the toxical effect spoken of as acting, first, on the respiratory centers and not stating in particular how the effect is produced; but this case showed so plainly how respiration is affected, that it is interesting to go over the symptoms.

The patient was given quite a large dose of cocaine and the toxical effects were very prominent. The person who gave it was a student in a college; he was very much frightened, the patient herself was very much frightened, and the case was very serious for some time. The paralysis of the respiration was very marked, so that the breathing was exceedingly difficult. The face was pallid as ashes, the extremities were cold, the hands were cold, and all those familiar symptoms occurred which usually are spoken of as being caused directly from the paralysis of the center in the brain which controls respiration. But it is, however, well known that cocaine is a tremendous muscular stimulant. It was first so used by the natives, who chew the coca leaves, and the cocaine acts in that way. The effect upon the respiration was produced by tremendous spasms of the muscular coats of the arterioles, so that throughout the systemic circulation the resistance was enormously increased, the heart was pumping against a tremendous resistance, and the arterioles all over the body being contracted to their utmost limit, almost stopping circulation through the extremities; consequently the blood was thrown into the lungs and almost the entire blood of the body was banked up there, so that the lungs were congested and the respiration was difficult on that account. The expansion of the arterioles of the lungs was caused by forcing the blood through the pulmonary circulation instead of the systemic circulation. The patient remained in that condition for an hour or two, I do not remember the exact time, the breathing exceedingly difficult; every one around her very much excited over it. The doctor who had been called diagnosed the case and made up his mind that the heart was strong enough to stand that tremendous resistance for the time and went away and left the patient. He did not leave the building, but left the patient, and in a little while they came running down to him saying that the patient was dead. He came back and looked at the patient and you could tell
by the expression of his face in a moment that he was not particularly alarmed, although the respiration had ceased entirely, and the patient did not breathe for nearly five minutes, but the spasms of the arterioles throughout the body had relaxed; the face, instead of being pale, was very much flushed, the hands were flushed and warm, the spasms of the systemic arterioles had given way and the blood that had been banked up in the lungs was flowing through the systemic circulation and it had been so aerated that breathing was for a time unnecessary. At the end of five minutes she began to breathe, making a very nice illustration of one of the physiological effects of cocaine in toxic doses.

Dr. Clifford: I would like to ask if there were any other antidotes administered prior to the reaction which took place?

Dr. Noyes: There was nothing administered whatever.

Dr. E. L. Clifford: That will make quite an important point in connection with what Dr. Noyes has described as to whether there had been any other drug that might possibly be powerful or even an assistant in some of the symptoms as have been described. The object in asking that was principally to see whether the experiences that have been noted by Dr. Pruyn have been had by others. Dr. Pruyn will bear me out that we were together in some of our work and noticed these toxicological effects of the drug, and my main object in saying anything at all is to direct the attention of those who have not had the experience; and while I do not believe in cruelty or vivisection only so far as it pertains to science, I do believe that we are justified in taking any such steps as are necessary to make us more able to cope with any misfortune that the human family may have.

Dr. Pruyn will tell you the marked similarity between symptoms, the different grades that come in regular rotation, the actions of the dumb brute, which will make you, if you have only one or two experiences of that kind, so thoroughly recognize those symptoms when they begin to occur in your practice, that they will finally become almost like your alphabet. You will be able to tell just what stage the toxicological effect has reached, you will be able to know just to what extent that toxicological effect can go before it is too late altogether for you to be able to controvert that by antidotes. During these experiments that we have had, we gave dogs doses that we knew would kill. We gave dogs doses that we did not know whether they would kill or not, but we thought
possibly we might let them go just as far as possible and at different stages applied certain antidotes and antagonists. Gentlemen, I think the dependence of your patients, the way they will cling to you at that time is something absolutely distressing. They believe that they are going to die, they believe that you can help them. So with the lower animals, you see this poor dumb brute walk around the floor, he will start away from you at first, he is afraid; and after a certain stage he will come to you, get between your limbs, get under the chair, come to you for protection, believing that you can do something for him, begging you in his humble way, believing you will do what you can; after that comes the next stage, and you will see these things, if you have had experience enough, and if you have dared to allow the symptoms to develop in any member of the human family. I would impress upon the other members of the profession and those who have not had the experience, that where they can possibly, they will see some of these symptoms so that they will be more apt to recognize them when they occur.

Another point that Dr. Perry spoke of was the fact of studying the temperament before the administration of any anaesthetic, and more especially cocaine. I do not believe that is hardly sufficient. The worst results that I have ever had have been with patients whom I had previously given cocaine with most beautiful results. The temperament of the same parties at different days is not the same, their condition is not the same; and the very fact that you have given even in large doses and large quantities to a certain patient at some previous time is no reason why you can give it with impunity at some later time.

Another point is that the only toxicological effects that I have noticed in the human family have been with the smallest doses and with the first impressions. I do not know whether that experience is followed out with other practitioners or not, but it certainly has been mine; where I have had untoward results, it has been with the first two or three drops and with the smallest percentages of solutions. I am getting to feel that if I can give the first three drops of a two per cent solution, or one-half per cent solution, or any solution I am using, without manifesting any deleterious effects, that I feel safer, feel as though I can go ahead with it with much less fear than I had before I started. So that it is this uncertainty of the drug that makes it a dangerous thing to deal
with, and our inability to have patients that are exactly alike, that live under the same régime, that are under the same influence when they come to us, that makes me feel that it is handling of two-edged swords. I acknowledge that I use it at times, but, like other practitioners, I will not use it nearly as much as I did when it first came out. I feel with that as I did with chloroform when I was a student, studying under my father. Not having any experience, I thought nothing of giving a patient chloroform day after day and extracting any number of teeth. I did it for eight years without any thought of harm, and the good Lord seemed to have been on my side, for I did not kill any one. I came very near killing myself once or twice from the effects of it, but when I began to study about it, when I began to learn its cause and effect, I sometimes now tremble in my boots to think what narrow escapes I must have had; and so the more I learn about cocaine, in fact, the more I learn about all medicines, the more I am afraid of them.

Dr. C. P. Pruyn: I think possibly it might be a wise thing to have a special meeting in the near future to study the effects of cocaine upon some of the lower animals. During the summer, when the dog catcher is around, we would have no difficulty in getting from the city dog pound all the dogs we want for experimental purposes, and I am of the opinion that an evening spent in such study would prove very interesting and instructive to the members of this society.

In surgical cases, or where there seems to be a need of considerable cocaine to produce the desired anesthesia, it is my custom to first fortify the patient with a full meal and plenty of coffee, and often, in addition to this, I give morphine, so that the effects of the morphine will be apparent before the cocaine is given. This method has proven very satisfactory in my practice, and cocaine poisoning is very, very rarely seen; and while coffee and morphine are antagonistic to each other they are both antagonistic to cocaine and antidote its effects.

I will recite a point in my own experience, and it may be that I have recited it here before, but I simply want this point clearly brought out. Some few years since I had a case in my own family. My son, about ten years of age, had a little enlargement of the turbinates. I sent him to a rhinologist to have his case treated. The nose was swabbed with a ten per cent solution, and
the little lad tumbled over almost at once and it took some few minutes to restore him. A week later I took him at the same hour, viz., 11 A.M. I gave him a sandwich and a cup of coffee; the little lad was not accustomed to coffee; he had the same amount of cocaine; the operation was performed; everything lovely; he had no toxicological symptoms whatever. A week later, at the same hour, I sent him over again, as the first operation was unsuccessfully performed. I was busy and did not go with him, and did not fortify him with the sandwich and coffee. The operation was performed, and he succeeded in reaching the street all right, but it was all he could do to come to my office. My office boy met him and brought him in. I laid him on the floor and performed artificial respiration, sent out for coffee and gave him spirits ammonia and nitrate of amyl, and it took an hour and a half to restore him. I recite this to show the importance of fortifying with coffee.

Dr. Perry: I would like to say a word in regard to the suggestion I made about knowing, or rather studying the temperament before applying anything of this sort, in response to what Dr. Clifford said. I appreciate the difficulty in attempting to study temperament in detail when the patient is in the chair. I only call attention to that fact because I think the effect that cocaine has on different people differs very widely, and differing as it does would produce certainly varying results. I appreciate the fact that a patient may be in a different condition one day to another, and so may also the operator, and the effect of the operator on the patient differ correspondingly; but it seems to me with my experience and from what I have learned from those who had unfortunate experiences, that people of nervous temperaments are worse to treat than others.

Dr. C. J. Murphy: I want to draw attention to the remarks by Dr. Pruyn in regard to peroxide of hydrogen, inasmuch as our newspapers lately have furnished us with new facts in the lines of surgery in regard to the effect of the pressure of gaseous substances within the intercellular tissues. I would like to place some emphasis on the remarks made by Dr. Pruyn. In the injection of peroxide of hydrogen, you would not only have the mechanical effect from the presence of the peroxide, but I believe you will have a mechanical effect by the very breaking up of the peroxide into elements, the formation of gases which would press upon the
tissues and consequently create and multiply the possibility of the anaesthetic condition. At the same time you would have complete rest of the tissues during the time that you are performing the operation. A slight puncture with an aseptic needle relieving the gas, without any possible bad effects.

Dr. J. B. Dicus: I have but one word to say in closing the discussion, and that is in relation to the physiological effects of cocaine on patients. If looked into carefully, I think you will find them as noted in my paper, and these effects of destroying the trophic nerves will result in an abscess; and thus I think abscesses do result from the cocaine itself and not from the infected needle. Many times the abscess will result from an infected needle, and possibly it does; but if care is used it is not likely to result from the needle. I would like to know why you would not get the abscess in other parts of the body as readily as in the mouth if the abscess comes from the infected needle? We know, however, that clinical experience teaches us that we rarely have an abscess in other tissues than the mouth when cocaine is used.

Wisconsin State Dental Society—Twenty-eighth Annual Meeting.

Thursday, July 21, 1898, 2:30 P. M.

[Concluded from page 869.]

Secretary Mueller read the minutes of the last meeting.

Dr. C. C. Chittenden: The report of the master of clinics, as I expected to make it, and intend to make it, is to announce what each operator did, and call upon him to describe his operation; then get whatever discussion may be brought out on the subject for and against the operation as presented. I hoped that Dr. Good would be here, because he was going away on the train, and I promised to give him the first call. Since he is not here I will take something that will not take a great while, that we may take his operation up as soon as he comes in. It is one, I think, that you are very largely interested in, and we will be glad to get all we can from him on it—that is pyorrhœa. I will call on Dr. Pierce, of Janesville, to describe the method of strengthening frail cavity walls and retaining alloy fillings.

Dr. Charles T. Pierce: That clinic of mine was simply putting in an amalgam filling with cement for strengthening the
walls. I dried the cavity, crushed the cement into it, and followed immediately with the amalgam. Then trimmed down the surplus cement, and built up in the ordinary way. It not only retains the filling, but strengthens the walls.

Dr. C. C. Chittenden: Dr. Pierce's operation depended for its success upon the amalgam in its plastic state being forced into the cement in its plastic state so that the amalgam got the benefit of the cement grip on the side walls. It appeared to be a success.

Dr. R. G. Richter: I would like to ask Dr. Pierce what cement he used.

Dr. Charles T. Pierce: I have used different cements. What I am using now is a cement made by Frink & Young.

Dr. R. G. Richter: Phosphate or chloride?

Dr. Charles T. Pierce: Phosphate. The stickiest cement that I can find.

Dr. C. C. Chittenden: Dr. Louis Stephen illustrated a combination of the Logan and Richmond crown.

Dr. L. J. Stephen: I think that I so fully demonstrated the crown that there is very little more to be said about it. The idea of the crown is to combine the advantages both of the Logan and Richmond crowns. The Logan, of course, as you all will admit, I believe, is considered the strongest porcelain crown made. I simply used the crown of the Logan. I cut my pin off through the countersunk portion, and fill out the countersunk part with 22 k. gold. I prepare my floor thoroughly, and pin the same as I would for an ordinary Richmond, soldering the two together. That, I claim, gives you the strength of the Logan crown. It gives you greater strength, because the strain is not centered on two small pins and soldered on the side of the backing, but is centered more at the base of the crown, where the pin is run into the porcelain portion. It gives you that protection which the Richmond gives you, covering the root from all penetrating secretions. I have the crown here, and I will pass it around if you wish.

Dr. C. C. Chittenden: Those who saw that crown, are there any who have anything to say about it? That is what this is for, is discussion by those who saw and investigated the method.

Dr. J. W. Boisole, Black River Falls: I examined Dr. Stephen's crown, and I have nothing to say except that I certainly must compliment Dr. Stephen on his combination of the Richmond and Logan crowns. As far as I can see it makes a crown that in
many respects is superior to the ordinary crown, and in all respects is certainly superior to the Richmond crown. I think the combination is a very happy thought on Dr. Stephen's part. It makes a very beautiful, and I should think a very serviceable piece of work.

President-elect Bennett: Dr. Hart, have you anything to say in regard to this crown?

Dr. R. J. Hart: I think Dr. Boisol has said what I should say. It is a much more beautiful crown than the Richmond. I think it can be made in less time, and that there would be less danger of cracking in the process.

Dr. C. C. Chittenden: I will call on Dr. James E. Baker, Madison. Dr. Baker made an operation in a lower molar, crown and anterior proximal combined, filling with cohesive gold and with an automatic mallet. I will call on Dr. Baker to describe and explain the operation.

Dr. James E. Baker, Madison: The pulp was slightly exposed, and I capped it with cement, and squared the base of the cavity nicely, grooved a little bit around, and cased it with non-cohesive gold, finishing with cohesive. That is about all there was to it.

Dr. Reinhold Maercklein: What kind of cement did you use?

Dr. James E. Baker: I think Sibley's insoluble cement.

Dr. Reinhold Maercklein: Phosphate or chloride?

Dr. James E. Baker: Phosphate.

A Member: I would like to know if the pulp bled any?

Dr. James E. Baker: No, it was only slightly exposed.

Dr. J. W. Boisol: I would like to ask what was the age of the patient in which he had the exposed pulp; and also whether he allowed the oxyphosphate to come in direct contact with the pulp, or whether he put a cushion, or something, under that phosphate.

Dr. James E. Baker: The patient was twenty-five years old. No, I just covered the pulp up. No layer between it at all; just the cement.

Dr. Reinhold Maercklein: Was the cavity thoroughly excavated of all disintegrated particles, or as nearly so as you could?

Dr. James E. Baker: Yes.

Dr. C. C. Chittenden: There were several of these clinics that were ready to be offered here, but we had neither time nor
place, nor opportunity, to get them all in. Dr. Carpenter, of Chicago, made his demonstration yesterday afternoon. Dr. G. V. I. Brown had the examination of some cases of pyorrhoea alveolaris, he having given a practical study of the etiological features of them, and I know that his report will be very interesting to us. I will call on Dr. Brown.

Dr. G. V. I. Brown, Milwaukee: I had submitted to me for examination altogether I think some seven cases, in which pyorrhoea and gingivitis were represented in various different stages. In each case those who saw I think will agree with me that we were able to demonstrate quite conclusively that the etiological factor, so far as each was concerned, was due to an acquired habit of rubbing certain particular teeth together. The cases, without individualizing, very clearly showed that condition. Now to go beyond that into the real etiology of the matter, the cause, perhaps, of the matter, it was apparent that in a number of the cases there had been some irregularity of occlusion, caused, in one or two instances, by having lost some of the molar teeth early in life. Another that was presented showed that the teeth had never fully erupted; never fully come out to complete growth, or else the jaw was so formed that they did not occlude. Another case showed that the wisdom teeth had erupted after the others were in place, and where one corner of this third molar struck a little bit more than the rest of the teeth, enough to cause this tipping. The subject of this habit of the jaws is one I have been working on for the last few years; not alone in connection with pyorrhoea, but perhaps more particularly with various neural disturbances of the face and neck, particularly neuralgic affections and also hyperæsthesia and anæsthesia of certain portions of the face. I found people who have more or less nervous difficulty have this habit more or less. When you consider for a moment the pressure on the jaws, there is from a matter of perhaps a hundred pounds to 270, or even 300 pounds; of course, the more extreme pressure being when the patient is under extreme nervous or unconscious conditions, such as in spasms, or in sleep, we realize that there is a great pressure brought to bear upon that periodental membrane. If that force is distributed upon the other teeth equally, naturally the force upon each particular tooth or root is not very great; but where through some nervous habit there is a twisting of the jaw slightly you have applied on one or two teeth
an unusual pressure. It is not an unusual amount of pressure, but a pressure in an unusual direction, so the tendency is to move those teeth slightly in the sockets. Now, of course, you can have that irritation transmitted directly to the pulp, to the nerve supply through the peridental membrane, and have neuralgic affections, or affections of the muscles, or, as in these cases, have slight motions in the sockets, which produces just the proper degree of peridental inflammation to cause elongation of the tooth, alteration of its position, and the deposit of the lime salts about the neck of the tooth, and ultimately a destruction of the membrane, with perhaps pus, and perhaps no pus. If we have pus we have true pyorrhea alveolaris, which means pus in the socket. If we do not have pus we have a diseased peridental membrane. The condition in these particular seven cases was very marked. They were in different stages of disease, some in very incipient condition, and one in particular very considerably advanced. We got these cases so nicely taken care of by the other clinicians that there was nothing left to be done but to diagnose the original etiological factor, which, of course, rested upon me.

Dr. Reinhold Maercklein: The American Text-Book, of which Dr. Kirk was the author, describes these cases under three different and distinct classes. He calls the pyorrhea cases produced by salivary calculus one kind of pyorrhea cases, and the cases produced by serumal calculus another kind of pyorrhea; and then he speaks of true pyorrhea, which is where you have probably little or no deposit itself. I have seen cases where there was no deposit at all which you could detect. Now, I would like to hear from Dr. Brown under what head, or what class, these cases would come; whether they are simple cases of pyorrhea produced by salivary calculus or serumal calculus, or whether they are real, true cases of pyorrhea without any deposit at all.

Dr. G. V. I. Brown: I am very glad that that question was asked, because it enables me to make clear the particular idea I wish to illustrate. I think that if you catch my idea clearly you all see that it opens a way to understand the subject without confusing the two classes that we may say are represented by Dr. Kirk and Dr. Pierce and certain other Philadelphians, who believe that nearly all of these cases are caused by uric acid diathesis, by the tendency to the deposit of lime salts about the neck of the tooth, due to that particular cause, even claiming to have some specimens
which show a large deposit of this serumal calculus about the apex of the tooth, without connection at least through the gingival margin, as against the theory of Dr. Talbot and others, who believe that that is not the case. Dr. Talbot has demonstrated at great expense, by the very best pathological assistants he could get, that the deposit about these teeth did not always—in fact, in a majority of cases did not show a uric acid reaction; therefore it was unfair to claim, at least in a majority of such cases, that you had a uric acid deposit, or a deposit caused by that diathesis. He showed further that the inflammatory condition, the diseased condition at the membrane around the necks of these teeth, passed beyond that point where you are ordinarily able to observe it. In other words, our observations cease largely at the bottom of the pocket. Beyond that, by cross sections, through the root, he demonstrated that in advance of what we ordinarily recognize as the progress of the disease, we had a condition of inflammation, a change in the cell structure of that membrane going on. Therefore his conclusion, very logically, was that these deposits were rather a result than the cause of the inflammation. Now if that be true of course you have many products of inflammation. You may have pus as a product of inflammation. You may have this deposit, perhaps, as a product of inflammation. You may have simply a destruction of the membrane which doubtless we all recognize as having seen, unaccompanied by pus, and unaccompanied by a deposit; simply the death of the membrane, similar to that which we recognize as senile gangrene. In the soft tissues we have a moist gangrene and dry gangrene. It results the same, but the symptoms are entirely distinct. The condition is distinct. It is altogether different, but you have one essential condition, the death of the part. That is the condition which we face, as I believe it, when we have a pyorrhoeal case to treat. We are in the face of a condition where we have a death of the membrane to some extent. It is dead as far as the progress of the disease has gone. It is ready to die, perhaps, a little beyond that. We can only correct it just as we can correct this tendency. Now, as has been suggested by Dr. Maercklein, and it is a most important point, I think, without wasting time to consider whether you have deposits, whether you have pus, whether you have a death of the membrane, without either of these, if we bear in mind clearly that you have a condition which
is the result of irritation and a slow degree of inflammation causing the death of that membrane, you have then a simple condition to treat. We are all accustomed to treating conditions in which there is a discharge of pus. That is a comparatively simple matter. We are accustomed to treat other conditions which represent the conditions which we have to face in this disease, but the essential thing is to remove the source of the irritation. If you have a deposit, naturally your success will depend upon the skill with which you can remove every particle, if possible, of that deposit. If you have no deposit, your skill will depend upon recognizing the irritation which caused that without a deposit. I have no doubt all of us have seen cases where there have been extractions of teeth caused by pyorrhoea where there was not a particle of deposit. I have seen other cases where there was no pus and no deposit, and those are the ones which we fear most.

Cases with a deposit, if handled successfully, are, in my opinion, the least troublesome pyorrhoea cases to treat. Therefore, I look upon this as, firstly, the result of some constant irritation; secondly, the result of a degree of inflammation of some character. It may cause a thickening of the membrane and a forcing of the tooth out, and may cause a destruction of the tooth. As the result of the inflammation you may have a destruction of the normal tissue. So that the question as to whether there are deposits or are not, is not essential to the treatment of the disease.

Dr. C. C. Chittenden: You are right directly in the line of the work of Dr. Good. Dr. Good is obliged to take the train very soon, and Dr. Brown's etiological report here on the subject of pyorrhoea alveolaris will be supplemented very properly by a report from Dr. Good on his clinic in two or three cases which he had here yesterday and to-day.

Dr. Robert Good, Chicago: I was trying to remove all deposits from around the roots of the teeth, and by so doing expected to accomplish the cure of the pyorrhoea. In cases where there is a flow of pus, if you succeed in removing all the deposits you will have no more discharge of pus. If you do have a discharge of pus you may make up your mind that you have not all the deposits removed. That is one thing that we have got to do in order to accomplish a cure of pyorrhoea, is to get rid of that deposit. A great many cases will take care of themselves after that; they do not need any further treatment. Of course, take a case of long standing, that is very, very bad, sometimes they
need further treatment in the way of medication, and it is a good thing to massage the gums in a case like that with the ends of the fingers, to help the circulation.

Dr. Reinhold Maercklein: I will state right here that I have cured with this condition hundreds of cases. I find cases and cure them almost daily and weekly. Where I find pyorrhœa produced by irritation brought on by calculous deposit, I simply remove it. A great many of the cases take care of themselves. But the cases that I find, as Dr. Brown stated, where there is no deposit, and a discharge of pus, I have failed to cure; and I have seen others fail, where they have used all kinds and methods of treatment. They carry treatment along probably for years, and finally the last resort is the loss of the tooth. There is one thing I would like to ask the doctor here. The American Text-book, Dr. Kirk's work on operative dentistry, a new work that has been out a year, classifies these pyorrhœa cases under three heads. Now I would like to ask of the doctor under what head he classifies these cases; whether they are simply cases of pyorrhœa brought on by deposits of salivary calculus, or whether they are a true case of pyorrhœa where there is no deposit at all, but a discharge of pus from all around the tooth.

Dr. Robert Good: I do not think Dr. Maercklein, or any one else, ever saw a case of pyorrhœa where there was not a deposit. Furthermore, I do not think you ever will. The reason you thought the deposit was not there was because you did not have the sense of touch to detect it; but you will always find it there. When there is destruction of tissue you may not think there is pus there. There is not any pus in sight, but the pus forms, and is washed away immediately. It does not collect. You will find that in lots of cases where the gum is receding. There may not be a pocket there to amount to anything, but I believe there is a formation of pus there, but it is washed away; it is not stored up so that we can detect it when we press on the gum, or make an examination. Those cases you speak of, where they run along for years, it is simply because they do not remove the deposit. It is a pyorrhœal deposit. It is not a serumal or calcareous deposit. The deposit may come, a great deal of it, from the alveolar structure itself, the wasting away of it may form the deposit.
Dr. Reinhold Maercklein: Dr. Brown stated a minute ago that he has seen teeth extracted, and he was unable, and other practitioners, to discover any deposit on the tooth. These were cases where they had not simply operated on the tooth, but the tooth had been removed because it was about useless to treat it. I will probably admit that my sense of touch is not as finely developed as a great many others; but when there is an amount of deposit there so that you can feel it I generally find it pretty well. I can cure hundreds of cases of pyorrhœa, as I look at it and understand it, and as we understand it here at the present time, with very simple treatment, and a great many cases with no treatment at all, but simply removing the deposit. The rest will take care of itself. I have simply removed the deposit and polished up the tooth, and given it no treatment at all, and in a week's time there was no more pyorrhœa.

Dr. J. W. Boisol: I must take issue with Dr. Good. He has stated that pyorrhœa did not exist without a deposit. I have had cases—perhaps it was not pyorrhœa, but I have diagnosed it as pyorrhœa—where pus was exuding from all around the tooth. I have treated it for months, and been unable to cure it, and as a last resort have extracted that tooth. I have found no deposit on the tooth; have found the tooth was entirely denuded of its periodentum, and yet immediately after the extracting and washing out of the socket the trouble ceased. Perhaps it was not pyorrhœa, but from what I have been able to learn I have diagnosed it as such.

Dr. Robert Good: I still stick to my statement. If anybody can show me a case of pyorrhœa where there is no deposit, it would be a great favor to me.

Dr. G. V. I. Brown: I would like to call attention to just one case I think that is of record. Two years ago, I think it was, when they had the meeting at Chicago, I was supposed to give a clinic on pyorrhœa. It was a difficult matter to do. I concluded I would consolidate my clinic, so that I could have it in such form that the other people could do part of the work. I gathered among my friends as many teeth as I could find that had been extracted for pyorrhœa. I took the teeth, which in most cases had deposits, and packed a little bit of cotton batting about them. I encased them in plaster of Paris, and afterward removed the cotton. At the gum line I placed a flexible rubber tube all around the neck of
the tooth, and encased it in plaster. The cotton represented such absorption as would have taken place. I gave those teeth to various men in Chicago—men well known to you all—and they were to be cleaned according to their various methods. They were entirely dependent on this sense of touch which Dr. Good has emphasized. They could not see. They had to slip the instrument down between the rubber tubing and the tooth, and find the form of the pocket and the deposit with the instrument, just as you would have to do in life. There was one central incisor among those which I had myself extracted, and which I took out bathed in pus. It was as typical a case of pyorrhea as one could find. It was typical according to Dr. Kirk and the rest of them; according to their idea of the uric acid diathesis, because the patient was a great sufferer from rheumatism, and had lost the other teeth in the same way. That tooth had the membrane thickened and deadened, just as you would expect to find it from pus, but without the slightest particle of deposit. That tooth got into Dr. Pruyn's hands. You ask Dr. Pruyn what trouble he had with that tooth. He worked all day, and he took it home at night, and got it beautifully cleaned. There was no deposit, and never had been. That membrane was thickened and deadened, and forced downward and outward very much as the one we had the other day, but there was no deposit. I think that case alone would prove that it was simply another form of inflammation. In citing this case I only cite it to avoid error, and not to draw attention away from the essential idea, that when you do have these deposits the essential thing nearly always is to get it all removed. Without removing that thoroughly you cannot have the case cured. You will cure cases just in proportion as you have the skill and the ability to remove that deposit. But I go one step further. I want the original cause to be removed, the malocclusion.

Dr. Robert Good: Yes, that is often the case. Anything that will cause local irritation should be removed.

Dr. Reinhold Maercklein: I would like to ask Dr. Good, in malocclusion, why the pocket generally forms on one side of that tooth, when the malocclusion is at the bottom of it? Generally in such cases you have the pocket forming on one side. Why does not it take in the entire surrounding of the tooth?

Dr. Robert Good: I would like to have your answer to that.

Dr. Reinhold Maercklein: I am unable to answer it.
Dr. Robert Good: Well, I think I am, too.
Dr. C. C. Chittenden: I think Dr. Brown can answer that.
Dr. G. V. I. Brown: I think a little study of that matter will make it very clear. We know when we are regulating teeth—and no one knows better than Dr. Maercklein—that it is in the direction of the side of the pressure that you have the absorption. You put pressure upon any tooth and you absorb upon the side opposite to the point of pressure. When you have occlusion in that way and you have the tooth move slightly back and forth, the pressure is made in one direction. It is not moved and held there, but moved a little and allowed to come back. You have absorption going on as the tooth comes back slightly and you have naturally a pocket.

Dr. Robert Good: Why would not we have those pockets in regulating teeth?
Dr. G. V. I. Brown: Because when you move with the regulating appliance you move it steadily; you are not irritating it with a slight motion.

Dr. Reinhold Maercklein: According to that statement you would have two pockets. It is the absorbing process and not filling in back of it; and if that wiggles, you have two pockets. But in the great majority of cases you have the pocket on one side.

Dr. G. V. I. Brown: I do not think that would follow at all. The irritation is on the side, principally, opposite to the point of the application of the force. It does not follow at all that it is on the other side because the natural tissue would fill in very readily. We do frequently have, as a secondary cause, a deposit form on that side. One of the clearest points in considering the diagnosis is to notice the side on which we have the pocket and look for the application of pressure in a different direction. I was able to decide which way the patient bit by looking at the gums.

Dr. Robert Good: You do not mean to say that most cases of pyorrhoea are caused by that, from malocclusion?

Dr. G. V. I. Brown: These cases here I think every one of them were caused by that.

Dr. Robert Good: Most pyorrhoea cases you do not mean to say are caused by malocclusion?

Dr. G. V. I. Brown: I do not want to be led into any such statement. I think we are traveling in that direction, but the statement I make is this: You have malocclusion as a factor in
every case of pyorrhœa. Whether it is always an original feature I am not able to state. I gave the same clinic I gave in Minnesota, and we had a vast number of patients, and in all those cases it was just the same, most of them cases in my practice.

Dr. Robert Good: I think there could be a hundred different causes of the beginning of pyorrhœa, that is, in the way of local irritation; but I think I have seen cases where there was malocclusion by some of the teeth, and the teeth adjoining them had pyorrhœa, and the teeth that had the malocclusion were not affected as badly as the ones beside them.

Dr. G. V. I. Brown: How do you know that? It is not the natural bite. It is an artificial occlusion.

Dr. Robert Good: I have not looked into that as much as you have. I will take note of it hereafter, and hope to be in better position next time to talk to you about it. The thing that we want to do is to learn how to cure it; then we can find out the causes of it later on. We were a long time finding out the cause of caries, but we were able to stop it a good many years before we knew its cause. I think that is the case with pyorrhœa. If we can only get to cure it, that is the main point. The only way to do that is to keep continually pecking at it. You have got to have that educated sense of touch, and to depend on that entirely. After these deposits are loosened you should always succeed in removing them from the pocket, because if you do not they will again become attached. Always get them out. Then if the tooth is loose it should be ligated. I worked on a gentleman this morning who had had a great many men examine his tooth, and they all told him there was no deposit. I found plenty of deposit. I spent over an hour and a half on that one lateral incisor. He said he had a number of men examine that tooth, and they told him there was nothing there. You will find thousands of cases like that. It all depends, as Dr. Younger says, upon being able to "see with the ends of our fingers." If anybody asks him how he succeeds with his cases he says: "There is the secret right there," indicating the ends of his fingers.

Dr. J. W. Boisol: I would like to ask Dr. Good what he uses for washing out the pockets?

Dr. Robert Good: In my office I use tar water and hamamelis, half and half. I always have it warm. In making the application of nitric acid, I use the oleo-stearate of zinc. Vaseline,
and things like that, are disagreeable to many patients. It is always a nice thing to roll up some absorbent cotton, or something of that nature, to try and protect the tongue and lips, and to keep the acid from getting into the mouth. I also do that with cocaine. I have always tried to catch it in the bibulous paper, and not let it get into the mouth. I think we should keep the taste of all drugs away from the patient as much as possible.

Dr. C. C. Chittenden: As I understood Dr. Good's theory of the treatment of pyorrhœa, he attempted to show, as Dr. Younger claims, that all that it is necessary to do, where you have serumal calculus all along the roots of the teeth, anywhere from the cervical margin to the apex, is to absolutely mechanically remove every particle of foreign deposit there of a calculous nature, and wash and clean out every bit of it; ligate the tooth if loosened so that it will be held firmly in place; hold it exactly in position so that it will have no motion, and give one treatment of nitric acid to the pocket; for what purpose I do not know.

Dr. Robert Good: To form an attachment between the soft tissues and the tooth substance, I use chemically pure nitric acid.

Dr. C. C. Chittenden: The whole demonstration was to give the method which is claimed by Dr. Younger, and which Dr. Good himself has had considerable experience in, as he says with considerable success; the absolute successful treatment by mechanical means of pyorrhœa alveolaris. To me he demonstrated it so well that I shall take great pleasure in watching the two cases until I see him again. Another year I hope he will come to Madison, and we will have those cases "on tap" here. That was the result of the operation, and what he undertook to do as I saw it.

Dr. L. J. Stephan, Milwaukee: After using the nitric acid you follow it with oleo-stearate of zinc?

Dr. Robert Good: No, I put that on the lips, so the acid will not burn them in any way.

Dr. T. B. Fletcher: Do you use the nitric acid full strength?

Dr. Robert Good: Yes, chemically pure. If you have got anything else you think is better, use it.

Dr. C. C. Chittenden: There was one thing I saw Dr. Good use was the small syringe which he told me was a ten or fifteen per cent solution of cocaine, which he forced into the
pockets, letting the surplus be caught up by some bibulous paper, to dull the exceeding sensitiveness of the part. He says in no instance has he had any absorption, because none of it was sent into the circulation. It was simply put into the pockets, and there made its local surface action.

Dr. Robert Good: There has never been enough absorption to cause any bad effects. I never get it into the gum. I simply put it into the pocket, and wait a few minutes until I think the parts are anæsthetized.

President-elect C. W. Bennett: This report has been very interesting, I think, and beneficial to us all. If there is nothing further to be said on the subject we will have to pass it.

Dr. C. C. Chittenden: I would like to rise to a question of privilege. Dr. Good is about leaving us on this 3:50 train, and I feel that if we have had nothing else the information we have received through him in connection with Dr. Brown and Dr. Campbell, who are our own members, has amply repaid us for all the trouble that this session has caused. Dr. Good is a gentleman who does not reside in this State, and who is not entitled to active membership in this society. I make the proposition, and I offer the motion here now, that he at this time be declared unanimously an honorary member of this society by a rising vote.

Dr. J. W. Boisol: I would like to second that, and add the name of Dr. Carpenter, also.

President-elect C. W. Bennett: Gentlemen, you have heard the motion. All those in favor of it will signify it by rising.

Carried unanimously.

Dr. Robert Good: I appreciate this very much. It is certainly very kind of you. I was not expecting any such reception as this. I came up here as I told Dr. Richter, with the idea that if I could show anybody anything, or teach them anything about pyorrhœa, I would go a long way to do it; and if any of you come to Chicago and I can show you anything, all you have got to do is to come to my office and it will be yours while you are there. With that I will say good-bye to you.

Dr. C. C. Chittenden: We will now hear from Dr. B. G. Maercklein.

Dr. B. G. Maercklein: I have nothing particular to report on my clinic. I think most of you saw it. The only features that are perhaps of interest in the case are the fact that the tooth has
been filled a number of times unsuccessfully. Now the question arises, what caused those fillings to fail so many times in succession? In my estimation the principal cause was, judging from the appearance of the tooth as I saw it, that in an attempt to anchor the filling firmly there was a tendency to make too deep undercuts. It makes the edges of the enamel frail, and they will invariably break away and the filling will loosen up. Another point I may state: The filling, as I removed it, was not condensed as it ought to be. It was very loosely condensed, especially where the greatest strain would be brought to bear upon it. Another feature in the way I operate is that in that filling I make my anchorages in the basilar ridge and on the labial surface, close to the neck of the tooth. I have hardly any undercuts at any time in that class of fillings at the incising surface. This one, the filling extending over one-half of the width of the tooth, made it so wide that the leverage brought on the distal surface would be so great that you could hardly get an anchorage strong enough at the basilar ridge and labial surface to stand the strain brought upon it. I therefore clipped off the remaining portion of the mesial surface on the cutting edge; made a very small groove in the dentine, in the middle of it, shallow, without any undercut, beveled the edges of the enamel, and the shape of the tooth slightly more at the mesial surface than at the median line, and as I restored the filling from the neck of the tooth downward, when I came on a level with that little groove I gradually filled the groove, and from that extended the gold over the entire surface of the tooth. The object is to bind the filling across the incising surface. Any strain that is brought to bear upon that tooth is brought upon the full incising surface. The beveling over the enamel is sufficient to allow the gold to grasp it cap-like, and you need never be afraid of its slipping. The beveling also toward the mesial side is sufficient to prevent its sliding or giving way toward the distal surface; and that filling will stand almost any strain that a normal tooth would stand. There is no danger of breaking or chipping the edge. The dangerous point in that tooth was the severe cracks in the enamel; one running at the neck of the tooth on the labial surface diagonally inward and upward, at the point where I made my greatest undercut to hold my filling in under. The other runs almost longitudinally in the line of curvature of the cavity. That I have to allow to remain—in fact, both. The
last check or crack in the enamel is not to be considered as a dangerous point, because that enamel is supported underneath by sound, healthy dentine. The edge of the enamel being beveled, and the gold filled solid against it, will hold that in place. I have no fear of that ever checking or breaking or giving away. That is about all I have to say on that subject.

Dr. C. C. Chittenden: Dr. Seeger had a very interesting demonstration of removal of bridge work; I think we all saw it.

Dr. Adolph Gropper demonstrated a case which you all have seen in my mouth. He began it yesterday morning, and it has given me practically not one bit of discomfort, and not as much pain as to stick yourself with a pin. I ate my dinner to-day with great comfort, on the left side of the mouth, where for years I have been unable to chew at all.

A Member (to Dr. Maercklein): What was the foil used in that filling?

Dr. B. G. Maercklein: Ney's cohesive, No. 4. In my practice I put two leaves together and fold it over twice, making it what you might term No. 32, or eight thicknesses of No. 4 foil. You fold the ribbon almost the width of my two fingers, and cut it in small, narrow strips, crosswise.

A Member: What is your method of retention, if the tooth had been very slender labiolingually, so that you could not have cut that groove in the dentine on the cutting edge?

Dr. B. G. Maercklein: You can always cut it off enough so as to get a slight groove. By beveling the edges you can run enough gold over the edges in exactly the same manner. You have to build it out larger, and cut it off outside and inside until your sharp edges conform to the tooth. You cut off the tooth until you get to a stronger surface of the tooth, cut it off behind, and build it out with gold. The gold will be stronger than the enamel.

Dr. R. G. Richter: Under the head of miscellaneous business I would like to offer a resolution:

Resolved, That whereas the All Wise Father in his Providence saw fit to suddenly take from this life our fellow member and President of the Southwestern Wisconsin Dental Society, Dr. J. E. Crane; Therefore be it

Resolved, That we, as a society, have lost a genial and useful member.

Resolved, That we hereby tender the family our sincere sympathy in their late bereavement.
Resolved, That a copy of these resolutions be spread upon the minutes of this meeting.

Dr. W. H. Chilson: I move the adoption of that resolution.

Carried.

Secretary W. H. Mueller: I have a letter here from Dr. Thos. J. Borland, who wishes me to apologize for him, that he was unable to be present. He fully intended to carry out his part of the programme, but unforeseen circumstances would not permit.

President-elect C. W. Bennett: I believe it falls to the lot of the president to nominate a member of the Board of Censors, who is to be confirmed by a two-thirds vote. I will nominate for that office Dr. Snyder, of Baraboo.

Dr. Snyder was hereupon elected by unanimous vote.

President-elect C. W. Bennett: There is the election of representatives to the National Association that meets at Omaha. We are entitled to ten members I think; about one to every ten members of the society. Shall we elect those by ballot to-day, or give the president and secretary the power of appointing them?

Dr. C. C. Chittenden: I think the proper way and the best way would be to authorize the president and secretary to issue certificates to any members of this society who intend going there, who are not members of the National Association. I am going there, but I am already a member, and on that basis, any who are members of the National Association do not need to be sent from here. We want to have as great a representation as possible, and I suggest that if the president and secretary are so authorized that any member of this society who thinks of going there take a certificate before he starts. He can then have the privileges of the floor. By paying $5 he can be a permanent member of the National Dental Association. I have been a member of that association almost twenty-eight years, and I never shall regret it as long as I live. I always make it a point to get there if possible.

I move that the president and secretary be empowered to issue certificates in that way.

Seconded.

Dr. G. V. I. Brown; I would like to amend that motion and add to it the American Medical Association, Section of Stomatology.

Dr. C. C. Chittenden: I accept the amendment.

Carried.
Dr. R. G. Richter: Before we adjourn, Dr. Boisol has an interesting case I would like him to report upon.

Dr. J. W. Boisol: Mr. President: Just before coming to the last meeting of the society—in fact, it was on the Sunday preceding our last annual meeting—I was out driving, and drove past my residence. My wife heard me coming, and came out and told me that the Rev. Veron was there and wanted to see me. He is the Methodist minister located in our city. I drove over to the Rev. Veron's house, and he told me that his little daughter, a very beautiful child, about twelve years of age, had been thrown out of a buggy the evening before, and that the two centrals and the right lateral had been, as he expressed it, knocked out of her mouth. I asked him if he had the teeth. He said: "No; they are out there in the country some four or five miles, where the accident happened." I immediately told him that I could not do anything until he would get me those teeth; that I would like very much if he would go out the first thing the following morning and get those teeth and bring them to my office as soon as possible. He went out in the morning quite early and got the teeth. Along about 9 o'clock he drove up to my office and had the three teeth. I found that caries had attacked the teeth on the proximal surface. I cleaned the cavities out, as I would if the teeth had been in the mouth. I removed the pulp tissue, cleansed the roots and canals and filled the root canals with chloro-percha. Now, the chloro-percha preparation I use is not the ordinary gutta-percha dissolved in chloroform. I use as a solvent of the gutta-percha one part eucalyptus, one part oil of cassia and two parts of chloroform. I cut off from the apex of the roots about half a line. I denuded the roots entirely of their pericementum, put the teeth into a bath of borolyptol, filling the sockets with borolyptol, inserted the teeth in their sockets, made a gutta-percha cushion for the teeth, and held that gutta-percha cushion on the teeth with a piece of thin wood taken from the lid of a crystal-gold box. I bound it on by a bandage over the head. That was on Monday. I think I left on Monday evening to come down here to the State society. On Friday when I got back I made some gold bands to fit those incisors. I also made bands to fit the first bicuspids. Now, the bands which were fitted to the incisors I soldered to tubes running across the longitudinal axis of the teeth. I soldered tubes also on to the bands on the bicuspids. I then fitted a piece of gold wire around through those
tubes and cemented the bands on to the incisors, and the bands on to the bicuspids, using that as a mode of retaining those incisors in position.

I looked at the case quite frequently for a short time, and then I decided that everything was progressing nicely, and I did not look after it much. The Methodist conference saw fit to send the minister down to Kilbourn City at their next meeting, and he left Black River Falls either very late in September or early in October. I told him I thought it would be better if those bands were allowed to remain for a month longer, and he could have the dentist in Kilbourn City remove those bands. I had spoken last year to several here, and they requested that I should make a report of it at this meeting. I therefore wrote to the father of the child to tell me the condition of things, and here is his reply:

"The dentist here was of the opinion that the bands around Evelyn's teeth had better remain on a little longer than you said they should. However, they were removed in January, and now you would not know that her teeth had ever been knocked out. When I remember that they lay in the road covered with dust from Saturday evening until Monday noon, and were then put back, I am amazed. It was on her twelfth birthday that the accident occurred, just a year ago. For the last six months she has eaten hard things, just as she used to do." So that I feel that that case was a complete success.

Dr. C. C. Chittenden: How much did you get for it?

Dr. J. W. Boisol: I performed the service gratuitously.

Dr. Owen: I move that the society extend a vote of thanks to the resident dentists of Madison for the elegant entertainment we received last evening, and the general courtesy shown us during the session.

Seconded and carried by a rising vote.

On motion, adjourned to meet in Madison, July, 1899.
The Dental Review.
Devoted to the Advancement of Dental Science.
Published Monthly.

Editor: A. W. HARLAN, M. D., D. D. S.
Associate Editor: A. E. Morey, Ph. B., D. D. S.

The Close of the Volume.

With this issue Volume XII. is finished. We trust the Dental Review has become of so much value that all old subscribers will renew their subscriptions and many new ones will be added. This journal is the official organ of the Chicago Dental Society, the Odontographic Society, the Odontological Society, Illinois State, Wisconsin State, Minnesota State, St. Louis Dental, Northern Illinois Dental Society, and it has occasional contributions from other societies. Several alumni associations send us their papers and discussions. Can you afford to be without the Dental Review for 1899?

Explanation.

In a recent issue we stated that the papers of the "American Dental Society of Europe" would be published in the Dental Review, but we learn from Dr. W. Mitchell, of London, that they have been sent to another journal after they had been promised to us. This is the reason why we will not publish the papers. We do not republish papers. They must be ours exclusively or we do not use them.

Merry Christmas and Happy New Year.

In this era of good feeling and felicitation we desire to extend our good wishes for a Merry Christmas and a prosperous New Year. All of the professions have been suffering in the United States for four or five years on account of hard times and enforced habits of economy, but the worst of financial depression is over and the close of our war has given a good impetus to business enter-
prises. This latter always means good times for the dentist and his patient. There is so much to be done that has been left undone for a few years that we believe all will feel the tide of prosperity that is sweeping over this country of ours and we hope that every reader of the Dental Review will be able to buy what he wants of new books, instruments, houses, lands, and take a six weeks' vacation in 1899, and still have a bank account. A Merry Christmas to all.

Dental Congress in Paris, 1900.

We judge from some private letters that the work of organizing a congress in 1900 is progressing favorably and that it will be quite the equal if not superior to the congress of 1893 in Chicago. The committee appointed at Omaha by the National Dental Association will hold a meeting early in 1899 to lay out a plan of securing papers and discussions from the United States. Any suggestions from correspondents relating to clinics, or papers to be read at Paris addressed to A. W. Harlan, 1000 Masonic Temple, Chicago, will be laid before the committee at its first meeting. Due notice of this meeting will be sent through the dental journals.

A Midwinter Meeting.

It is the purpose of the Chicago Dental Society to hold a meeting in Chicago on February 3 and 4 to celebrate the thirty-fifth anniversary of the organization of the society. This meeting will provide two or three papers to be read by prominent members of the profession, and about sixty clinics on various methods of practice by as many operators. As usual, it is expected that a large attendance of dentists will be present to make this a memorable affair. For several years, beginning in 1884, or a little earlier, midwinter meetings have been held in the West. Two of these meetings were held in St. Louis, but latterly they have been held in Chicago.

We believe that there can be no question of the utility of such gatherings, as none of the national or quasi-national meetings offer clinics as an inducement to attend their sessions. We hope for a large attendance, and every one will be assured of a cordial welcome.
DOMESTIC CORRESPONDENCE.

LETTER FROM ONLOOKER RE FACULTY ASSOCIATION.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—As a looker on, though not entitled to a vote, at the late meeting of the Dental Faculties Association in Omaha, the undersigned was impressed with the thought that surely the truly good must seek other spheres than this before perfection is attained. Here are the chiefs of dental education, assembled in council of war; they discuss the physical and mental caliber of the expected new recruit, the ignorant student, as though he were the only enemy involved in the coming scrimmage; they pass "resolutions" that hereafter, when he enters their several camps, he must come prepared to at once understand the tremendously big words employed therein, and to put in three years of at least seven months each at hard drill before he be permitted to join the ranks of the regular army of dental occupation, all of which is proper and just to everybody concerned; but is the gradual raising of the standard of dental education the only object of the association? Are the members themselves supposed to be so much like Cæsar's wife that a code of ethics should not be adopted for their guidance, by which the peculiar business methods of conducting some dental colleges might be modified?

As things are now, when a college is admitted to membership, and almost any new "old thing" can be so admitted, it at once becomes the peer of the best in the general estimation of the profession and State boards. It "complies with all the rules aforesaid" in its catalogue, and then does pretty much as it pleases, knowing that the mere official cloak of membership in the association can cover many sins of skullduggery. And thus—"Oh, the pity of it, Iago"—the College Faculties Association is used as the responsible protector, the cat's paw of what otherwise would be, on its own merits, a disreputable institution.

The college should be the ideal exemplar of the "golden rule," the symbolized embodiment of the letter and spirit of professional ethics. But such is not the rule; it is more apparent "the enlistment of self-interest" only, "on the side of falsity." Sending out undergraduates on commission to meet expected students on incoming railway trains, and steering the unsuspecting to "the college that will graduate you sure," "pay down some cash and
give your note for the balance," "and although our college is a member of the Faculties Association in which, perhaps, one of our professors is an officer, or the leading member of a committee, we will not be too strict with you." Or offering special inducements, which may be too numerous to mention, to the late freshmen and juniors of other colleges., etc., ad nauseam.

When his alma mater presents such a hustling example of the mercenary spirit, it would be surprising, indeed, if the recent graduate did not try to imitate such a distinguished and successful prototype.

Gentlemen of the Dental College Faculties Association, "Noblesse oblige." JESSE.

PRACTICAL NOTES.

WERE SILVER PALATES MADE IN 1654? YES, THEY WERE.


The question, were silver palates made as early as 1654, suggested in the last paragraph on page 873 of the November number of the Review (1898), can be positively answered in the affirmative by any one having access to the surgical works of Ambroise Paré, to be found in most medical libraries. (When will we be able to say, dental libraries? How many are there accessible to members of the dental profession in the United States, where works such as this may be consulted?) In my copy,* a Latin edition published at Frankfort-on-the-Main, and dated 1594, page 650, paragraph D, chapter 4, of book 22, reads as follows:

DE PALATI LACUNA REPLENDA.

Cause & no-x & palati desperditi. Non raro sit ut bombat dulce igniuomae missili globo ossis palati portio fracta, vel virulente luis carie exesa procidat, quod sit vt minus expressè loquatur aegri, sed obscurius & turbidius: his etiam opis aliquid adserre arte nostra operæpretium duximus. Id siet repleta palati lacuna, argentea vel aurea lamina paulo maiore quam ipsa lucuna sit. Caeterum crassitie quæ aurei mumi solati cressitiem non excedat, figura testudinea ad eius exterioriorem, quæ scilicet cerebrum versus ponenda est partem religata hærebit spongiosa, quæ max humore a cerebro stillantè vbi se ingurgitarit, sic lacunam, tumidior facta, implebit, vt excidere lamina ipsa nequeat, sed per se hæreat, stetq; tanquam defixa. Horum instrumentorum seu laminarum figura est eiusmodi, quorum certum & qualem enerraui vsum, non vno sed frequenti experimento comprobaui in bellis Transalpinis.

*Opera Chirurgico Ambrosii Paræi, Galliarvm Regis Primarii, et Parisiensis Chirurgi. Francofoevri ad Moenvm, apud M.D.XCIII.
Translation—Concerning the Replacing of a Lost Palate.

Cause and Effect of a Lost Palate. It is not infrequent that the palatal bone is fractured by a globular missile from firearms, or as the result of virulent caries it is destroyed and falls away. When this happens, as a result of its loss, speech becomes imperfect and indistinct. To relieve this we call art to the assistance of our profession and remedy it by replacing the lost palate with a gold or silver plate a little larger than the opening; in thickness it should not exceed that of an ordinary gold coin, and in figure, of the shape of the exterior of a tortoise shell, on which, of course on the side turned toward the brain, is fastened, to hold it, a spongy substance, which soon, drop by drop, fills itself with humors from the head which cause it to swell up and occupy the place of the lost tissue, so that it is firmly held; it clings, so as to speak, of its own accord and is rendered immovable. The usefulness of this instrument or plate which I have here described, I have proved not once, but many times by experiments during the Transalpine wars.

This account is accompanied by three cuts illustrating palates to be held by a spongy substance and two shaped very much like a round collar button or stud. Such forms are frequently seen illustrated in old dental and medical works.*

Paré’s dedication of the completed work is dated 1579; when this particular book was written I cannot say; nor is it in this instance important, as the writer of “The Deluge” would have been well in bounds had the unfortunate captain been supplied with a silver palate a hundred years before.

The Ideal Laboratory.†

By William W. Belcher, D. D. S., Rochester, N. Y.

“'The task he undertakes
Is num'ring sands, and drinking oceans dry.'

Shakespeare: Richard II.

In the fitting up of an office the laboratory is the prime essential.

We could get along without a reception room, a modern chair or cabinet, but not a laboratory. However much pride a man may take in fitting up his office with modern furniture, palms and

*A somewhat different version of the above may be found, with illustrations faithfully copied from Paré’s work, in Vol. II., American System of Dentistry, page 1056, Figs. 967, 968.

†Read before the Rochester Dental Society.
pictures, electric engine, fountain spittoon, etc., the one spot dear to him is the laboratory. During business hours his office is a public place; the fine curtains and furniture are not for him. The patient's idea of the successful dentist is, that he is always busy and even should he have the coveted leisure to enjoy them, he feels that it has an unbusinesslike appearance to be seen in his reception room. The laboratory is his; a retiring room, the one place where he can feel at home and say to the dear public at the workroom door: Thus far and no farther. See to it that this privacy is maintained; that it is not converted into a lounging or smoking place for your friends and acquaintances.

And yet, the laboratory in most offices is a place to avoid; at least it would seem so from the fact that when you call on another dentist he is not anxious to have you see that department.

This is not as it should be; no part of our office should receive more care nor be better fitted with labor saving devices.

Some one has said: "Show me a man's laboratory and I will tell you what kind of a dentist he is." If we were to estimate a man by his surroundings I am afraid that the opinion reached from a survey of our work rooms, would be a poor one, and at times quite undeserved. The laboratory fittings, in a majority of offices, I venture to say, could be purchased for a sum not exceeding fifty dollars. This was not true in the beginning of dentistry; the laboratory in the past was a detail of apparatus; forges, anvils, furnaces, retorts, rolling mills and swedging table, cost money and entered largely in the expense of furnishings.

The laboratory of to-day is an important part of every office. At a time when prosthetic dentistry and with it, the laboratory was, it seemed, destined to only a memory in the better class of offices, came the modern crown and bridge work and laterally regulating has played an important part in the modern rejuvenation of the laboratory, so that the dentist, even if he would, cannot rid himself of this adjunct.

Before entering practice for myself I enjoyed a somewhat varied career, as assistant. I have known all sorts and conditions of laboratories. I can remember one man who did his vulcanizing in a coal stove, changing the position as it gradually neared the "320° mark;" there was another man who did his plate work on a Brussels carpet, a black walnut cabinet that was everything but a folding bed, holding the laboratory utensils. This
was placed near the operating chair and when one learned to work neatly, served its purpose well.

I have worked in one hall bedroom and one closet; the bedroom had a small window; the closet none. You went in and closed the door, lighted the gas and necessarily worked in a standing position; the grinding and polishing was done at the chair on an ordinary lathe with a covered top. The vulcanizer was in the dentist’s residence a mile from the office, necessitating a trip back and forth when the case was not flanked in time for the evening car homeward; but the dentist—and if you will pardon the personal part—his assistant, rising superior to the environments, did some good work in this laboratory.

One laboratory I have heard of, this in Chicago, where room space costs money, was placed midway between the ceiling and the floor over the operating room, connected by a winding stairway on the Eggleston and Archer plan. The ceiling was a low one, and necessitated that the dentist and his assistants, when standing, should assume a stooping posture. Then there was the dirty laboratory—plaster of unknown ages bestrewing the floor, filled with dirty instruments and soiled linen, the floor space taken up with the accumulated broken office fittings and trumpery of both the dentist and his friends.

But, however ill fitted our present quarters, we expect some time in the future to better them. Who has not, in his mind’s eye, the ideal laboratory? When we have time and our bank account is in a satisfactory condition, we intend that the ideal shall be a reality, a model laboratory, to be shown up in the journals; a Mecca, where our professional brethren shall come for ideas. This laboratory is to be large and roomy, with broad windows and a north light. The work benches of well seasoned lumber, two inches thick; a small anvil, a pounding block, and a forge for the melting of metals in one corner; a rolling mill, covered with an oiled cloth, is handy by; our vulcanizer, of latest pattern, with steam gauge, gas regulator and cut off, are to be placed near; over all is to be a hood, connecting with a chimney, to carry off the vapors and odors so objectionable to our reception room. There are to be plenty of drawers—small ones, large ones—for teeth and instruments, for no man yet ever constructed a laboratory with too much drawer room. A special drawer for amalgam making and the necessary tools, for sand, plaster, wax, marble dust and pumice
stone, one for laboratory tools; then there is to be a waste drawer for plaster, the office sweepings and refuse, to be emptied daily; last of all, a drawer—perhaps two—for odds and ends, a place for the many little things that have passed their usefulness, but for which occasion may arise in the future. On one end of our work bench is to be a vise, built for business, strong and durable, so that one may even use a draw plate for the desired size of wire. The lathe for grinding and polishing is to be of the latest pattern, taking up wear at every point; running true and noiseless; well furnished with mandrels and chucks, brush wheels, buffers, stones and burs. Electricity is to be the power, this to be connected by a belt which can be slipped off at will, with an air pump which will connect with an air chamber, placed in an out of the way corner, furnishing the necessary blast for soldering purposes and by connections running to the operating room for use at the chair also. On the bench over the plaster drawer, which is large enough to hold 100 pounds of plaster and is fitted with rollers, is to be placed a piece of zinc, where we shall mix the plaster. Two rubber bowls of different size for mixing the same; one for plate work, the smaller one for crowns. These plaster bowls are always to be clean and ready for use, as are the spatula and knives. There is to be plenty of shelf room in this laboratory, wooden cases, each with a double glass door, containing shelves for the old magazines, empty bottles and reserve stock both for the laboratory and operating room. There are to be cases for plaster models, for medicines, those in a dry state in a drawer by itself; the bottles all in a row each drug neatly labeled. A case for impression cups, each on its own peg, to be cleaned and returned at once after use. In one corner and handy to the plaster drawer is to be placed a sink with one or more water taps well supplied with towels and soap, hair brush and comb, a block of pumice and other requisites of the toilet; nearby are placed the brush, board and antiseptic used in cleaning instruments. Suspended above, is a mirror enabling one to make a hasty toilet before waiting on the expectant patient. In one corner and suspended over the sink is to be a hot water tank, heated by a Bunsen burner, well supplied with water ready in an instant for chair or laboratory. The covering of the floor is to be linoleum, preferably of a solid color pleasing to the eye and not easily showing stain, this to be kept scrupulously clean. A door opening from the laboratory in the hall makes it easy to get out of the office without going
through the reception room, a great convenience at times when
the reception room is occupied by waiting patients, equally useful
for dodging an expectant creditor.

The crown and bridge work cabinet is to be handy to the
operating room, of goodly dimensions, at least six feet long. The
top is to be a slab of marble, on which is placed an asbestos mat of
good size, to be used during soldering, the blowpipe supplied by
our air pump. The gas taps in plenty connected by a gas tight
rubber tubing with the Bunsen burner, blowpipe and necessary
adjuncts. The cabinet is well supplied with drawer room; the first
one runs the whole length and is lined with zinc, a depression of
six inches wide runs along the outer edge, covered with a wire
mesh; into this are brushed the filings and sweeps to be sent to the
refiner. This drawer is to hold the gold files, brush, borax, clamps,
soldering block, small iron wire, stock of gold and solder, in short
all that is necessary for the successful construction of the modern
crown.

Underneath this drawer are to be smaller ones on each side, the center being left open. These drawers are to hold
the moldine, fusible metal, saws, saw frames, hard wax, drawing
tools, crown dies, each in its own special place.

But this ideal laboratory of ours, did I say it was to be a large
one? I spoke without due consideration. Perhaps to most of us
in the city the ideal laboratory will, until that time when landlords
are less grasping and greedy, when they have rid themselves of
the idea that the dental tenants' pockets are particularly large,
open and exposed to the weather; until this time the ideal labora-
tory will be a small one, a pocket edition, if you please, containing
all that is desirable in the larger one; well fitted with drawers and
glass covered cases; everything in its place; pounding block, roll-
ing mill and anvil, pushed aside under the work bench.

We may even decide to have it of a circular pattern. Why
not? The dentist, seated on a revolving stool, helps himself with-
out rising to the necessary implements for his calling. The small
laboratory saves many steps, is easily kept clean; in fact it cannot
be otherwise should he desire to keep a neat operating room.
Build it small then, Oh, Mr. Contractor, small and handy, bright
and cosy, and we will rise up and sing your praises and call ye
blessed.
Dr. A. C. Hart, of San Francisco, visited Chicago in November.

"Uneasy lies the root that wears a crown," says a dentist's victim.

Dr. J. Carroll Whinnery, of Omaha, was in Chicago in November.

Dr. E. K. Wedelstadt, of St. Paul, Minn., visited Chicago in December.

Dr. W. N. Dorward, of Omaha, paid a flying visit to Chicago in November.

Use a hot boracic solution, about 1 to 600, for a mouth wash after removing calculus.

The alumni clinic of the N. W. U. Dental School will be held about February 6, 1899.

Dr. Dana, of Burlington, Iowa, looked in at the meeting of the Chicago Dental Society in December.

The Chicago College alumni clinic will be held January 11, 1899. This will be an all-day clinic, closing with a dinner in the evening.

The National School of Dental Technics will hold its annual meeting in Cincinnati, beginning December 28, and holding for two days. The headquarters will be in the Grand Hotel.

Dr. J. S. McCurdy, of Fort Wayne, Ind., visited Chicago recently. Dr. McCurdy is secretary of the "Isaac Knapp Dental Coterie," of Fort Wayne, one of the most progressive local dental societies in the United States.

Dr. and Mrs. L. P. Haskell celebrated their golden wedding on December 13, at their home in Hinsdale. We extend congratulations and best wishes for long life and happiness.

Who will organize a dental society in any of the following countries: Porto Rico, Hawaii, Cuba and Manila?

Contributions are solicited from dentists residents in any of the above countries on the dental statutes of our recently acquired possessions.

Gould's Pocket Dictionary.


This is the most complete up-to-date dictionary we have seen. All the new words and many tables of value. No student can afford to be without it.

Query.

Dr. J. F. Wessels, of Philadelphia, wishes to know of Dr. Younger if the tooth (mentioned on page 828, November issue) had the pulp removed before it was replaced in the socket, or, if it was not removed, whether there would not be an alveolar abscess develop at some future time. Will Dr. Younger kindly answer whether it is his practice to replant teeth with dead pulps in them or whether it is not best to always remove them?
ANESON, THE NEW ANÆSTHETIC.

This is a colorless, aqueous solution of trichlor-pseudobutyl-alcohol or aceton-chloroform and corresponds to a 2 to 2.5 solution of cocaine, but has none of the latter's local irritation and is nontoxic. As much as seventeen grams have been used without after effects. The anaesthetic effect is also immediate, with no interval, as with cocaine. In suturing, a small amount of aneson injected at the points where the stitches are to be taken will prevent pain. Even inflammatory phlegmonous processes can be rendered perfectly insensible if sufficient aneson is used to keep them flooded all the time. The anaesthesia was not perfect in all cases, but this can be said of all other anaesthetics. L. Sternberge, of Berlin, concludes his report of a dozen tests of aneson in the *Klin.-Therap. Woch.*, of September 25, by recommending it as a useful and safe anaesthetic.

TRI-STATE DENTAL ASSOCIATION.

To the Editor:

On the twenty-fourth day of October, 1898, there was organized at Carmi, Ill., an association of the dentists of Indiana, Kentucky and Illinois, called the Tri-State Dental Association. It is hardly necessary to enlarge upon the importance of such an organization and the benefits which will accrue therefrom to the profession collectively and individually. It is the earnest desire of the entire membership that all reputable dentists in the three States become members of the association.

It is our intention to make this the largest dental society of the South and West. At each meeting clinics will be given by some of the best men in the profession, and the latest and most approved methods demonstrated. Will you join us at Henderson, Ky., on the second Tuesday in May, 1899? An interesting programme is nearly completed.

L. A. King,
Chairman Executive Committee.

THE ETIOLOGY OF SYPHILIS.

Dr. Van Niessen, of Wiesbaden (Centralb. f. Bact. Paras. u. Inf., Vol. XXIII., No. 2-7, 1898), concludes:

1. Syphilis is a chronic, infectious disease of the blood, the contagium reaching the blood from without and being carried to the other tissues by means of the lymphatics.

2. The contagium of syphilis may be demonstrated microscopically in every case and in every stage of the disease. In many cases it may be found in the urine, milk, semen, sputum, sweat, etc.

3. The syphilitic virus is a pleomorphous form of bacillus which stands in close relation to the higher organized fungi such as the actinomyceetous dermatium and cladosporium.

4. In all its stages syphilis is inheritable and communicable. This applies also to rabbits, which are susceptible to syphilitic infection experimentally.

5. With the therapeutic means at our command syphilis is absolutely incurable. Relative healing merely denotes a latency of the disease. It is, therefore, of the greatest importance to mankind that positive cure be discovered.

S.
ODONTOGRAPHIC SOCIETY OF CHICAGO.


OHIO STATE DENTAL SOCIETY.

Officers: The following named officers were elected at the recent meeting of the Ohio State Dental Society: L. P. Bethel, president; L. L. Barber, first vice president; H. F. Harvey, second vice president; S. D. Ruggles, secretary; C. I. Keeley, treasurer.

Dear Doctor:—In the "Memoranda" of November Review reference is made to the fact that one enthusiastic speaker in a dental society called it "celurion" deposits on the roots of teeth. I judge that "silurian" may be the right spelling, and he probably used the word with reference to the great age some of them attain before being quarried!!

Dear Editor: Enclosed please find answer to the question asked, page 873 of November Review. I have given the original and also my translation. I do not profess to be a Latin scholar, and thought that perhaps, you, or some of your readers might wish to see it as it is in the old book. Should you desire it, I will have the illustrations photographed; they are, however, shown on page 1056, Vol. II., American System, cuts 967 and 968. The description there given has been taken from an English translation, I think the only one made. There have been a number of Latin editions. Johnsons' differs somewhat from mine, I had not seen it until I looked for the illustrations while writing this note, I will add a reference to it.

In reference to the early use of carbolic acid as a disinfectant, see Wood and Bache, United States Dispensatory, 13th ed. 1871, page 37; London Lancet, Dec. 14, 1867, page 784; Amer. Jour. Phar. May, 1867. page 232. From data there given there is no doubt but that the authoress of "Ground Arms" might have smelled the smell she speaks of, at the time she says she did. It is, however, a little out of my line.

Yours respectfully,

William H. Trueman.

Chicago, Nov. 10, 1898.

To the Editor.

Dear Sir:—I enclose in this communication copies of two bills introduced in congress during the month of May.

I drafted the senate bill introduced by Mr. Mason* as an outline and suggestion of what was needed, and not as a finished bill, ready to introduce, but through a misunderstanding it was introduced without any changes.

Mr. Mason introduced the bill in the senate May 4, and Mr. Otey introduced a bill of marked similarity in the house, May 27.

I wish to call your attention to lines 9-12, inclusive, of the senate bill, as they were intended to be so worded as to make the five dentists heads of departments, and, in addition to the duties as dentists, to assume the duties of an examining board when necessary.

*See page 876.
THE DENTAL REVIEW.

It is desirable to have the bills discussed and suggestions offered, that the bills may be amended and put in better shape.

Mr. Mason suggests that the dental societies and representative dentists of Chicago meet and endorse the senate bill, offer suggestions, and if possible, send a dentist or lawyer, or both, to Washington to appear before the military committee to get this matter up at the proper time.

As I have worked for the soldiers a long time, I am very much interested in them, in a professional way especially.

Yours trernally,  
Benj. M. Ford, D. D. S.

FROM DR. SENN’S ARTICLE ON MILITARY SURGERY.—TOOTHACHE.

Of the organs frequently affected among the returning soldiers were the teeth. Patients suffering from carious aching teeth were numerous. In most instances they presented evidences of serious malnutrition following disease and exposure. Suppurative alveolitis was less frequent. Infection of many oral cavities showed that teeth had been sadly neglected during the campaign. In Cuba and Porto Rico I saw occasionally a soldier with a toothbrush under the hat band, but I have reason to believe that most of the toothbrushes were either left at home or thrown away on the march, as unnecessary articles of the limited toilet outfit. I did all I could in the way of conservative dentistry by cleaning out cavities and packing with cotton saturated with carbroic acid, but in the majority of cases the patients returned and insisted on having the painful tooth extracted. Tooth extraction was a conspicuous and grateful part of the surgery of Camp Wykoff. Hardly a day passed without two or three such operations. A very complete set of tooth forceps furnished by the government did good service in relieving the victims of toothache of their agonizing suffering. Much has been said in favor of attaching a dentist to each regiment to look after the teeth of the men, and the observations made in Camp Wykoff tend to support the propriety of such a much needed addition to the medical service. It is interesting to know that among these patients there was not a single officer, undoubtedly because the officers were more particular in the care of their teeth than the privates.

CLINICS—AT NORTHERN ILLINOIS DENTAL SOCIETY.

1. Dr. O. A. Chappell, Elgin. Dead soft gold filling in inf. left molar, coronal cavity. Base of cavity prepared flat and smooth; walls as nearly parallel as possible; slightly inverted cone shape; gold rolled cylinders, by the operator, to have them in size to correspond with that of cavity. Gold placed on end at periphery of cavity, filling toward the center until the cavity is full, then malleted down so as to spread the mass like a rivet; no rubber dam used; filling well inserted and condensed; margins perfect and well finished.

2. Dr. J. L. Palmer. Amalgam filling with celluloid matrix. Tooth was inf. right second molar cavity, distal surface, including occlusal surface. Filling was well contoured, smooth at gingival margin and left in good condition.

3. Dr. C. L. Snyder, Freeport. Tin and gold. Tooth sup. L. first molar. The claim made is that with tin and gold the conductivity of the filling is greatly lessened and better adaptation to the walls of cavity. Filling was finished with pure gold. Cavity well prepared and filled, with perfect margins, and well finished.

4. Dr. Edmund Noyes, Chicago. Patient, Dr. Kitchen, of Rockford. Tooth
R. sup. central, cavity mesial and incising edge. Cavity prepared with flat bottom with slight undercuts. Great reliance placed on the flat bottom for retaining the filling. The patient being considered an "immune," the cavity was not extended far toward the cervix.

5. Dr. M. L. Hanaford, Rockford. Tooth sup. first R. bicuspid. Extension for prevention. The cavity was prepared in the way laid down by Dr. Black. The cavity was well prepared and well filled with gold, and finished in a beautiful manner.

6. Dr. C. J. Underwood, Elgin. Crown. Using crescent tooth with platinum backing, burnished and soldered in place; then bevel the root labially and lingually from the center. The root canal is then enlarged for the pin, and soldered to a piece of plat. plate, fifty gauge, which has been bent to conform to the end of the root; then burnish to conform to the end of the root. The tooth then formed as to occlusion, waxed to pin and cap, invested, and any space between cap and tooth filled with solder. The doctor exhibited a soldering device of his invention, which simplifies the operation very much. The crown is of decided merit.

7. Dr. A. N. Stone, Elgin. Gold crown. R. second inferior bicuspid. Holingsworth system used. The crown filled the root well, but the occlusion was not as well as it should have been; but this may be excused by the fact that the difficulties which confronted the doctor were great, as they always are at such a place.

8. Swaging aluminum, Dr. Edmond’s method. By Dr. M. R. Harned, Rockford. Aluminum swaged without annealing. Two counterdies are made, one for swaging the root and one for swaging over the ridge wherever the counterdie is battered, or where the plate does not fit take little roll of moistened paper on the counterdie and place plate into it and swage. It is claimed that better adaptation is secured in this way than by the old way.

**ANTISEPTIC POWDER.**

- Pulv. camphoræ ........................................... 5 parts.
- Pulv. bismuthi subnitrate .................................... 20 "
- Pulv. acidi sylicylici ........................................ 20 "
- Pulv. iodoform .................................................. 55 "

M. S. Apply to wounds and ulcerous surfaces.

—Cazozzani.

**"ROTERINUM."**

- Acidi citrici.
  Thymoli .......................................................... ää gr. iss.
  Acidi salicylici ................................................ gr. x.
  Acidi boracici .................................................. gr. xlv.
  Zinci chloridi.
  Zinci sulphocarbolatis ....................................... ää gr. lxxv.

M. et ft. pastilli No. iv.

This is a disinfectant and antiseptic mixture, officially recommended in Bavaria as a substitute for carbolic acid and corrosive sublimate. To make a proper strength solution dissolve one pastil in a quart of water.—Roth.
OBITUARY.

Dr. S. L. Edwards.

Dr. Surry L. Edwards, the veteran dentist, died, Saturday night, at 10:30 o'clock, at his home, 920 West Fifteenth Street.

Dr. Edwards had been ailing for several months, but was confined to the house only two weeks. He was seventy-one years of age last March; was born in Gilford, Vt., and had lived in Des Moines since 1874. He leaves several sons, the eldest, Horace N., being associated with him in the dental practice; Joseph A. is with the Fifty-first Iowa volunteers, now en route to Manila; Newton O. and Benj. S. are in the city, recently mustered out of the Fifty-second regiment. Mrs. T. E. Carter, of Girard, Ill., sister of the deceased, was at the bedside. There are two daughters, Mary A. and Esther E.

Dr. Edwards entered the McKendree College in 1850, and graduated. He taught public school for five years, and then began the study of dentistry, entering practice of that profession in Griggsville, where he was married, in 1855, to Emma A. Dickinson. Dr. Edwards was a member and an officer of the First M. E. church for many years. He assisted in the formation of the church and has ever been an active, conscientious worker for its upbuilding. Although a man of retiring disposition, and one who took no part in public affairs, he was always a close observer of the progress of the city and of all things looking to a betterment of society.

The funeral will be held from the First M. Church, at 3:20 P. M., to-morrow. —Des Moines Paper.
Manual of Histology, 252
Matrixis, 870
Medicine, Logical Relation of Dentistry to, 729
Medicines, List of, for Use of Dentists, 324
Memoranda, 71, 163, 258, 382, 411, 481, 570, 649, 726, 797, 873, 911
Merry Christmas and Happy New Year, 392
Metal Posts for Anchorage for Fillings in Incisor and Canine Teeth, 287, 308
Method of Applying Clamps in Difficult Cases, 855
Midwinter Enthusiasm, 244
Minnesota State Dental Association, 57, 126, 188

Nerves, Relative to Dentistry, Physiological and Pathological Conditions of, 764
New Methods and Appliances in Orthodontia, 573
Northwestern University Dental School, 408

Obituary, 76, 388, 946
Odontographic Society, Chicago, 52, 53, 228, 303, 388, 483, 465, 770, 819, 903
Oils, The Essential, etc., 595, 631
Oral Hygiene, 294, 294
Oral Pathology and Practice, 468
Oral Surgery, 628
Organic Germinicides, 323
Oriental Dentistry, 107
Orthodontia, New Methods and Appliances In, 573, 627
Our Porcelain Teeth, 7, 43

Pamphlets, 331
Park's History of Medicine, 331
Platinum. A New Process of Fusing, 504, 625
Poisoning, Cocaine, 639
Power, Foot, Passing of, 493
Practice, Incidents of Office, 50, 513
Practice, Specialism in Country, 756, 860
Preparation of Cavities, 702
President's Address, 367, 436, 539, 888
Prophylaxis in Bridge Work, 370
Prosthetic Dentistry, A Few Remarks on, 893
Protection, Need of Local Co-operative Dental, 183
Protective Association, Dental, 60
Pulp, Removing the, 720
Pyrrothoa Alveolaris, 200, 808, 819, 856, 916

Removing the Pulp, 720
Replantation, 930
Report of Clinic No. 37, Amaigam Experiments, 608
Report of the Committee on Dental Art and Inventions, 657
Report of the Committee on Dental Science and Literature, 441
Report of the Supervisor of Clinics, 687

Saliva in Infancy, 790
Secret and Proprietary Preparations, 323
Shaping and Improving the Appearance of the Natural Teeth with the Wheel Used in the Dental Engine, 29
Signs of the Times, 39
Silver Plates Made in 1654, etc., 905
Simikins, Law of, Applied to Dentistry, 18
Some New Things in Orthodontia, 627
Some Relations of the Oral Cavity to the Eye, Ear, Nose and Throat, 139
Some Thoughts on Alcoholic Abscess, 286, 920
Specialism in Country Practice, 756, 860
State Board of Examiners, 475
State Meetings, 322
Sterilization of Dental Instruments, etc., 803, 837
St. Louis Dental Society, 516, 870
Suggestive Therapeutics, 288
Surgery, Conservatism in Oral, 589
Surgery, Oral, 628
Surgical Clinic at the Chicago College of Dental Surgery, October 25, 1898, 518
Surgical Treatment of Congenital Cleft Palate, 611, 830
Surgical Treatment of Harelip, 23, 52
Syphils, 10
Syphils from a Dental Standpoint, 272

Teeth, Our Porcelain, 7, 43
The Adaptation and Retention of Artificial Dentures, 189
The Admissibility of Devitalization, Banding and Removal of Enamel in Crown and Bridge Work, 57, 110
The Application of Comparative Dental Anatomy to Dentistry, 895
The Application of Heat in Dentistry for the Destruction of Pathogenic Germs, 172, 303
The Artistic and Mechanical in Dentistry, 38
The Building of Small Contour Fillings with Gold, 77, 126
The Ceramic Art in Dentistry, 655
The Close of the Volume, 992
The DENTAL REVIEW, 571
The Drug Habit, 3
The Essential Oils and Some Other Agents, Their Antiseptic Value, Also Their Irritating or Nonirritating Properties, 598
The Ideal Laboratory, 936
The Importance and Manner of Sterilization of Dental Instruments, 563, 887
The Influence and Power of Association, 167, 315
The Introduction of Gold in Large Cavities, 654
The Law of Similars Applied to Dentistry, 18
The Logical Relation of Dentistry to Medicine, 729
The National Dental Association, 567, 639, 720
The Need of Local Co-operative Dental Protection, 153, 221
The Passing of the Foot Power, 433
The Physiological and Pathological Conditions of the Nerves Relative to Dentistry, 764, 779
The Preparation of Cavities, 677
The Presence of Arsenic in Cements, 431, 465, 476
The Protection and Maintenance of the Gum Tissue in the Interproximal Space, 347
Therapeutics, Suggestive, 288
The Tri-State Meeting at Put in Bay, 474
The Welding Property of Gold, with Demonstrations, 278, 312
Tomes Dental Surgery, 252
To Our Contributors, 566
Transactions of the American Dental Association, 722
Transactions of the Illinois State Dental Society, 1897, 251
Tri-State Dental Association, 565

Were Silver Plates Made in 1654? Yes, They Were, 958
We Thought So When We Wrote It, 69
What is Medicine? 245
Wheel Used in the Dental Engine for Shaping and Improving the Appearance of the Natural Teeth, 29
Where Shall I Locate, or the Beauties of a Country Practice, 500, 623
Why Conquants Diffuse Through Dentine, 496, 538
Wisconsin State Dental Society, 773, 887, 913
BI OGRAPHICAL INDEX.

Allen, E. E., 524, 537, 624, 890

Bacon, D. C., 149
Baker, J. E., 915
Bailey, C. M., 399
Bandy, O. L., 696
Barnett, Dr., 59
Barrett, W. C., 317, 319
Becheher, W. W., 396
Bell, F. T., 39
Bentley, C. E., 384, 393, 895
Black, G. V., 122, 275, 313, 388, 531, 548, 563, 631, 706
Blair, E. E., 890, 523, 687
Bolsol, J. W., 851, 914, 921, 930
Bond, S., 61
Bonwill, W. G., 320, 397
Bowman, F. H., 308, 756
Bridges, J. S., 150
Brophy, T. W., 29, 48, 55, 130, 226, 316, 339, 469, 514, 522, 542, 589, 628, 698, 818, 892
Brophy, R. C., 151, 689
Brown, F. N., 47, 906
Brown, G. V. I., 159, 195, 200, 781, 889, 891, 892, 886, 916
Brunson, G. M., 555
Bryan, L. C., 168
Burckley, F. G., 175, 221

Callahan, Dr., 320
Campbell, B. C., 773, 837
Carpenter, E. R., 272, 530, 855
Carpenter, G. T., 149
Carson, W. H., 739, 852
Case, C. S., 117, 145, 573, 627, 688, 830
Catching, B. H., 871
Cattell, D. M., 246, 464
Chilson, W. H., 766, 785, 861
Chittenden, C. C., 398, 776, 846, 913, 925
Clirand, J. B., 96, 379, 966
Clifford, E. L., 183, 929
Cook, G. W., 308, 379, 826
Corbett, C. C., 696
Cormany, J. W., 500, 521, 688
Cowdrey, Dr., 518
Cox, C. W., 23
Cravens, Dr., 315
Crissman, L. B., 372
Crouse, J. N., 223, 319, 463, 591, 545, 554
Cruttenden, H. L., 59
Cushing, G. H., 401
Custer, L. E., 146, 704, 626, 687

Darrow, Mr. C. S., 394
Davis, L. L., Dr., 192
Davis, J. A. W., 456, 533
Dean, H. E., 795, 559
DeTrey, A., 146
Dennis, G. J., 375
Diets, J. B., 894, 918

Edmonds, N. D., 696
Esterly, C. E., 315

Fernandez, E. M. S., 116, 468
Fletcher, E. F., 370
Fletcher, T. B., 787, 925
Fox, W. H., 391
Fresen, A. B., 173, 227
French, Dr., 143, 191
Fuller, A. H., 579

Gallie, D. M., 222
Gibson, G. H., 93
Glimer, T. L., 22, 296, 376, 592, 629, 689
Good, E., 589, 933
Gorgas, F. J. S., 326
Goslee, H. J., 87, 151, 468, 626, 692, 771
Gramm, C. T., 146
Griswold, W. E., 795

Halphpde, A. C., 288
Hanford, M. L., 677, 710
Harlan, A. W., 3, 140, 196, 207, 218, 268, 382, 411, 515

Harned, M. R., 18
Harper, J. G., 367
Harper, W. E., 702
Hara, R. J., 915
Hartzell, M. V., 68
Hartzell, T. B., 141, 193, 203
Huskell, L. P., 7, 45, 48, 256
Haskins, G. W., 772
Helm, C. B., 888
Henderson, G. H., 526
Hinkins, J. E., 313, 384, 515, 558
Hoff, N. S., 65, 135, 195
Hobbrook, A. T., 729, 848
Howatt, A. B., 491
Hungerford, C. L., 305
Hunt, A. O., 1

Ivory, W. A., 742

James, A. F., 908
James, Dr., 59, 129
Johnston, C. N., 113, 147, 309, 312, 347, 459, 518, 545, 625, 655, 683, 709
Johnston, E. M., 61
Johnston, W. A., 536

Keefe, J. E., 232, 447, 555, 697
Kennerly, J. H., 688
Kerfoot, G. O., 886
Kester, P. J., 259, 530, 648, 696
Kimball, R. H., 547
Knight, H. A., 194

Laurence, R. N., 532, 628, 688
Leonard, L. P., 203
Lob, G. E., 417, 626
Logan, W. H. G., 811, 837

McCandless, A. W., 689
McDonald, A. J., 688
McDowell, J. N., 773
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