H. M. McCLANAHAN, M. D.,
President Nebraska State Medical Society, 1900-1901.
The Nebraska State Medical Society does not hold itself responsible for, nor necessarily endorse, any of the papers herein.

A. D. Wilkinson,

Secretary Nebraska State Medical Society.
OFFICERS AND COMMITTEES, 1901-1902.

OFFICERS.

W. B. Ely, University Place ............................................................. President
Inez C. Philbrick, Lincoln ............................................................. First Vice-President
E. J. C. Sward, Oakland ............................................................. Second Vice-President
A. D. Wilkinson, Lincoln ............................................................. Recording Secretary
H. Winnett Orr, Lincoln ............................................................. Corresponding Secretary and Librarian
J. L. Greene, University Place ............................................................. Treasurer

COMMITTEE.

ARRANGEMENTS—J. P. Lord, Omaha, Chairman ; J. M. Aikin, Omaha ; A. B. Somers, Omaha.
CREDENTIALS—A. D. Wilkinson, ex officio, Chairman, Lincoln ; J. B. Hungate, Weeping Water ; W. S. Gibbs, Omaha ; M. L. Hildreth, Lyons ; L. M. Shaw, Osceola ; J. F. Miller, Holdrege ; H. J. White, Bassett.
NECROLOGY—A. D. Wilkinson, ex officio, Chairman, Lincoln.
  First Congressional District—E. M. Whitten, Nebraska City.
  Second Congressional District—E. C. Moore, Omaha.
  Third Congressional District—Chas. Inches, Scribner.
  Fourth Congressional District—T. C. McCleary, Exeter.
  Fifth Congressional District—G. W. Wilson, Curtis.
  Sixth Congressional District—Alexander Bear, Norfolk.
GRIEVANCES—A. S. von Mansfelde, Chairman, Ashland ; Henry D. Boyden, Grand Island ; F. G. Salter, Norfolk.
MEDICAL LEGISLATION—M. H. Garten, Chairman, Lincoln ; W. O. Bridges, Omaha ; J. A. Pollard, Nehawka ; D. E. Sedgewick, York ; F. D. Haldeman, Ord.
AUDITING—P. L. Hall, Chairman, Lincoln ; E. W. Cook, Plattsmouth ; H. M. McClanahan, Omaha.

CHAIRMEN OF SECTIONS.

PRACTICE OF MEDICINE—A. D. Nesbit, Tekamah.
Surgery—A. I. McKinnon, Havelock.
OBSTETRICS AND GYNECOLOGY—A. J. Clark, Albion.
NERVOUS AND MENTAL DISEASES—Jay G. Roberts, Hastings.
ANATOMY AND PHYSIOLOGY—Le Roy Crummer, Omaha.
OPHTHALMOLOGY AND OTOLOGY—Harold Gifford, Omaha.
MEDICAL JURISPRUDENCE, CHEMISTRY, AND TOXICOLOGY—H. B. Lowry, Lincoln.
MATERIA MEDICA AND THERAPEUTICS—R. C. McDonald, Fremont.
PATHOLOGY AND HISTOLOGY—W. K. Yeakel, Omaha.
PUBLIC HYGIENE AND MEDICAL LEGISLATION—Solon R. Towne, Omaha.
DERMATOLOGY—E. J. Angle.
LARYNGOLOGY AND RHINOLOGY—J. P. Williams, Lincoln.
DISEASES OF CHILDREN—Georgiana Grothan, St Paul.
PROCEEDINGS.

MORNING SESSION.

TUESDAY, May 7, 1901.

The thirty-third annual session of the Nebraska State Medical Society met at Walsh's Hall, Lincoln, May 7, 8, and 9, 1901. The first session was called to order at 11 a. m. by the president, Dr. H. M. McClanahan.

The president said: It is my pleasure to introduce to you a gentleman, distinguished not only in medical but in political affairs; a member of our profession who has demonstrated his ability as a physician and as an administrator of municipal affairs. Permit me to introduce to you Dr. H. J. Winnett, mayor of Lincoln.

Dr. Winnett responded with a speech of welcome, and extended to the doctors the hospitality of the city.

Dr. J. W. Bullard, of Pawnee City, who was to respond to the address of welcome, not being present, Dr. J. A. Andrews, of Eustis, was called upon and responded.

Dr. J. L. Greene moved that inasmuch as the minutes are printed in the proceedings, they can be dispensed with. Motion seconded and carried.

The secretary then read his annual report, which was as follows:

RECORDING SECRETARY'S REPORT.

In submitting this, my annual report, I beg to say that the work which has passed through my office for (7)
the year just ended has been of the usual routine character.

In accordance with the instructions of this society at our last meeting, I placed myself in correspondence with the other state medical bodies, as well as that of the dental and pharmaceutical associations, suggesting that we meet at the same time and place, in order to secure reduced railroad rates. All agreed, except the State Dental, to meet at Lincoln in May. This accomplished our purpose of securing reduced railroad rates.

I think the time is ripe for a complete reorganization of our state society, along the line suggested at the last meeting of the American Medical Association.

There are about 1,300 regular medical societies, most of which were organized and are acting independently of each other—scarcely any two organized alike. This can be remedied by a systematic attempt at creating representative bodies, establishing in each county, if possible, a county medical society, which shall be a branch of the state society, and all state societies organized on a specific plan as branches of the American Medical Association. Objections may be raised that there are too small a number of physicians in some counties in our state to warrant an independent county society. Let them unite with those in an adjoining county and be known as a district society. Membership in the state society (excepting the present members) to be obtained only through the county or district societies, excepting also the cases of physicians in any county where there is no county society, in which case physicians could join direct when recommended by three members. This plan, if carried out, ought to do so much for its members in a scientific, social and material way that no member of the profession could afford to remain out. The State Medical Society should include in its membership in a short time all or nearly all of the regular physicians in the state. If this could be done
in every county and state in the United States, and all pull together, through a reciprocal medical society organization, we could wield such a political and professional influence as would overcome most of the obstacles to our success. Some of the eastern states have organized on this plan, and find it a decided success.

The committee on necrology has always worked under a disadvantage. I think if it were to include in its membership one physician from each congressional district, the field could be more carefully looked after.

FINANCIAL REPORT.

RECEIPTS.

May 10, Received from Treasurer, for expenses...... $100 00
May 8, 9, and 10, Received membership fees......... 220 00

$320 00

DISBURSEMENTS.

Stamps .................................................. $13 50
Express and revenue stamps.......................... 33 90
500 delegates' certificates .......................... 1 75
50 mailing tubes ...................................... 2 50
Postal cards and printing ............................ 3 00
Freight and drayage Transactions .................. 7 90
Application blanks .................................. 8 50
Ch. Western Passenger Association ............... 11 15
Postal cards and printing .......................... 4 50
Circular letter and envelopes ....................... 5 75
Secretary's check .................................... 3 45

$100 00

Paid Dr. J. L. Greene, membership fees........... 220 00

$320 00

Respectfully submitted,

A. D. WILKINSON, Secretary.

Dr. Mansfelde moved that report of secretary be placed on file and referred to a special committee. Seconded and carried.

Dr. J. L. Greene, treasurer, then read his annual report, which was as follows:
TREASURER’S REPORT.

Dr. J. L. Greene, Treasurer, in account with Nebraska State Medical Society:

1900.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Dr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 1,</td>
<td>To cash balance</td>
<td>$619</td>
<td>20</td>
</tr>
<tr>
<td>May 10,</td>
<td>To cash from Dr. A. D. Wilkinson, 44 new members</td>
<td></td>
<td>220 00</td>
</tr>
<tr>
<td>May 10,</td>
<td>To cash from Dr. A. D. Wilkinson, unexpended balance of his expense appropriation for 1899</td>
<td></td>
<td>9 08</td>
</tr>
<tr>
<td>1901.</td>
<td>May 3, To cash collected from members on account of dues from May 1, 1900, to May 3, 1901</td>
<td></td>
<td>378 00</td>
</tr>
</tbody>
</table>

$1,226 28

CONTRA.

1900.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Dr.</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 10,</td>
<td>Amount paid Order No. 7</td>
<td>$100</td>
<td>00</td>
</tr>
<tr>
<td>May 10,</td>
<td>Amount paid Order No. 8</td>
<td>100</td>
<td>00</td>
</tr>
<tr>
<td>May 10,</td>
<td>Amount paid Order No. 9</td>
<td>158</td>
<td>10</td>
</tr>
<tr>
<td>May 10,</td>
<td>Amount paid Order No. 10</td>
<td>25</td>
<td>00</td>
</tr>
<tr>
<td>May 10,</td>
<td>Amount paid Order No. 11</td>
<td>12</td>
<td>67</td>
</tr>
<tr>
<td>June 18,</td>
<td>Amount paid Order No. 12</td>
<td>29</td>
<td>00</td>
</tr>
<tr>
<td>June 18,</td>
<td>Amount paid Order No. 13</td>
<td>30</td>
<td>00</td>
</tr>
<tr>
<td>Dec. 18,</td>
<td>Amount paid Order No. 14</td>
<td>327</td>
<td>85</td>
</tr>
<tr>
<td>1901.</td>
<td>May 3, Cash to balance</td>
<td></td>
<td>443 66</td>
</tr>
</tbody>
</table>

$1,226 28

May 3, To cash balance........... $443 66

$1,226 28 $1,226 28

I have at hand the stubs and unissued receipts, and have prepared in my cash account an alphabetical list of all payments made on account of dues and submit them with this report.

I now hand the president a cashier’s check, made by the First National Bank of this city, for the balance in my hands, belonging to this society.

All of which is most respectfully submitted.

J. L. GREENE, Treasurer.

Moved by Dr. Mansfelde that the report be referred to Auditing Committee. Seconded and carried.
REPORT OF RECEPTION COMMITTEE.

Dr. A. R. Mitchell, chairman of the committee, said there was nothing further to report than the plans for the meeting as announced in the morning papers.

President: Dr. M. L. Hildreth, of Lyons, chairman of committee on grievances, and Dr. Claude Watson, of Nebraska City, chairman of committee on necrology, being absent, it will be necessary to pass these reports until these members of the committee are present.

President: Members of the credentials committee who are present should come forward; and if they are not present, some other members should be appointed to take their places so that credentials can be acted upon as soon as possible.

No further business being before the society, without adjourning, the members may have the opportunity to register.

Society called to order by president.

Dr. Lowry, corresponding secretary and librarian, presented his report, as follows:

REPORT OF CORRESPONDING SECRETARY AND LIBRARIAN.

Lincoln, Neb., May 7, 1901.

Mr. President: Your corresponding secretary and librarian begs leave to submit the following report:

The following publications have been received: The Journal of the New York State Medical Society; the Journal of the Pennsylvania State Medical Society; also the transactions of the following state societies: Alabama, California, Colorado, North Dakota, Florida, Kansas, Kentucky, Louisiana, Massachusetts, Maine, Michigan, New York, New Jersey, South Carolina, Texas, Vermont, Washington and West Virginia; and the report of the Michigan State Board of Health.

This society has sent its transactions for 1900 as follows, one to each of the following state and provincial societies: Kansas Medical Society, Kentucky
State Medical Society, Louisiana State Medical Society, Maine Medical Association, the Massachusetts Medical Society, Michigan State Medical Society, Minnesota State Medical Society, Missouri State Medical Association, Medical Association of Montana, the New York State Medical Association, the Medical Society of the State of New York, Nebraska State Medical Society, the Medical Society of the State of North Carolina, North Dakota Medical Society, the Ohio State Medical Society, Oregon State Medical Society, Ontario Medical Association, New Brunswick Medical Society, the Medical Society of the State of Pennsylvania, Rhode Island Medical Society, South Dakota State Medical Society, South Carolina Medical Association, Tennessee State Medical Society, the Texas State Medical Society, Utah State Medical Society, Vermont State Medical Society, the Washington State Medical Society, the Wisconsin State Medical Society, the Medical Society of the State of West Virginia, Wyoming State Medical Society, Mississippi Valley Medical Association, Western Surgical and Gynecological Association, Medical Association of the State of Alabama, the Arkansas Medical Society, Connecticut Medical Society, the Medical Society of the State of California, Colorado State Medical Society, Medical Society of the District of Columbia, Florida Medical Association, the Medical Association of Georgia, Illinois State Medical Society, Indiana State Medical Society, and the Iowa State Medical Society.

Respectfully submitted, H. B. Lowry.

Moved by Dr. W. D. Shields that report of corresponding secretary be adopted and placed on file. Seconded and carried.

Adjourned to 2 p. m.
THIRTY-THIRD ANNUAL SESSION.

AFTERNOON SESSION.

TUESDAY, MAY 7, 2 P. M.

Meeting called to order by the president. In the absence of Dr. J. P. Lord, member of the committee of the second district, Dr. B. B. Davis is appointed to act in his place. Dr. Roeder, of the fifth congressional district, is also absent.

The first section of the session, that of Practice of Medicine, was here taken up.


Moved by Dr. von Mansfelde that Drs. N. S. Davis, Jr., and Geo. H. Simmons, of Chicago, be made members of this society by invitation, and also that the president extend to the applicants whose names have not been acted upon the privileges of the floor. Carried.


Dr. Hildreth moved that since Dr. Davis, of Chicago, was present, and as his time was somewhat limited, that he now address the society. Seconded and carried.

Dr. Davis was then introduced.

Address by Dr. N. S. Davis, Jr., of Chicago, on "Round Ulcer of the Stomach."

Motion by Dr. Hildreth, that as a token of appreciation a vote of thanks be extended to Dr. Davis for his very able paper. Seconded and carried.

DR. DAVIS: I wish to thank you for the apprecia-
tion which you show me for my paper, which I have read. I hope that it may help others to make earlier diagnosis than heretofore.

Dr. Ely takes the chair.


Sixth paper—"The Commercial Aspects of the Practice of Medicine," H. Gifford, Omaha. Discussed by Drs. von Mansfelde, McConaughy, Pollard, Ely, Whiting, Garten, Bridges, and Roberts. Dr. Gifford, in closing, offered the following resolution:

Resolved, That the following paragraph be added to the by-laws of the society:

"The practice of giving or receiving commissions for the reference of patients is entirely reprehensible and any member of the society who, after being advised of this rule, shall be guilty of this offense shall be expelled from the society."

Adjourned to meet at 7:30 p.m.

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EVENING SESSION.

TUESDAY, 8 p.m., May 7, 1901.

Meeting called to order by the president.
First paper—"Cirrhosis of the Liver," W. R. Lavender, Omaha. No discussion.
Third paper—"Treatment of Pneumonia in Children," Georgina Grothan, St. Paul. No discussion. This finished the Section on Medicine.
Address by the president, Dr. H. M. McClanahan.
Moved by Dr. Watson that the president's address be referred to a committee. Carried.
Appointed on this committee, Drs. Inches, von Mansfelde, and Lowry.

Illustrated lecture on "The Life History of the Malarial Parasite," by Prof. Henry B. Ward, State University.

Adjourned to Wednesday morning, 9 o'clock a. m.

MORNING SESSION.

WEDNESDAY, May 8, 9 a. m.

The Section of Ophthalmology and Otology was taken up and the first paper, "Treatment of Acute Otitis Media," was read by the chairman of the section, Dr. F. S. Owen, of Omaha. Discussed by Drs. Gifford, Nesbit, Bryant, Garten, Cook, Wilbur, Andrews, Hildreth, and Talbot.


Fourth paper—"The Relation of the Teeth to Diseases of the Eye," Geo. H. Bicknell, Omaha. Discussed by Dr. Bryant.

The Section on Materia Medica and Therapeutics was next taken up, and the chairman, Dr. W. D. Shields, Asylum, read a paper on "Practical Suggestions on Therapeutics." Discussed by Drs. Milroy and W. H. Wilson.


PRESIDENT: On the auditing committee I will ap-
point Drs. Gifford, of Omaha; Hoover, of Kearney; McDonald, of Fremont. They shall meet during the recess.

Adjourned to meet Wednesday, 2 p. m.

AFTERNOON SESSION.

Wednesday, May 8, 2 p. m.

President: There are a few matters of business to come before the society. Let us have the report of the auditing committee.

REPORT OF AUDITING COMMITTEE.

May, 1901.

Your committee has to report that, having examined the accounts of the secretary and treasurer, we find them to be correct.

R. C. McDonald.
M. A. Hoover.
H. Gifford.

Moved that report be accepted. Carried.

Treasurer: I suggest that the unissued receipts and stubs be placed in the hands of the secretary.

President: Since it is the custom of the treasurer to keep these unissued receipts, they should not be handed over to the secretary, but should be kept by the treasurer.

Committee on necrology was expected to report at this time. Committee was not present.

President: If there is no other business demanding immediate attention, we will proceed to the regular reading of papers. Committee on credentials are requested to meet in this room immediately at the close of this session.

Secretary reads letter from Dr. N. Senn, who was unable to be present.

Section on Surgery. Chairman was not present.

The following greeting from the Homeopathic Society was read by the secretary:

Lindell Hotel, Lincoln, Neb., May 7, 1901.

To the Nebraska State Medical Society: The Nebraska State Homeopathic Medical Society, in convention assembled, hereby send greeting to your honorable and scientific body.

We wish you success in all your noble efforts and investigations. Our aims are mutual in the research of truth, and in the noble and benign effort to ameliorate and relieve the ills of suffering humanity.

Respectfully,

W. H. Hanchett, M. D., Ch.,
W. A. Cate, M. D.,
A. V. Holmes, M. D.,
Committee.

Moved and seconded that the secretary acknowledge the communication from the Homeopathic Society in a courteous and ceremonious manner. Carried.

Walsh Hall, Lincoln, Neb., May 8, 1901.

To the Nebraska State Homeopathic Medical Society: The Nebraska State Medical Society, in convention assembled, acknowledge with thanks the very cordial greeting from your honorable and scientific body and express its best wishes for you.

May the unfolding of the great science of medicine lead all honorable physicians nearer together and stimulate the growth of a more fraternal feeling.

A. D. Wilkinson, Secretary.


President: I wish to appoint on the committee to
investigate secretary's report, Drs. Mansfelde, of Ashland; Inches, of Scribner; Lowry, of Lincoln.

The credentials committee will please retire to some small room to complete some business that they shall report on at the evening session.


5. "Internal Derangements of the Knee-Joint," C. C. Allison, Omaha. Discussed by Dr. Hamilton.


Adjourned until Wednesday evening, 7:30, May 8.

EVENING SESSION.

WEDNESDAY EVENING, May 8, 1901, 7:30.

Meeting called to order by president.

Section on Pathology and Histology, the chairman not being present.

First paper—"Hemochromatic Bodies in Pernicious Anemia," W. K. Yeakel, Omaha. Discussed by Dr. Gifford.

The chairman of the section now being present he read his paper.


Reports of special committees on secretary's report and president's address were read, as follows:
REPORT OF THE SPECIAL COMMITTEE ON THE ANNUAL REPORT OF THE SECRETARY.

The thanks of the society are due and hereby extended to the secretary for his services in bringing the meetings of other state bodies to Lincoln at this time, thereby securing reduced rates from the railroads for the members of this society.

The suggestion of the secretary in regard to the reorganization of the Nebraska State Medical Society upon a plan advised by a committee of the American Medical Association, being identical with the recommendations of the president in his annual address, this matter will be acted upon by the committee upon that address. Suffice it to say, that your committee endorses in full the findings of that committee. Your committee on necrology to be active for the coming year only, when the matter shall be acted upon as is required for changes in the constitution and by-laws, the secretary formulating the proper changes at this session: Resolved, That the committee on necrology shall be increased to consist of one member from each congressional district, with the secretary as chairman ex officio.

The financial report of the secretary is hereby approved as to its general features, its analysis being the duty of the auditing committee.

In conclusion, your committee advises the society's approval of the very efficient services of the secretary for the last fiscal year, and the thanks of the society are extended by your endorsement of this report.

Very respectfully submitted,

A. S. von Mansfelde.
H. B. Lowry.
C. Inches.
Your special committee upon the president's address beg leave to report the adoption of the following resolutions as covering the spirit of the recommendations of the president:

1. Resolved, That for the next session of the society all papers to be read shall be in the hands of the secretary one month before the meeting, accompanied by a short abstract of the same, for publication in the programme, subject, however, to the editorial supervision of the secretary, and that the secretary prepare this resolution for permanent incorporation in the laws of the society.

2. Resolved, That the society at this meeting elect two members, who shall represent the Nebraska State Medical Society in the proposed house of delegates to be created by the American Medical Association at its meeting at St. Paul, and that said delegates shall have all the rights and privileges now given to the legislative committee of the A. M. A., for the ensuing year.

3. Resolved, That this society hereby endorses the plan of the Committee of the A. M. A., for a thorough reorganization of the A. M. A. and all affiliatory societies and the delegates created in resolution 2 of this report, and all delegates of the Nebraska State Medical Society in attendance at the annual meeting of the A. M. A. at St. Paul are hereby instructed to use all diligent effort for the accomplishment of this object, and all permanent members are respectfully solicited to do likewise.

4. Resolved, That the board of trustees be, and are hereby, created a committee to investigate the subject of reorganization of the profession of Nebraska and report at the next annual meeting upon all matters recommended by the president.

Respecting the giving of commission for the trans-
ference of cases from one doctor to another, the president says, "I appreciate the delicacy of this matter," so does your committee, and therefore respectfully refer the matter to the action of the society.

Yours very respectfully,

C. Inches.
A. S. Von Mansfelde.
H. B. Lowry.

Moved and seconded that the matter of giving and accepting commission on cases referred by one physician to another be laid on the table. Carried.

Proposition by Dr. H. W. Orr, managing editor of the Western Medical Review, to publish proceedings, papers and discussions thereon, of the State Medical Society for the year 1901. Dr. Orr made the following proposition:

That the Western Medical Review be authorized to publish in a special department of the Review all the papers, discussions and proceedings of the Nebraska State Medical Society, and to furnish each member of the society with a copy of the Review monthly as it is issued for one year. When all the papers, discussions, etc., shall have been printed in the Review, they to be issued in book form similar to the volumes issued for the last five years, The Western Medical Review to receive as payment for same $1.35 for each member supplied with the Review and a copy of the transactions.

Moved and seconded that the proposition be accepted. Carried.

Dr. Crummer read the following letter:

Fremont, Neb., April 24, 1901.

Dr. E. N. Leake, City—Dear Sir: In your suit against Mrs. Lucas the following are the facts. You furnished medicine and medical attendance to Mr. Lucas here. He moved from the state. Judgment was obtained against him in Missouri and execution issued there. Then suit was commenced against the
wife here, alleging that she was liable because the medicine and medical attendance were necessaries for the family. Two defenses were raised; first, that medicine and medical attendance furnished the husband are not necessaries for which the wife is liable in any event; second, that the judgment against the husband must have been obtained in this state. The court found against us on both propositions, and both of these questions will be raised for determination by the supreme court, where the cause is now pending.

The latter question is one of practice only, which the medical fraternity would not be interested in. But the question as to whether these items are necessaries under our statute is certainly a very important one to the medical fraternity and is squarely in dispute in the case.

Very truly yours, Courtright & Gidner.

Moved and seconded that this society appropriate $50.00 at this session to get a legal decision upon the question as to whether medical attendance and medicines are necessaries for the family. Motion lost.

The committee on credentials reported the following:

Inasmuch as Dr. Geo. Haslam, of Fremont, was a candidate for membership in the society ten years ago and the society, as a body, objected to his application, your committee feels that it is the society’s prerogative to act directly upon the application and refer it back without recommendation and without prejudice.

A. B. Anderson.  
I. N. Pickett.  
Geo. Roerden.  
E. J. C. Sward.  
R. C. Talbot.  
B. B. Davis.

Moved and seconded that the report be referred back to the committee on credentials and that they report again at the morning session.
Dr. Wilkinson: There are some bills to be met by the society. They are as follows:

State Journal Co., printing programs and env. $30 00
Dr. H. M. McClanahan, expenses .......... 17 10
Dr. J. L. Greene, expenses ................. 11 23
The Whitehead & Hoag Co., badges ......... 25 00
Hall rent, Geo. M. Walsh ..................... 40 00
Dr. J. R. Haggard, services railroad certificates, 5 00
U. G. Cornell, operating stereopticon ....... 5 00

Moved and seconded that the bills be allowed. Carried.

Moved by Dr. Crummer that this society appropriate $200 to test the osteopathic bill in the supreme court; this money to be used as attorney's fees. Motion seconded. Moved in amendment that the $200 be placed in the hands of the committee on medical legislation of this society, to be at their disposition whenever called for. Motion seconded. Moved as an amendment to the amendment that the sum of $200, to be at the disposal of the committee on medical legislation, be left in the treasury until they are ready to use it. Motion seconded. The original motion as amended was carried as follows:

That the sum of $200 be at the disposal of the committee on legislation, to be called upon at their option, but to remain in the hands of the treasurer until needed, and to be drawn upon by draft of the president of this society.

The committee on credentials presented their report, as follows:

To the Nebraska State Medical Society: In the application of Dr. Geo. Haslam, of Fremont, your committee on credentials begs leave to submit the following: In view of the fact that we have been credibly informed that at the January meeting of the Elkhorn Valley Medical Society, in which district he resides, his petition for membership was not ac-
cepted, we deem it inexpedient to recommend his
election to membership at the present time.

A. B. Anderson.
B. B. Davis.
R. C. Talbot.
E. J. C. Sward.
I. N. Pickett.

Moved and seconded that the report be adopted.
Carried.

ELECTION OF OFFICERS.

For president, Dr. Wm. B. Ely, having received the
majority of votes, was declared elected; first vice-
president, Dr. A. B. Anderson, of Pawnee City, hav­
ing received the majority of votes, was declared
elected; second vice-president, Dr. E. J. C. Sward, of
Oakland, having received the majority of votes, was
declared elected. For secretary the rules were sus­
pended and the treasurer cast ballots of the society
for Dr. A. D. Wilkinson, who was declared elected.
For treasurer the rules were suspended and the sec­
cretary cast the ballots of the society for Dr. J. L.
Greene, of Asylum, who was declared elected. For
corresponding secretary and librarian the rules were
suspended and the secretary cast the ballots of the
society for Dr. H. Winnett Orr, who was declared
elected.

There being no further business, the society ad­
journed until Thursday morning, 9 o'clock.

After adjournment the members repaired to the
Lincoln Hotel and sat down to the thirty-third annual
banquet as guests of the Lincoln Medical Society.

MORNING SESSION.

THURSDAY, May 9, 9 a. m.

A communication was read from Dr. Wynn, of In­
dianapolis, relative to the appointment of some one
to take charge of any pathological exhibit that the
state of Nebraska might make at the American Medical Association in St. Paul. Dr. Harry H. Everett, of Lincoln, was appointed to take charge of the work.

The committee on necrology submitted the following report:

REPORT OF COMMITTEE ON NECROLOGY.

MR. PRESIDENT, LADIES AND GENTLEMEN: Your committee in making its report would incorporate the recommendation that was made by the committee of last year, that the secretary of this society be made an ex-officio member of the committee on necrology, as we believe it would materially aid the committee in getting such data and knowledge as it should have in regard to deceased members in order to give a full and correct report to this society.

Dr. Mary C. Case, Holdrege, died some two years ago and never reported.
Dr. N. R. Hobbs, Elmwood, died July, 1900.
Dr. Joseph Neville, Omaha, died August 18, 1900.
Dr. Charles C. Crowe, Randolph. Dead.
Dr. Henry B. Wilson, Omaha, died September, 1900.
Dr. W. J. Harris, Beatrice, died January 26, 1901.
Dr. C. C. Jordan, Nebraska City, died June 29, 1900.
Dr. Ira Doan, North Bend, died February 6, 1901.

WILLIAM JOHNSTON HARRIS was born at Frankford, Ontario, December 28, 1840, and died at his home in Beatrice, Neb., January 28, 1901. He received his academic education at Victoria University, Toronto, his medical education at the University of Michigan and Rush Medical College, graduating from the latter institution in 1866. He also graduated from the Long Island College Hospital, of Brooklyn, in 1876. Soon after graduating the doctor located at Peoria, Ill., where he remained in active practice eighteen years, with the exception of one year spent in practice at Sioux Falls, S. D., and two years at Medora, Ill.

Dr. Harris was a man of broad reading in general literature as well as in medicine. Of commanding
personal appearance, with a face expressive of a high order of intelligence, he occupied a conspicuous place and exercised an important influence in society and business circles. He was a successful practitioner, a good surgeon and greatly respected by all who knew him. He was a progressive physician, and kept himself well informed and up to date, by taking frequent post-graduate courses in New York, Philadelphia, and Chicago. The doctor became a member of the Nebraska State Medical Society in 1889, and was a member of the American Medical Association and the Gage County Medical Society at the time of his death.

Dr. Harris located at Beatrice in 1885 and enjoyed a large and lucrative practice up to the time of his death. He died from an acute exacerbation of Bright's disease after three weeks' illness. The doctor was a Christian gentleman and a descendant of one of the old and aristocratic Welsh-Canadian families. He left his family in very comfortable circumstances. His widow, two sons, and only daughter all reside in Beatrice. One of his sons, Dr. George A., has taken up his father's practice and the other, Herbert Taylor Harris, is a senior student in the Creighton Medical College. The daughter, Margaret L., is a student in the high school and makes her home with her mother. Dr. Harris was a member of the I. O. O. F., M. W. A. and other orders.

All honor to his memory and may his soul rest in peace.

The old guard is passing away. The names and faces that will be most prominent on occasions like this, in a few years will be those of a newer generation, but this thought only brings us nearer to the realization of the tremendous responsibilities which we cannot escape. Let us then accept the obligations of the hour and acknowledge this time as an opportunity in which we can awaken to a deeper interest, renew our fealty, and pledge our earnest co-operation in that work which shall best develop the great and benefi-
cent end we are striving to accomplish. The advancement of our society depends upon the life and action of its individual aggressive forces. The future is glistening with glorious possibilities; let us act so as to secure its richest rewards. Concert of action, harmony of feeling and unity of purpose will win for us a magnificent victory and make us triumphant in years to come.

Your committee respectfully submits the following list of deceased members, and would urge any member in possession of information which would make this list more complete to confer with the next committee on necrology:

Deceased Members.

Dr. William Edmund Donelan, Plattsmouth, died April 22, 1879, aged 50.
Dr. D. H. O'Linn, Blair, died February 12, 1880, aged 36.
Dr. Enos Lowe, Omaha, died February 12, 1880, aged 76.
Dr. Jonas Crane, Brownville, died June 4, 1881, aged 61.
Dr. Gilbert C. Monell, Omaha, died September 29, 1881, aged 65.
Dr. J. D. Leslie, Lincoln, died 1883.
Dr. H. Brunner, Fremont, died 1883.
Dr. Wm. McClelland, Omaha, died 1883, aged 51.
Dr. David E. Beadle, Papillion, died April 9, 1883, aged 49.
Dr. Anna L. Benson, Omaha, died Apr. 22, 1884, aged 25.
Dr. George Rightmire, Wymore, died April 14, 1884, aged 36.
Dr. C. T. Dildine, Kearney, died July 13, 1886, aged 36.
Dr. Eli M. Wilson, Falls City, died November 5, 1886, aged 45.
Dr. Horace Chapin, Lincoln, died July 15, 1887, aged 65.
Dr. N. B. Larsh, Nebraska City, died December 22, 1887, aged 53.
Dr. Thos. Edward Mitchell, Ogden, Utah, died February 7, 1888, aged 56.
Dr. F. G. Fuller, Lincoln, died April 13, 1888, aged 47.
Dr. Robert R. Livingston, Plattsmouth, died September 28, 1888, aged 61.
Dr. Peter Hostetter, Omaha, died October 22, 1889, aged 50.
Dr. Milton Lane, Lincoln, died September 16, 1889, aged 42.
Dr. Geo. B. Ayres, Omaha, died August 19, 1890, aged 34.
Dr. John L. Long, Wakefield, died July 26, 1890, aged 35.
Dr. D. R. Ball, Nelson, died 1891.
Dr. Marcus W. Wilcox, Harvard, died January 7, 1891, aged 58.
Dr. Chas. E. Dittebrandt, Summerville, Ore., died June 27, 1891, aged 30.
Dr. S. B. Taylor, Blair, died 1892, aged 53.
Dr. Levi F. McKenna, Omaha, died July 18, 1892, aged 53.
Dr. L. A. Claussen, Beatrice, died October 17, 1893, aged 43.
Dr. Horace E. Harrington, Bertrand, died January 7, 1894, aged 36.
Dr. G. Hial Peebles, Lincoln, died March 15, 1894, aged 54.
Dr. Andrew Newton Jackson, Chadron, died April 15, 1894, aged 35.
Dr. M. W. Walton, Beatrice, died July 11, 1895, aged 53.
Dr. Metha Helfritz Jonas, Omaha, died October 28, 1895, aged 38.
Dr. Aurelius Bowen, Nebraska City, died August 5, 1895, aged 78.
Dr. Edward H. Smith, Fullerton, died October 27, 1897, aged 38.
Dr. Frederick N. Dick, North Platte, died December 29, 1896, aged 54.
Dr. George Winton Johnson, Geneva, died April 21, 1897, aged 46.
Dr. Nelson F. Donaldson, North Platte, died February 24, 1898, aged 51.
Dr. W. H. Parkhurst, Dunbar, died February 24, 1898, aged 38.
Dr. Jacob Conover Denise, Omaha, died January 20, 1899, aged 71.
Dr. James Titus Armstrong, Beatrice, died January 14, 1899, aged 43.
Dr. Luther J. Abbott, South Omaha, died February 22, 1900, aged 69.
Dr. George L. Humphreys, Monroe, died March 30, 1900.
Dr. Otto C. Heise, Nebraska City, died February 9, 1900, aged 31.

Respectfully submitted,

Claude Watson, Chairman,
F. D. Halderman,
E. A. Benton,
Committee.

The President: We neglected to select a place of meeting at last night's session. What is the will of the members?

Dr. von Mansfelde: I don't know but that a preliminary remark is necessary to the members of the society, and then perhaps we can more intelligently carry out the motion that ought to be made in regard to the next place of meeting. I think the Lincoln members did creditably last night in the carrying out of the entertainment. It seems to me that the outlay of money and the outlay of time and of energy is wasted by these social banquets. Give us a good social time, a cup of coffee and a cigar, if the ladies are willing, and let the society pay for it from its funds. It is done in the Medical Society of the Missouri Valley and elsewhere. If we will express our-
selves by a motion like this, that we are heartily thankful to the profession of Lincoln for the fine entertainment that we had last evening, but that hereafter no such undertaking be held unless at the expense of the society—

PRESIDENT: Motion out of order. Question before the house is, Where is the meeting to be next year? Dr. Henry suggested that meeting be held in Omaha. Moved and seconded. Carried.

Dr. Henry: In regard to the matter of Dr. von Mansfelde, I have held for some years that the society should pay their own expenses. The fact of the matter is that the society ought to have funds on hand to pay their own entertainment; therefore, I move that in the future the expenses of entertainment be paid out of the funds of the society. Seconded.

Dr. Wilkinson: The members are aware, I presume, that heretofore there has been $100 appropriated towards entertainment. It has been the rule for several years. That pays for part of the entertainment. The local profession pays the remainder. What we receive from the exhibitors also goes into the entertainment fund.

PRESIDENT: Motion is out of order.

In regard to sending delegates to the American Medical Association Dr. von Mansfelde moved that Dr. McClanahan continue as one of the delegates to the A. M. A.; also Dr. Wilkinson. Moved and seconded. Carried.

LIST OF DELEGATES TO A. M. A.

Dr. H. M. McClanahan, Omaha.
Dr. A. D. Wilkinson, Lincoln.
Dr. E. C. Henry, Omaha.
Dr. W. O. Henry, Omaha.
Dr. B. F. Crummer, Omaha.
Dr. A. F. Jonas, Omaha.
Dr. E. W. Powell, Omaha.
Dr. Ewing Brown, Omaha.
Dr. D. C. Bryant, Omaha.
Dr. Harry H. Everett, Lincoln.
Dr. J. L. Greene, Lincoln.
Dr. A. R. Mitchell, Lincoln.
Dr. W. H. Dearing, Lincoln.
Dr. W. L. Dayton, Lincoln.
Dr. J. O. Dawson, Lincoln.
Dr. A. S. von Mansfelde, Ashland.
Dr. P. K. Drummond, Wymore.
Dr. W. F. Conwell, Neligh
Dr. A. I. McKinnon, Havelock.
Dr. Jonas Hoover, Bennett.
Dr. M. L. Hildreth, Lyons.
Dr. F. A. Butler, Harvard.
Dr. J. W. Bullard, Pawnee City.
Dr. G. W. Shidler, York.
Dr. R. C. Moore, Omaha.
Dr. J. E. Summers, Jr., Omaha.
Dr. A. W. Riley, Omaha.
Dr. M. H. Garten, Lincoln.
Dr. A. D. Nesbit, Tekamah.
Dr. W. R. Young, Ansley.
Dr. C. C. Moyer, Lincoln.

Moved and seconded that society endorse the plan that is outlined in pamphlet received from A. MacDonald at Washington, D. C., relative to the establishment of a psycho-physical laboratory in the department of the interior. Carried.

Dr. Orr introduced a proposition of the State University librarian in regard to classifying the medical literature in the Nebraska State Medical Society library.

Moved that society appropriate for this year, for the purpose of completing uncompleted files and classifying medical books, the sum of $30, this to be under the supervision of the corresponding secretary, and to include his necessary expenses for the current year.

Dr. Shields: I have been thinking about the pro-
priety of having some member appointed by the president to make observations and put into practice what he has gained from this session and to make recapitulation of the discussions for the next meeting. I do not know whether this meets with the approval of the society or not. Make it a point to note it in the minutes, Mr. Secretary.

The president appointed Dr. Shields to so act and report at our next meeting.

Reading of papers proceeded with.

The Sections on Medical Jurisprudence and Medical Legislation not having a representative present, that of Obstetrics and Gynecology was taken up. The chairman, Dr. Ewing Brown, of Omaha, read his paper on the “Office Treatment of Gynecological Patients.” No discussion.


Discussion of both papers by Drs. von Mansfelde, Crummer, Brown, Ely, Pollard, Jonas, Anderson, and Henry.

E. W. Powell presents specimen for inspection of the society.

Moved that the work of the Section on Laryngology and Nervous Diseases be read by title. Seconded and carried.

Fifty-three new members were elected to full membership during this meeting.

Dr. von Mansfelde: I want to say just one word to the members of the society before we adjourn. Let us not come back next year with self-accusations and
confessions of our short-comings. Let us come back here with cheerful hearts, congratulating this society on its growth from year to year. This society twenty years ago did not have twenty members who had paid their dues to date, now it has 300 members who are in full membership. We have no cause for lamentations, but every reason for rejoicing and thanksgiving. Mr. President, I move an adjournment sine die. Carried.

A. D. Wilkinson, Recording Secretary.
NEW MEMBERS.

C. A. Allenberger, Shelby.
W. S. Wilson, Nebraska City.
J. M. McLeod, Lincoln.
H. L. Finley, Pawnee City.
D. J. Reymish, Burchard.
J. C. Mosshart, Lincoln.
J. V. Beachley, Lincoln.
W. E. Gossett, Waverly.
U. D. Stone, Steinauer.
J. M. Birkner, Lincoln.
H. J. Vance, Omaha.
E. L. Bridges, Wausa.
Rudolph Rix, Omaha.
R. A. Davies, Arlington.
W. R. Talboys, New Castle.
A. E. Cook, Randolph.
F. H. Brown, Fremont.
D. S. Hogen, North Loup.
J. W. Archard, Grafton.
G. W. Miesenbach, Swanton.
E. W. Steenburg, Aurora.
P. A. Drummond, Wymore.
G. L. Brash, Beatrice.
J. W. McKibben, Adams.
H. W. Hepperlen, Beatrice.
L. A. Beck, Red Cloud.
A. Postka, Upland.
J. Williams, Kenesaw.
W. C. Fulkerson, Blue Hill.
J. C. Dwyer, Valentine.
P. E. Plumb, Gothenburg.
A. Lewis, Valentine.
A. J. Kearns, Loup City.
W. R. Young, Ansley.
M. Stuart, Tecumseh.
J. F. Bradshaw, Superior.
M. U. Thomas, Weeping Water.
H. H. Everett, Lincoln.
C. L. Mullen, Broken Bow.
C. H. Zigler, Vesta.
J. Bixby, Strang.
R. G. Gale, Belvidere.
H. J. Arnold, Columbus.
W. Ackley, Juniata.
E. R. Porter, Omaha.
B. M. Deardoff, Clatonia.
I. B. Wamsley, West Union.
J. M. Doan, North Bend.
H. F. McCoy, Benson.
J. L. McCartney, Gretna.
E. J. Taggart, Gretna.
S. N. Bentley, Ravenna.
THE FOLLOWING MEMBERS REGISTERED.

Adams: J. W. McKibbon.
Ainsworth: W. B. Ely.
Asylum: J. L. Greene, W. D. Shields.
Bassett: H. J. White.
Beaver Crossing: C. W. Doty.
Bennet: Jonas Hoover.
Benson: H. F. McCoy.
Bloomington: Ella P. Sumner.
Broken Bow: C. L. Mullins, R. C. Talbot.
Burchard: D. J. Reymish.
Cambridge: J. Hiett.
Central City: W. N. Hunt.
Chicago, Ill.: Geo. H. Simmons.
Columbus: A. J. Baker, Berthold Tiesing.
Cortland: E. E. Aukes.
Cowles: T. R. Hall.
Cozad: J. H. Fochtman.
Craig: F. C. Clark.
Eustis: J. A. Andrews.
Fairbury: G. L. Pritchert.
Falls City: F. C. Wiser.
Fremont: F. H. Brown, R. C. McDonald.
Friend: J. V. Beghtol.
Grand Island: Geo. Roeder.
Greenwood: N. D. Talcott.
Gretna: J. L. McCarthy.
Hartington: M. M. Willson.
Hastings: Jay G. Roberts.
Havelock: A. J. McKinnon.
Holdrege: J. T. Miller.
Hooper: M. T. Zellers.
Howells: N. H. Wilber.
Juniata: W. Ackley.
Kearney: M. A. Hoover.
Lyons: M. L. Hildreth.
Memphis: H. P. Thelin.
Nebraska City: W. T. Neal, C. Watson.
Nehawka: J. A. Pollard.
Neligh: W. F. Conwell.
North Bend: J. M. Doan.
North Loup: D. S. Hogan.
Oakland: E. J. C. Sward.
Odell: I. N. Pickett.
Ong: J. H. Winston.
Ord: C. E. Coffin.
Osceola: L. M. Shaw.
Pawnee City: A. B. Anderson.
Prague: J. P. Percival.
Randolph: A. E. Cook.
Red Cloud: Robert Damerell.
Roca: E. W. Demarce, H. C. Demarce.
Scribner: Chas. Lucas.
Shelton: E. L. Smith.
South Omaha: W. L. Curtis, W. Berry.
St. Paul: Georgiana Grothan, O. Grothan.
Stromsburg: C. A. Anderson.
Superior: J. T. Bradshaw, F. E. McKeeny.
Surprise: J. H. Miller.
Swanton: G. W. Meisenbach.
Table Rock: W. H. Wilson.
Tecumseh: M. Stewart.
Tekamah: I. Lukens.
Valentine: Alfred Lewis.
Waverly: W. E. Gossett.
Weeping Water: J. B. Hungate.
Wilber: P. F. Dodson.
Before entering upon the discussion of the topics of my address I desire to thank you most cordially for the distinguished honor of having been elected president. The promise made one year ago, that I would do all in my power to advance the interests of this society and of the medical profession of Nebraska, I have endeavored to the best of my ability to fulfill.

I wish to acknowledge my indebtedness to our esteemed secretary, Dr. A. D. Wilkinson, for the faithful performance of the manifold duties of his office, for his uniform promptness and courtesy, and his valuable suggestions and advice. I thank the members of the committees and the chairmen of the sections for their hearty and generous co-operation. The success of this meeting, in numbers and the character of the papers, is largely due to their work and influence. I have the honor to make the following recommendations for your consideration:

First—Members of the society desiring to have their names on the program shall be required to forward to the secretary, at a convenient time before the annual meeting, a verbatim copy of their paper, together with a brief abstract of the same; and that no name shall appear upon the annual program until a copy of the paper is in the hands of the secretary. This, I believe, would improve the quality of the papers and prevent names appearing upon the program when no paper had been prepared. A brief abstract printed upon the program would enable members to form a clearer conception of the scope of the paper, as the title often conveys no information as to its contents. Members could then prepare themselves for a more intelligent discussion of the papers read. Were a member prevented from attending the annual meeting, the society would have the paper, which could be read in full, or by title.
Second—At the meeting of the A. M. A., at Columbus, in 1899, a committee on national legislation was organized. It was the intention that each state society should appoint one of its number as a member of this committee. That committee has already abundantly demonstrated its usefulness. The defeat of the Gallinger anti-vivisection bill was largely due to the personal work and influence of this committee. There yet remain subjects for national legislation, important to our profession and to the public. Bills are constantly being brought before congress requiring the attention of this committee. Nebraska was not represented in the meeting at Washington, February, 1901. I recommend that at this meeting of the society one of our number be elected as a committeeman on national legislation from this state; that the member elected shall have power of appointing an alternate, and that provision be made for defraying his necessary expenses in attending the meetings of the committee. The next meeting of the committee on national legislation will be held at the call of the chairman, Dr. H. L. E. Johnson, at Washington, D. C.

Third—The good name and honor of our profession is of paramount importance and transcends the interest of any individual member. The danger to the integrity of the medical profession is within and not without our ranks. "Every individual, on entering the profession, as he becomes thereby entitled to all its privileges and immunities, incurs an obligation, to exert his best ability to maintain its dignity and honor, to exalt its standing and to extend the bounds of its usefulness." (Code of Ethics, art. 1, sec. 1.) Any practice that lowers our profession in the estimation of the public, by destroying its confidence in our honor, or integrity, is to be condemned. The payment of a commission for the referring of cases from one physician to another, without the knowledge or consent of the patient, is bad practice,—a violation of the spirit of the code, and demoralizing to the entire profession. It is only just to the individual physician,
that the profession, through its organized body, shall express its sentiments on this subject in clear and unmistakable language. I appreciate the delicacy of this matter, but feel free to speak of it, because I do not know of any instance of this practice having been resorted to by a member of this society. I bring it before you for consideration, solely upon my own responsibility, without the advice or request of any member. I recommend that the society take formal action by resolution, expressing its views upon this subject, to the end that members may know that this practice is in violation of the expressed sentiments of this society. I may add that formal action upon this subject has already been taken by other societies, both local and state.

Fourth—Organization is the greatest power in modern civilization. We realize its force and extent in the commercial world, and in the trades unions of all classes of skilled artisans. Without organization, it is impossible for any large number of individuals, having like interests and common ends, to accomplish anything in moulding public sentiment, or in procuring the enactment of statutory laws. The influence of the medical profession of the United States is less than that of any equally large number of individuals. The reason for this is not from the lack of personal worth, for no class stands higher in public estimation, but for want of effective unity of action. When the representative of a labor organization appeals to a legislator for the support of a measure, he knows that back of the individual is the united voting rank of the order. During the last session of our legislature a few of our members appealed to that body to defeat a bill, detrimental to public interests and humiliating to all physicians. Had the legislature realized that back of those individuals was the entire united profession of Nebraska, ready to co-operate with them, do you not believe they would have received greater consideration?

The subject of the reorganization of state societies
is an important one. I have given the matter careful study and, in order to inform myself as fully as possible, have corresponded with a number of the members of our profession in other states. There is a strong sentiment among those who have given the matter study that the medical profession of the United States should be more systematically organized. I have ascertained that there is practically an unanimity of sentiment upon certain features in the scheme of re-organization, as contemplated by those who have given the subject careful consideration. The county society is the primary unit, the foundation upon which the entire superstructure should rest. In localities where the counties are thinly settled and the members of our profession are few in number, as in many of the counties of Nebraska, several are to be grouped together, to form the district society. Under this plan, the county or district society would have officers as at present, would be the judge of the eligibility of members, would hold meetings for scientific and business purposes, at their own discretion, and for all local purposes would be untrammeled.

The membership of the state society would include all of the members of the county and district societies. The expenses of the state society could be defrayed by per capita tax upon the members of the local societies; that is, the payment of annual dues into the treasury of the local society would include a sufficient sum to defray the expenses of the state society. Membership in the local society would include membership in the state society. The membership of the state societies would, therefore, be as large as the total membership of the local societies. This is spoken of in current literature as the "Connecticut plan," for the reason that it has been the method of organization of that society for more than one hundred years. In letters received from a former president of one of the county societies and the president of the state society, I am informed that the plan is entirely satisfactory.

The State Medical Association of New York has
recently been reorganized in this manner. The secretary of the association writes me that the method meets the hearty approval of the profession. Other states have recently adopted a similar method of reorganization. The committee upon organization of the A. M. A. desires to carry this plan one step further and make membership in that association dependent upon the membership in the state society; thus, a physician not a member of his local or state society would not be eligible for membership in the national association. In other words, the A. M. A. would be the creature of the state society, and the state society the creature of the local society; therefore the local society would be the primary unit and the source of all power. Each physician in the local society, however humble or poor in purse, would have a voice in shaping the destiny and moulding the sentiment of the profession at large. The advantages that would accrue from such a complete reorganization are many. It would certainly stimulate the formation of county and district societies where none now exist, and consequently lead physicians to take more interest in their profession. It would debar men who are unfitted, or have no interest in the local profession, from becoming members of the state or national societies. In the local societies it would be possible to keep a record of each member, so that were he to remove from one portion of the state to another, or to an adjoining state, information as to his character and standing could be readily procured. At present, each society is an integral body, having no relation with the societies of adjoining states. Under this plan of reorganization there would naturally be co-operation between the societies of the different states. That of one state could render valuable aid to that of another in matters of legislation, in regulating the standing of medical colleges, in the enforcement of medical laws, in creating a uniform standard for the granting of licenses, and satisfactorily adjudicate the vexed question of reciprocity. Were this scheme of reorganization carried
out in every state, it would be possible, within the period of thirty days, to give information upon subjects of legislation, either national or state, to almost the entire body of our profession throughout the country. For example, matters going before the national congress affecting the welfare of our profession, the secretaries of the national, state, and local societies could give information to the rank of the profession of the import of bills introduced, and make arrangements to have each senator and representative interviewed by physicians in his own state, or community, with whom he was personally acquainted. It would give our profession a standing before legislative bodies and would confer upon it a power for good to which it is rightfully entitled.

I have corresponded with the presidents of the societies of ten western and adjoining states, and from replies received I can assure you that this matter will be presented for consideration in nearly every state at the annual meeting of 1901. In conclusion, I have to recommend that a committee be elected, at this meeting, to be known as a committee of reorganization, and that this committee be requested to carefully investigate this subject, to gather information from all possible sources, and to report the result of its deliberations at our next annual meeting.

I desire to acknowledge my indebtedness, for valuable information received, to Dr. George H. Simmons, a member of this society and now editor of the Journal of the A. M. A.; to Dr. Kreider, of Illinois; to Dr. Wiggin, of New York, and others.

It is a custom that the president in his annual address shall present to the members a subject pertaining to the interests and welfare of the medical profession. In conformity to that custom I desire to call your attention, as briefly as possible, to some reforms and improvements in medical education. I am aware that this subject has been carefully studied by those more capable than myself, but I do not recall having noticed in literature any suggestions along the line of
the reforms I have to recommend. As we realize the marvelous advance in medical education within the last twenty-five years, it would seem there is nothing more to be desired. Astonishing as it may seem, it is nevertheless true that a greater advance has been made since 1875 than in all the preceding centuries. From the time of Galen, in the second century, down to the last quarter of the nineteenth century, medical education consisted of didactics, lectures, and clinical instruction. During the last twenty-five years the actual time devoted to the study of medicine has been increased 120 per cent. The greatest improvement, however, has been made in the method of the study of the scientific branches. Almost the entire time of the first two years of the medical course is devoted to the study of these subjects. The number of subjects has also been greatly increased. Formerly the four elementary branches were anatomy, physiology, chemistry, and materia medica. There have been added to the number embryology, biology, histology, pathology, and bacteriology. The advancement in the method of study has been even greater than in the number of subjects. Laboratory work now occupies more than half of the student's time during the first two sessions. He is taught not only to know, but to do. His education is both scientific and practical. Indeed, it is practically scientific. In the third and fourth years, in addition to the general branches, namely, surgery, medicine, and obstetrics, there have been added pathology, otology, rhinology, laryngology, gynecology, pediatrics, and bedside clinical instruction. Upon most of these subjects the student receives both didactic and clinical instruction. My plea is for a widening of the curriculum, in the direction of the practical application of the knowledge acquired, to the treatment and management of disease. I have been led to give this subject careful study, because of the fact that there are in every community those engaged in the practice of medicine who are neither qualified by education nor experience. In spite of the fact that
there are everywhere educated and accomplished physicians, these "irregulars" find a large clientage. The physician who has spent his time and money in procuring a modern medical education is, in justice, entitled to the confidence and support of the community.

Why is it that so many place themselves in the care of the osteopath or the Christian Scientists? Is the fault with the public, or with our profession or medical schools? This is certainly a proper question for consideration. If the fault be with our profession or with the methods of teaching, then, in self-defense and in justice to ourselves, is it not our duty to ascertain and correct it? I do not believe that people patronize quacks and irregular practitioners from choice. Is it not true that a majority of those who seek aid from these sources have been under the care of the family physician, or possibly of several members of the profession, and have drifted away because they failed to find the desired relief? There is a well-founded belief in the minds of the laity that the medical profession is narrow and exclusive, and that it is slow to adopt new methods. This belief is not confined to the ignorant, but prevails among the highly educated, as I think you will all concede. In the minds of the public, the physician is too generally looked upon as an individual who administers drugs and performs surgical operations; and if these methods of treatment fail to bring relief, they believe he has reached the limit of his capacity. This low conception of the function of the physician is unfortunate, but is not wholly the fault of the public. Any method of treatment, not immoral, that is of benefit to the sick is legitimate and should be within the reach of members of our profession. We have a right to expect instruction, in our medical schools, upon all proper and legitimate methods of treatment. Permit me to briefly call your attention to certain methods of treatment that might be, with propriety and benefit, incorporated in the course of instruction.

My information is derived from a careful study of
the catalogues and announcements of twenty-one medical colleges, in widely distributed parts of our country. In but one did I find the subject of massage even mentioned. Denuded of its sophistry, osteopathy is merely a system of massage, and not even the best at that; but it has taken a hold upon the public and receives the patronage to which, in many cases, we are rightfully entitled. It is not the fault of our patients, but of our medical schools that this sect has grown up in our midst. Shall we ignore the truth because it is hidden in quackery? Had we not better expose the quackery and appropriate the truths? In certain cases massage is an excellent method of treatment, and will sometimes accomplish that which no other mode of treatment can. Why is it not possible in our medical colleges to give a thorough and systematic course upon the indications for its use and the methods of application, so that physicians may recognize those cases where it is properly indicated and refer them to some one competent to apply the treatment, instead of having them go, as now, to incompetent and irregular practitioners? It is not a sufficient argument to say that the physician cannot become a masseur. With equal force it can be said that every physician cannot do an abdominal section; but that does not excuse the physician from recognizing the nature of the case and referring it for operation. As the demand for better nursing of the sick has developed the trained nurse, to the great benefit of our profession, so the demand for skilled mechanical treatment will develop the trained masseur. At present many of us fail to recognize the cases where this method of treatment is indicated. For example, a gentleman in Omaha, in the course of two years, passed under the care of seven regular physicians for habitual constipation. He received nothing but drug treatment, and consequently only temporary relief. In despair he went to an osteopath and was cured. Let us be just. The osteopath is the one who administered the proper treatment in this particular
case, and as a result received the hearty thanks and continuous influence of this gentleman. Now, had these seven physicians, in their college course, received proper instruction upon the subject of massage, as they no doubt did upon other branches of medicine, do you believe they would have permitted this patient to have drifted along without instituting a rational method of treatment? On the other hand, I know a lady who has a cystic ovary. She went to an osteopath for treatment. As a result of the first treatment, she was confined to bed for three days; as a result of the second and last, she was seriously sick. Now it would not have been possible for a scientific physician, having knowledge of general medicine, to have recommended such ridiculous treatment in this particular case. This illustrates the truth that in medicine, science without art is helpless, and art without scientific knowledge leads to charlatanism. It seems to me, therefore, that, in this direction, teaching in our medical schools can be improved, and that for the profession at large, instead of fighting the osteopath by statutory laws, we could better vanquish them by appropriating their own weapon. When the educated physician understands the limitations and indications for this method of treatment, then he can demonstrate to the public that he is more capable than the osteopath, both in selecting the proper cases and in directing the treatment.

In the last few years we have witnessed the growth of a sect called Christian Scientists, and have been humiliated to observe the number of intelligent people who have been taken up and carried away with this cult. It is not a question of whether they are increasing in numbers or dying out, but it is a proper question whether or not there is any truth in the idea that the mind influences the body. In the abstract, every physician realizes the influence of the mind over the body. There are many instances in physiology of the influence of the nervous system upon secreting and excreting organs; but in a practical way, have we not
failed to realize the influence of the emotions over the physical welfare of the individual? Every physician knows that when he loses the confidence of his patient, he is seriously handicapped in his treatment, yet, in spite of this knowledge, I believe it is the result of our own carelessness, or a lack of our own appreciation, that so many cases, to which we are legitimately entitled, pass to the hands of these irregular practitioners. I believe the day has come when our medical schools should give greater attention to this subject, that a chair upon suggestive therapeutics, or psychology, would be a practical benefit to the physician. Such a chair would encourage study, and, as has been true of all other branches of science, teaching would develop investigation and investigation would enhance the sum of knowledge. A study of the catalogues above referred to reveals the fact that this subject receives no consideration, and indeed is only mentioned in one of the twenty-one catalogues. I do not mean to imply that this subject is not mentioned in any of the medical schools, but that it does not receive careful and systematic consideration.

Another important and practical subject that has received almost no consideration, and is only mentioned in two catalogues, is that of climatology. In this country there are a large number of individuals whose condition can only be benefited by a change of climate and environment, and yet, in recommending the change to our patients, we have very little accurate information upon which to base our opinion. A study of the subject of climatology in our medical schools would also encourage investigation. The subject of the influence of climate and altitude and humidity upon health, and the adaptability of certain climates to certain diseases, is an important one. Were a chair devoted to this subject, a valuable amount of information would be obtained within a few years, which is now difficult and often impossible to procure.

I have presumed to present these subjects briefly
to you, because the general profession is deeply interested in them; because, in the past, medical schools have been slow to extend their curriculum, or to improve their course of study; because many of the reforms in medical education are in response to a demand upon the part of the general profession; because educated physicians have a right to the confidence and patronage of the public; and because all legitimate methods of treatment should be accessible to them.

That further improvement is possible, we believe; that a marvelous advance has been made, we know. The increase in the knowledge and art and science of medicine during the century just closed is almost beyond credence.

At its early dawn, Laennec, the discoverer of the stethoscope, by his investigation of the chest, laid the foundation of modern clinical medicine. The discovery of an agent for the production of anesthesia made surgery a humane art, relieving it of its terrors and extending its field of usefulness. Towards the middle of the century, Koch of Berlin and Pasteur of Paris, by their patient investigations, shed a flood of light upon our science and laid the foundation of bacteriology,—a science that has done more for medicine and the welfare of humanity than any other discovery or event in modern history. Lister's antiseptic surgery removed the greatest danger to that art, and led to the adoption of aseptic surgery, because all scientific minds readily discovered that it was better to prevent than to destroy infection in living tissues. The benefits to internal medicine, though less strikingly brilliant, were none the less certain and permanent. The discovery of antitoxin was directly due to our knowledge of bacteriology. It has been conservatively estimated that the use of this remedy, in this country alone, has saved the lives of a hundred thousand children. The same knowledge revealing the danger to infants of infected milk has in New York city alone, in the past
two years, saved forty thousand infants. The dreaded plague has been held in check upon the threshold of our country and the cholera driven to its home along the Ganges. What magnificent achievements are these! What a splendid heritage is ours!

May I not express the hope that the profession of this state,—fair and beautiful among the sisterhood of states, strong in her youth, mighty in her commerce, boundless in her agricultural resources, whose beautiful prairies and growing cities are yet to be the homes of millions,—that we of the State Medical Society of Nebraska, gathering inspiration from these wonderful achievements of the past century, may do our part in the present century towards advancing the science, improving the art, and enlarging the influence of our profession,—a profession grand in its antiquity, great in its history, magnificent in its achievements, humane in its aims, and ennobling in its practice.
Scientific medicine is confronted by conditions which call for our dispassionate deliberation and our profoundest wisdom in action. I use the term "scientific medicine" in this connection, not in that restricted sense which embraces the school of "regular" medicine merely, but in a sense wide enough to include all who found their medical practice upon a systematic and somewhat exhaustive study of those branches of knowledge usually denominated the fundamental medical sciences.

The events of the past few years show conclusively (to my own mind at all events) that the undignified, often acrimonious, controversies which all too frequently have marked the inter-relations of medical men in the past have borne their natural fruit in diminished respect among the laity for the whole body of systematic medicine. Opprobrious epithets, throwing contempt upon each other's knowledge, impugning their motives and vilifying their personal character even, have been hurled back and forth till all distinction between honorable physician and quack has been completely effaced from the minds of the masses of the people. Therapeutic orthodoxy is a subject of which they know nothing and for which they care less. "Orthodoxy is my doxy; heterodoxy is the other fellow's doxy," expresses the literal truth to their minds in this connection, and the Philippic lightning of medical polemics has illuminated their understanding to the extent that scientific medicine and quackery are perceived as essentially one and the same thing. It is time that we awake from our lethargy and open our eyes to the sort of conditions we have been largely instrumental in bringing about, and gird ourselves to do something—or to make the attempt at all events—looking toward such a cor-
rection of them as may render the unification of scientific medicine possible.

The tendency of earnest partisanship is to magnify factional differences. We are too much inclined to estimate practical homeopathy by the extremest dogmatic utterances of Hahnemann, and that too in the face of the well known fact that the "low potency" branch of his school (which constitutes probably more than 95 per cent. of the entire body) have amended out of all possible recognition by him such of them as they have not openly rejected. The following quotation from unquestioned authority will make this clear:

"The ostracism and persecution of Hahnemann by the medical profession of Germany produced its usual results. The 'Master' speedily advanced the most extreme and dogmatic tenets concerning the nature of disease and the limit of attenuation of medicines. A few of his disciples followed his steps into the mystic realm of absurd speculation in which he dwelt during the years of his declining manhood. Two parties were thus formed in the school which he founded, whose positions are well set forth in the following resolutions:

"'Although firmly believing the principle Similia Similibus Curantur to constitute the best guide in the selection of remedies, this belief does not debar us from recognizing and making use of the results of any experience; and we shall exercise and defend the inviolable right of every educated physician to make practical use of any established principle in medical science, or of any therapeutical facts founded upon experiments and verified by experience, so far as in his individual judgment they shall tend to promote the welfare of those under his professional care.'”

(Extract from resolutions of February 8, 1878, by the Homeopathic Medical Society of New York County, and February 12, 1878, by the Homeopathic Medical Society, New York State.)

And, gentlemen, this represents more than 95 per
cent. of modern homeopathy! As to eclecticism, I have never been able to discover any difference between it and our own practice at the bedside. As a matter of hard fact, when it comes to actual bedside work, fine-spun, school-taught theories are thrown to the winds by every doctor regardless of his "school"; each follows his own home-made theories in the light of his individual experience and fundamental scientific training.

In all else save theoretical therapeutic orthodoxy, the two established medical sects stand in essential agreement with the old physiological school. Now, within ourselves, if there exists a single dogma in therapeutics or theory of practical detail, the acceptance of which constitutes orthodoxy and its rejection, heterodoxy, I'll frankly confess that I have never made the discovery. I am at absolute liberty to hold such opinions as my educated judgment compels, and however radically opposed they may be to the theories of my brethren, there is not one who would presume to question my professional standing because of them, or my right to fraternity with this society. Our liberty in opinion and practice is unbounded. In the presence of such unlimited freedom as between ourselves, by what rule of ethics shall we deny the same freedom to others, our equals in scientific acumen and moral integrity?

As a matter of cold fact, what is it that determines the medical neophyte's choice of a sectarian school? Does he enter upon its course with a clear apprehension of the distinctive differences between it and the rest of the body of medicine? Has he weighed all the pros and cons of the intricate questions involved and come to an intelligent judgment of their weight and merits? Never! By the very necessities of the case, it is an utter impossibility that he could do so. As well expect a newborn infant to solve the intricacies of the nebular hypothesis. What then determines his choice? In the language of a homeopathic acquaintance of mine, "He is steered into it" by de-
signing or interested friends. Having committed himself to it by entering upon its course, he goes through its curriculum and graduates, a sectarian doctor—probably with his last dollar spent paying for his diploma. In a year or two he probably marries, if he is not married already. Very likely during that year or two he begins to catch a glimmer of his mistake, which, once flashing in upon his mind, grows brighter and brighter as time passes and his experience widens. And it is right here that the rub comes. For all such as hold to the delusions with which they enter upon sectarianism, I have not a word to say. This paper relates wholly to such of them as come to feel that they have made a mistake. How may such an one rectify it? Under our present rules this is a practical impossibility, in that we require him to go through a complete course and graduate at some "regular" school. In more than 99 per cent. of the cases this requirement is tantamount to inexorable prohibition; for how is a poor man with a family on his hands to take another complete course in medicine? However devoutly he may wish to do so, he simply cannot. Now for such an one there is but one course open, to study in the privacy of his office along those lines which were omitted from his course at school, and apply in secret the knowledge so gained. He is compelled to choose between adhering to his sectarian name on the one hand and becoming a medical outlaw on the other without professional association of any kind. He naturally prefers comradeship and sticks, formally, to his sectarianism. I have heard such a course characterized by some pretty hard names, but, considering the limitations of human nature and the Sparatan stringency of our rules, the strictures are hardly to be just. That the desire to abandon their exclusiveness permeates rather widely among the sectarians, is generally admitted, but, in the nature of the case, it will always remain impossible to find out how widely this feeling extends till some intelligent attempt is made to devise for them an acceptable
avenue of escape into the body of unsectarianism. It is unthinkable that the overtures should come from them. There are limits which common pride will never overstep, and here is one of them. The way out of sectarianism will have to be made by us, or it never will be opened at all.

The question involved in this proposition is not whether we shall put the stamp of our approval upon certain dogmas in therapeutics and theories of practical detail, but whether or not we will extend the intellectual liberty we freely accord to each other within the limits of our own organization, to all equally honest, equally intelligent and equally educated men, on the one condition that they shall drop their exclusiveness and all names and titles indicative of it. We now are prohibited from it by our rules. They treat the man whose misfortune it was to get steered into a sectarian school as though he had committed the unpardonable sin. Though he comes to a clear perception of his mistake; though by his private study he closes completely the gap that separated him from us; though his practical work at the bedside is made absolutely free from all appearance of sectarian bias, and though he drops his sectarian name, he cannot be recognized by us before the world as a co-worker, unless he is blessed with a fortune sufficient to carry him through a course at some “regular” medical school. Now this seems a little unjust, and, furthermore, it places scientific medicine in a most anomalous position within the scientific world. No other scientific body would tolerate such a rule for a moment.

Instruction in the fundamental medical sciences is not materially different in all the recognized medical schools. Wherein the sectarian schools differ from the “regulars” relates to therapeutic theories only, and in some details of practice based upon them. And since they are grounded in the same scientific sub-stratum as we, it would seem that the only condition to be insisted upon as indispensably requisite for pro-
fessional association and co-operation should relate to those branches alone which were omitted from their preparatory course, viz., materia medica and practice. A single year devoted to these studies alone by a graduate of any of the recognized medical schools, either under the tutelage of a practicing physician or in a regular medical school, should be ample to cover the whole ground. For that matter, I can see no good reason for insisting that his knowledge should come from any prescribed source, only so that he has it.

The action of our state legislature last winter in legalizing osteopathy, for no better reason, apparently, than that the cult was lucky in its choice of a name (it claims to be one of the "pathies"), together with that other fact that this new candidate for public favor has received similar legal recognition in many of the older states which boast of a high degree of general "culcha," is a hint of what, in all probability, is in store for the future. There is little room for doubt that this action is merely preliminary to the legal establishment of every form of medical faddism, and that another decade will scarcely pass till anything and everything professing to be a new, strange, and peculiar mode of healing will be placed upon precisely the same legal footing as scientific medicine. Out of this must necessarily spring, in all our state institutions at all events, side by side with our schools of medicine, colleges of osteopathy, of magnetic healing, of sarcic-psychology, Christian Science, and the Lord knows what not.

Gentlemen, this is no idle dream. What reason has ever yet been advanced why osteopathy should receive legal sanction as a distinct school of medicine that is not applicable with equal force to every medical fad that ever has afflicted a suffering world? It is one of the enigmas of human nature that the Nebraska state legislature should have enacted the osteopathy bill into law, and at the same time kill the magnetic healing and Christian Science bills. And
with the osteopathy bill on our statute books for a precedent, it is as certain as the law of gravity that the next legislature will legalize these also. Certain citizens of every state are earnest believers in these fads—the fact is that they are more deadly earnest in their faith than are their propagandists; the taxes they pay go to maintain the state medical school, and they have the same inalienable right to have their darling fad taught in them as have the believers in scientific medicine. In the end this logic will dominate our state legislatures.

But I have an abiding faith that there is one avenue of escape from all this, and that is in the unification of scientific medicine. With all due respect for the opinions of my professional brethren, I feel certain that the causes which have brought about such a condition of public sentiment toward medicine as to render this legislation possible are chiefly, if not wholly, the factional contentions within the body of scientific medicine. Let us unite upon the broad ground of science and experience,—and it would seem from the authoritative utterances of the sectarians that this might be possible,—and the chief body of argument for the various fads will be shorn of its force. And every consideration points to us as the body from whom the overtures looking toward union should come.

This paper is not designed as an argument in support of any specific line of action, but to be suggestive merely of the expediency of such a modification in our rules as will remove the present absolute estoppel against receiving into our membership one who happens to have received his preliminary medical education at a sectarian school. That end would be accomplished, I believe, in a provision for his examination before an authorized board, whose favorable report covering his scientific attainments and practical knowledge would place him before our society on the same footing as the possession of a diploma from a recognized "regular" medical school.
The subject has been introduced, not with the purpose of starting a discussion at this time, which might easily prove unprofitably extended and barren of results in the end, but to urge its importance and in the hope that the gentlemen will give to it their best thought and careful consideration preparatory to that deliberate and dispassionate debate which surely will be called for at no very distant time when such an amendment to our by-laws shall have been proposed. For I am persuaded—and the belief amounts to a conviction with me—that scientific medicine must find some common ground for united action if we are to be saved from retrogression into the conditions of former ages. As individuals, as relates to our own individual business interests, perhaps it makes little difference to us whether we act in the premises or supinely leave events to shape themselves, but the world of medicine of the future will hold us up to scorn if we permit ourselves to be governed by our commercial instincts merely, or to darken counsel by dogmatic bigotry and narrow prejudice.

DISCUSSION.

Dr. R. McConaughy, York: Dr. Ely has seen the thing in the same light that I have seen it. We have been too much divided ourselves, not agreeing as to what medical science was wanting. The thing that is necessary is that the eclecticists and homeopaths come in as medical men upon the same footing as ourselves, and then we will be able to secure, perhaps, the necessary legislation. The question of medical legislation is the great question to-day that has to be settled, and we are either going to have more strict medical laws or none at all. Some day perhaps the people will have their eyes open and will be able to distinguish between a scientific doctor and a fake.

Dr. A. S. von Mansfelde, Ashland: I wish to say a word on the other side of the issue. It appears to me that the doctor's suggestion is putting the cart before the horse. I joined the State Medical Society in the belief that I was the most liberal physician in the state of Nebraska. I am not prepared to do the work that the governor of the state of Nebraska asks us to do, to equalize the conditions imposed by signing such measures as the osteopathic bill. It has always seemed to me that the place to commence fighting quackery is the medical college. Establish a chair on
medical ethics in the schools and make the code of the American Medical Association the text-book. The older I become, the more I am convinced that the code is to the profession what the commandments are to society—a light to show the way. Light the torch as soon as possible.
MEDICAL COLLEGES AND PROFESSIONAL STANDARDS.

INEZ C. PHILBRICK, A. M., M. D., LINCOLN.

Said Dr. Oliver Wendell Holmes in his "Currents and Counter-Currents," delivered before the Massachusetts Medical Society in 1860: "The truth is that medicine, professedly founded on observation, is as sensitive to outside influence, political, religious, philosophical, imaginative, as is the barometer to the changes of atmospheric density. Theoretically, it ought to go on its own straightforward inductive path without regard to changes of government or to fluctuations of public opinion. But look a moment while I clash a few facts together, and see if some sparks do not reveal by their light a closer relation between the medical sciences and the conditions of society and the general thought of the time, than would at first be suspected."

Scrutiny of the record left us by any people, of any time, of its literature and its art, reveals a spirit which dominated the thought, the feeling and the action of that people. The devotions of the esthetic Greek found fullest expression in the temples of Venus and Minerva. To the Roman, war and justice were paramount. With the passing centuries have come changing ideals. Romanticism has yielded to realism, mysticism to materialism, despotism to democracy, individualism to socialism. That spirit of human liberty which distinguished the latter half of the eighteenth century, which gave birth to the first constitutional democracy, found itself effete in the closing years of the 19th, when, the Declaration of Independence outgrown, the golden rule obsolete, a people struggling for its liberty became merchandise. Today we bow at the shrines of Mercury and Plutus. Commercialism is the controlling spirit of the time. In our view, everything has its price. Like the prophet
of old, we think to buy even truth, but we fail to add the saving injunction to sell it not.

Our learned professions, so denominated by courtesy, cannot escape the all-pervasive miasma, of the earth, earthy. That minister is most honored who draws the crowd that pays the price that maintains the church and himself; and, rest assured, the gist of his discourse is ever satisfactory to the parishioner who heads the list of contributors to his salary. The lawyer sells his abilities and his manhood to the corporation that promises the largest fee. The medical type of the day is the commercial doctor. Weelum MacLures are more common to fiction than to experience; and though the record of their deeds may bring tears to our eyes, it falls short of inspiring our action. Medicine is prostituted to the base demands of a business, using this word in the modern sense, which implies so much of failure because of ill preparation; and not as of yore, when the merchant began his career as an errand boy, and it took seven precious years to learn to make a table.

So all-compelling is this dominant trade spirit, that medical societies, representing the best brain and heart of the profession, by their failure to withhold membership from him who advertises his talents as the merchant his cottons, tacitly sanction the commercial methods of the day. In their deliberations it is questioned if it be wise, i. e., financially sound, to withhold consultation from practitioners of other schools, every member present knowing in the deeps of his own consciousness that every such consultation is an empty pretense, shamming a unanimity of sentiment which does not, nay, cannot, exist, and which can work no good to the patient, for whose welfare it is, ostensibly, held.

Verily "the times that try men's souls" are not passed. It is as reprehensible to enslave men by conditions as by birth or taxation. The reformer is still needed. The profession cannot yet read its title clear. Because familiarity has bred contempt for the evils
which beset, does not lessen the responsibility but demands greater effort to overcome the inertia of the medical mass.

The profession is liable to severe arraignment. That it is overcrowded, that it is incompetent and unworthy, that it does not command the respect of laity nor government, cannot be gainsaid. There is something rotten in Denmark; and it behooves the profession to trace the stench to its source. To do this is the function of state and national medical societies. In concerted action there is strength. That the sessions of the medical society are too often occasions for self-gratulation over medical feats performed rather than for the consideration of lamentable failure and short-coming is all too evident.

That the medical society is justified in its bringing to the knowledge of each practitioner the achievements of others, in its affording avenues of comparison, re-enforcement, conviction of error, renewal of enthusiasm, we do not deny. But this does not constitute its highest function, which is not to exalt personal ambition, but professional welfare. The evils which beset our profession are intrinsic. With St. Bernard it may confess, "Nothing can work me damage except myself. The harm that I sustain I carry about with me, and never am a real sufferer but by my own fault." Conversion must come from within.

According to the report of the United States commissioner of education in 1899, there were in that year 23,778 medical students and 4,911 medical graduates. Between 1875 and 1899, the increase in the number of medical students was 177 per cent. But not alone upon statistics do we depend for confirmation of the crowded state of the profession. The fact is so patent and alive that much of the editorial space of leading medical journals is devoted to a discussion of the condition, its cause and its cure.

That a majority of the profession is incompetent and unworthy, is not subject to statistical proof. To
the unprejudiced medical observer of the profession of almost any locality, the truth is clear that very many of its members are persons of inferior ability, questionable character, and coarse and common fibre. The little esteem in which the profession is held by laity and government attests its unworthiness. Patients whose number is legion throw themselves from its arms into the embrace of quackery; and we must admit that the support is often as effective in the one case as in the other. Christian Science, mental healing, magnetic healing, osteopathy, reap a rich harvest from the incompetency of regular practitioners.

Granted that the wisest and most conscientious often stumble, to any one possessed of medical skill, witnessing the mistaken diagnoses, inefficient and oft-times barbarous treatment, and the unconscionable fleecing of a credulous public by members of the profession, is borne in the conviction that like the traveller on the Jericho road, he has fallen among thieves. The public cannot discriminate. In its view there is no comparison of a degree which, qualitatively considered, varies as between mud and mind.

The influence of the profession is not felt in the conduct of government. Bills championed by its foremost members are pigeon-holed in the committee room. Just bills for compensation for medical services rendered the public are not allowed; while those licensing quackery make triumphant passage from the first reading to the governor’s signature. The opinion upon matters medical of the ignorant member from X outweighs that of the highest in the profession. And why? Because the profession does not confirm to that short rule of Dr. Holmes for acquiring the confidence and esteem of the public—to deserve it.

Unquestionably the cause of professional degeneracy lies in the educational requirements made for entrance to the profession; and hence, the question resolves itself into one of medical colleges, their number, their location, and their standards. The
educational aspect of medicine is seldom discussed in our societies. Are we dwellers in houses of glass and hence wary of stone-throwing? In defense of the highest, it is well if all our houses of glass be shattered, that we must build us more enduring.

Medical colleges exist far in excess of any public need. Like the country store, which doles out its inferior wares at every cross-road, a so-called medical college is found in well-nigh every city of generous size; and to obtain a degree is within the possibility, intellectual and financial, of any youth, however lacking in mental and moral fitness. In inverse ratio to the frequency of medical colleges do we find the extent of their equipment. In the majority of cases they possess few facilities for demonstration; are located in towns where there is not a sufficient number of dependents to furnish requisite clinical material; and for the most part have as instructors men of mediocre or less ability. The same law that holds in trade, to wit, that the best interests of the consumer are served by bringing him as near as possible to the center of distribution, obtains as regards medical instruction. The report for 1899 of the United States commissioner of education notes 151 medical colleges. The recent estimate of the secretary of the American Medical Association is 173. No doubt the latter figure is more nearly correct. As an institution of local ill-fame and more than average depravity is not noted in the list, it is probable that other choice institutions throughout the land do not appear in this report.

The total number of medical colleges in Austria and Germany, with a population greater than in the United States, was, in 1898, 29. In the same year, Great Britain, with a population more than half ours, had 17. The editor of the Medical Record, commenting upon this discrepancy, while admitting the greater need of America, by virtue of its less dense population, adds: "But we do contend that when a city the size of St. Louis has as many medical schools
as Russia, the craze for multiplying these schools is being carried to absurd and harmful lengths.” As regards the establishment of medical schools, there seems to be but one governing idea, that they may have life (considered in a purely quantitative sense), and have it more abundantly. Instead of bending its energies to the eradication of the large number of medical colleges which are a blot on its escutcheon, the profession establishes ever more, perhaps reasoning homeopathically that one poison will antidote another.

A motto which might appropriately adorn the portals of many of our medical colleges were fitly expressed in the lines of the old doggerel, “Will you walk into my parlor, said the spider to the fly.” Being generally a very inexperienced fly, fresh from sylvan groves, he often accepts the invitation, and can never thereafter extricate himself from the mesh of inadequate instruction and indifferent example found therein. Professional welfare is not a desideratum in the founding of most medical colleges, they being merely reflectors of personal ambition. To most men the good of the moment is paramount. Few there are who, tempted upon the mountain of personal ambition, offered a professor’s title or an enlarged fame and clientele, can, following the Nazarene, exorcise Satan.

Excessive multiplication of medical colleges entails inferior instruction and example. Prophets are not as thick as roses in June; and to be divinely called to the instruction of youth, is a distinction to which few attain. Too often, men who have not sufficient scientific interest in their profession to attend the meetings of a medical society; who, if they possessed the energy, have not the ability to write a correct medical paper, much less appreciate one; and whose morals are for the most part in that nebulous stage where the distinctions of my case and thy case are but dimly revealed, are, forsooth, set apart as instructors and inspirers of youth.
Commensurate with the vast strides that medicine is making along the lines of bacteriology and physiological chemistry, laboratories are demanded, requiring for their equipment large sums of money, generally not available to the small institution. However, given the endowment, the latter can build and equip the laboratory and call men of ability to professors' chairs. You can make a bacteriologist in a laboratory, you cannot make a physician. To train a physician demands a large clinical experience, legitimately obtainable only where there is a large dependent population, and hence, only in metropolitan centers. To acquire a knowledge of pathology requires a rich autopsical service, possible only in connection with large charity hospitals. While to maintain clinics sufficient for the instruction of medical classes were in Chicago feasible and defensible, in the town of 50,000 inhabitants it would pauperize well-nigh the entire population.

So irrationally have hospital clinics been established in our large cities (notably New York) that it is recognized by sociologists and charity-workers as one of the most potent causes at work to undermine the sense of economic independence and self-respect in the community. The clinics must be filled; hence the ability to pay of those seeking relief cannot be questioned. The official of the railroad and the banker's wife seek unquestioned the free medical services offered therein. Not alone are the laity pauperized; the young practitioner walks long and wearily in the border land between inanition and starvation. My statements are fact, not fancy.

It is granted that there are men in small towns and in the country (that brooder of self-reliant strength) possessed of sufficient ability and character to honor a professor's chair; but this does not justify the founding of the medical college in their midst. Let him who deems his light hid under a bushel remove to the medical center, where, if he possess transcendent ability, that recognition it merits will be vouchsafed.
While we Americans are proud of our state universities, which bring within the possibility of well-nigh every young person the higher education, we must admit them liable to severe criticism. A chief indictment is their incorporation of the medical department. In no case does a state school take first-rank among medical colleges; and, with little exception, to eliminate the medical department from the state university should be our constant aim. Besides the objections already named, applying to state schools because of their usual location in small towns, their students lack the inspiration arising out of association with a large working profession and access to large medical libraries. Boards of regents need education along this line.

That a majority of our 173 medical colleges require a four years' course, is no adequate basis for judgment as to their worth. It has been said, "Better fifty years of Europe than a cycle of Cathay." A safe criterion is the old injunction, "By their fruits ye shall know them." Teeth set on edge by sampling the product sent into many a hamlet, is sufficient evidence that either the persimmon was prematurely plucked or intrinsically beyond the embrowning and sweetening influence of sun and frost.

But not alone do we find explanation of the excess of medical colleges in the commercial spirit of the time. There is an ultra-democratic tendency abroad (somewhat in disrepute at present in governmental circles) which maintains that nothing is too good for anybody, ignoring the fact that there is an aristocracy of intellect and character, not dependent upon birth, to which, if our civilization is to grow and endure, we must entrust guidance. If this be a trust, let us have it.

While recognizing the great ability and disinterestedness of members of faculties, and the worthy equipment of graduates of our two Nebraska medical schools, I affirm that for Nebraska to maintain one, much more two medical colleges, is in contravention
of the fundamental law of professional progress. Until the profession can be brought to this way of thinking, until, in the words of Emerson, "private men can be brought to act with vast views," we cannot look for amelioration of professional conditions.

In closing, let me not be misunderstood. I would not ignore the many noblemen in character and intellectual grasp who have not behind them the momentum of birth, or general culture, or best or even good medical training, but who have, by innate ability, untiring devotion and unimpeachable honesty, won highest professional honors. To such no added restrictions to entrance to the profession would oppose ultimate success. Such are not the supporters of the diploma mill.

"Hope springs eternal in the human breast," and that such is the case justifies the belief that there is ever a basis for hope. Along with our commercialism, our intense individualism, there is growing a reactionary collectivism, proclaiming the solidarity of the race, that the good of one is the good of all, upholding the law of individual sacrifice as the only saving grace. Ultimately, "he that exalteth himself shall be abased," in the case of the physician, in the abasement of a prostituted profession. The cosmic law of Huxley, which may be tersely if inelegantly stated as, "Every man for himself, and devil take the hindmost," has yielded in theory, if not practice, to the ethical, where personal sacrifice rules.

In the service of a regenerated profession, let us conform to this law. Let us not, for personal ambition, commit the unpardonable sin, medically considered, of further lowering educational standards by foisting more medical colleges upon an already basely deluded public. Let us labor unceasingly to raise professional standards, upholding for the future the thorough preliminary education (a college degree, and that not obtained from the sectarian academy of the cross-roads); medical reciprocity obtained through national regulation of medical schools and rules gov-
erning admission to practice; and minimizing the number while magnifying the quality of professional schools. Let fewer and better be our motto. Let us discourage the entrance of the unfit into a profession to guard whose honor should be our every thought.

What I have said, I enter as a protest against evils which are not chimerical and cannot be met after the manner accorded the prejudice in the rhyme, by assuming an absent-minded air, and walking directly through them as if they were not there. They stand a solid and impenetrable hulk athwart the path of professional progress, requiring for removal the lever of an intelligent and disinterested attitude on the part of the members of the medical profession.
OBSERVATIONS IN MODERN SMALLPOX.

M. L. HILDRETH, M. D., LYONS.

In comparing the smallpox of the past, as recorded in the standard text-books, from which source the conceptions of the disease in the minds of most of the physicians of the present generation have been formed, the discrepancies between the pictures as presented in the books and the observations of the disease at the present time are markedly manifest. The record of the past is appalling—the observations of the present hardly attract our notice. Evidently the fact of this discrepancy is the reason why so much of controversy and difference of opinion as to the nature of the present pandemic has been manifest during the past year or two.

Most of the knowledge regarding the disease, in the minds of present-day physicians, has been gained from reading and not from observation, few having seen much of it, and many none at all. On this hypothesis it is but natural that, in view of the extreme mildness of the disease in its present manifestations, it should so often be looked upon as something else. Would it be unreasonable to suggest that a new chapter on smallpox ought to be written? Not that the books do not speak of the aborted or modified form, for they do; but they make these cases the exception to the rule, while at the present time the mild atypical cases constitute the rule, and the typical ones the exception. In the line of prognosis there certainly should be a change. Hyde, in Pepper's System, says: "Certainly from 15 to 50 per cent. of unprotected individuals affected with this disease, occurring in epidemic form in any given community, will perish." This dictum does not certainly conform to present facts. As to the reasons why the disease has assumed such mild proportions, opinions differ and speculations are rife. Some have assumed during the past summer that it was the
season, and have urged that as winter came on it would take on its old-time virulence. This I have never believed. More likely, to my mind, is the theory of hereditary immunity. The virtues of the fathers (vaccination) are being visited upon the children.

I assume it to be a fact that several generations in the past, from Jenner's time to the generation immediately past, have been well vaccinated. As to the present generation of children, probably previous to the past year only a small per cent. had been vaccinated and yet these same children are the beneficiaries of the immunity. The generations contemporaneous with and immediately following Jenner's time, being witness to and subjects of the terrible scourge, were eager to grasp at anything which could hold out to them any hope of relief. But as time went on, and the ravages of the disease became gradually lessened, people became careless and indifferent, and the precious boon, greater than any the world has ever known, came to be disregarded, until the present condition as to vaccination obtains. On this theory our duty is plain. Renew our efforts to see that vaccination and re-vaccination become universal; and if our children do not rise up and call us blessed, they ought to.

Illustrative case: February 8, 1900—Called to see M. G., girl, 8 years old. Indefinite history of slight chills, pain in head and back, slight nausea and vomiting, with fever, extending over a period of four or five days. Found her sitting up in bed playing. Temperature normal. Face, body and limbs well covered with discrete vesicles, size of a small pea. Vesicles filled with serum, some transparent, others milky, surrounded by bright pink halo. No pus; no umbilication. (A good copy of Morrow's picture of varicella.) The covering of the vesicle was macerated epidermis, giving the appearance of pustules until opened. Later in the epidemic, a few cases were seen in which the eruption was pustular and conflu-
ent, but I think it is safe to say that 95 per cent.
were discrete and not pustular at any stage. I gave
a guarded diagnosis and prognosis, and established
quarantine. Returned next day, vaccinated sixteen
children (neighbors who had been exposed), and held
my breath. On this day, the third or fourth of the
rash, the covering of many of the vesicles had des­
siccated and dropped off, leaving a deeply reddened
or purple spot, surrounded by a fringe of dry epider­
mis. Upon inquiry learned that a few similar cases
had been observed in an area of a few miles. From
that time on the disease spread over several town­
ships in the northeast part of the county, getting
into several towns, and continuing until the present
time, aggregating a thousand or more cases (esti­
mated), with a death-rate of probably 0.5 per cent.
Most of the cases were very mild, very few being in
bed at all.

The most characteristic features were in the in­
vasion period. Intense headache and backache, nau­
sea and fever, lasting about two days, sometimes
prolonged to a week. As rash appeared, constitu­
tional symptoms disappeared, not to return. Vesi­
cles usually discrete, without suppuration or second­
ary fever. In a few cases the accidental (prodromal)
rashes were observed. Generally no permanent pit­
ting was left. Among a large number of cases ex­
amined, after weeks and months, I have seen none
of the old-time scars.

At the Atlantic City meeting of the A. M. A. a
paper was read by Dr. T. J. Happel, of Tennessee,
under the title of “Pseudo (?) or Modified (?) Small­
pox,” which elicited a hot discussion, and drew forth
a proposed resolution of censure, on the ground of
belief that it would have the effect of encouraging
the “antis,” or favor a tendency, always present on
the part of the public, to disregard the value of
vaccination, and so work a public harm. This resolu­
tion was certainly untimely, and properly declared
out of order. No scientific body ought to be afraid
of facts. Dr. Happel is a keen, competent, and conscientious observer, and his only motive in presenting the paper was to establish fact. The impression one would have from his conclusions at the end of his paper is that he does not believe it to be variola-vera, which conclusion I could not subscribe to. The last sentence of his paper is as follows: "You ask what I call the disease. I answer frankly, that I do not know." It certainly is not varioloid. I believe it to be true variola, modified, made milder, not by vaccination of the subjects of the infection, but either by vaccinations of ancestors, or some other influence unknown, or both.

As to the effects of previous vaccination of the individual subjects the observations of Dr. Happel do not agree with the observations of those who have had most to do with the infection in Nebraska. To my mind, there can be no question but that the nature of the disease in the south and west is identical, and from personal observation and inquiry I am convinced that a successful, perfect, recent vaccination gives almost complete protection. On the other hand, vaccination following an attack of the disease results in "takes" in a liberal per cent. of cases. This would seem anomalous, but I believe it to be a fact.

A FEW NOTES ON THE RECENT EPIDEMIC OF SMALLPOX.

S. R. TOWNE, M. D., OMAHA.

There is no doubt of the fact that we are passing through an epidemic of smallpox with a peculiarly large proportion of discrete cases. Its mildness has favored its rapid and general distribution, both because fear is disarmed and the patient is not housed by his malady; associated, however, is occasionally one that is diagnosed with eyes shut.
1. Modern sanitation, personal cleanliness, and frequent changes of clothing undoubtedly have weight in mitigating a disease so susceptible to sunlight and pure air.

2. In most, if not all, epidemics of variola the infant and aged are especially susceptible, while in its milder forms especially youth and adolescence are not severely attacked (Keating). This is most conspicuous in this epidemic.

3. Immunity may never be exactly explained, more than life itself. But thus far the theory of our race acquiring immunity in some degree through vaccination for a century may not be impossible, even though not acquired by centuries of contact with variola itself.

4. Inoculation, with due preparation of the patient, has been quite harmless for centuries (Chinese, 1000; Buchan, 1789), showing, despite the statements of modern laymen and occasional physicians even, that under certain conditions variola may be mild; and this very process of inoculation must have arisen from observation of mild epidemics and making use of them.

5. Mild epidemics may be accounted for, just as in other transmissible disease, by the diminished virulence of the microbe or protozoon (if it be such) here. Recent severe epidemics, such as those in Montreal and in Chicago, where there were 640 deaths in 2,400 cases, would be accounted for by (1) the more virulent type of the infective agent and also (2) the unhygienic surroundings or condition of many of the cases when taken sick. There is good ground for the statement that most fatal cases in present epidemic are the result of some such complication.

In a recent pamphlet by Louis Leroy, B.S., M.D., published by Tennessee state board of health, quotations are made from "The Study of Medicine," by John Mason Goode (Harper's, 1827), that describe epidemics like our own; one in Kandyan, India, described by Mr. Marshall; another at Montpelier, 1816. Our modern writers all speak of discrete forms with-
out secondary fever. Sydenham is quoted, "Discrete variola seldom pits." Fox says, "You sometimes need to give a man a mirror to persuade him that he is ill"; but there are few references to so large a proportion of mild cases.

The relation of the various pus organisms to variola has not been studied—a different variety or combination of them would no doubt vary the amount of secondary fever which all authors say, in many of the discrete cases, is almost nil. Vaccination reaction probably varies for same reason.

The question is often asked as to how great an immunity is established by the present form of variola. While experience must be our absolute guide, I see no reason why this may not be as complete and permanent as methods of inoculation, formerly so successful. It must be remembered that there are individuals in whom immunity to variola is difficult to maintain or establish even. These individuals may have a second or third attack sometimes within a few months. Dr. Grossman, of Omaha, while a student, attended a case, in an epidemic of some seventy cases, which had a third and fatal attack. Three attacks in same year.

Immunity from vaccination varies in its completeness and maintenance also. Some require only infrequent vaccination, while others need frequently repeated attempts. With but few exceptions I believe repeated revaccinations, though mild in themselves, will render immunity complete to variola. Germany has proven as much. Vaccination after variola will sometimes, even frequently, "take." Cases under my own knowledge have been "spurious," not showing a vesicle or pustule, but a mulberry-like elevation. Leroy quotes from the American Text-Book of Applied Therapeutics saying that revaccination is successful in 24 to 25 per cent. of those who have had variola. The statement seems surprising.

The hesitancy with which the diagnosis has been
made in this epidemic is due to a variety of causes no doubt. There are plenty of instances where the local physician, often without previous experience in smallpox, has stemmed the opposing tide of commercial interests—not always an easy thing to do—and has proven himself the right stuff and gained desirable friends by it. There are other instances, too, where, perhaps from inexperience with the disease or from not being informed upon the character of our epidemic, there has been a lack of astuteness in recognizing variola, and in accepting the diagnosis even when declared by some one without local interests or prejudices. I must confess in one or two instances where there have been few physicians in a place I have been unfraternal enough to question the true motive in not accepting the diagnosis. I believe here again, "Honesty is the best policy" in the long run, though at first it might seem to add to one's poverty. Few of us can realize what a stress the country doctor may be in when obliged, in the face of business interests in the town, not only to publish his diagnosis but sacrifice and lose much of his other practice in attending the cases.

The efforts of our state board have been eminently profitable to the state in helping various communities to do as rapid work as possible, and yet the effect has been accomplished almost wholly through local personal effort, and often at great sacrifice, at least of time and attention. And it is quite as certain that very much of our epidemic during the last season could have been wholly prevented had our state board been given sanitary power two years ago and thus been prepared to go out (tracing rumors) into suspected regions and arresting early cases. Most of our earlier cases from which there was wide distribution up to January and further can be traced to three or possibly two towns in the state and should have been prevented.

And yet the Board has again failed to secure sanitary power at the hands of our late legislature.
DISCUSSION.

Dr. A. S. von Mansfelde, Ashland: I would like to have the doctor define what he means by a mild case of smallpox. I have carefully looked over these photographs, said to present all stages of smallpox, as found by the doctor. I beg to say that not one of them is representative of the suppurative stage (pustulation) of that disease; not one of them goes beyond the vesicular form, which may be approaching pustulation, yet not a single umbilication is to be detected in any one of them. Are all of them cases of aborted smallpox? They are certainly not mild smallpox.

Dr. Claude Watson, Nebraska City: Before proceeding with smallpox, I would like to compliment Dr. Philbrick on her paper. As understood, she is correct in most cases. We have too many doctors and too many medical colleges.

Taking up the question of smallpox, two years ago I had the pleasure of reading a paper before this society on smallpox at Nebraska City, one of the first cities in Nebraska to have smallpox. In the fall of 1898 it broke out and from that time until the meeting of the State Medical Society, in 1899, we had some 300 cases, some mild and some questionable as to its being smallpox, and some very severe cases. In regard to Dr. Mansfelde's question, I am unable to answer that. I believe we had smallpox there in all types, pustules from the crown of the head to the sole of the foot. We had only three deaths. Up to the present time we have had twenty-two well marked cases during this winter. One of these cases I saw myself. You cannot be too careful in these cases. I never had seen a case of smallpox up to November, 1898. I have had plenty of experience in smallpox since then. I had one case, a man 22 years of age broken out from head to foot with a typical case of smallpox. Never went to bed and never felt better in his life. I believe that we are having throughout the west typical cases of smallpox.

Dr. Jay G. Roberts, Hastings: It seems to me that there can be little gained by the discussion of this subject. The ground has been threshed over and over in the medical societies, state and local, and in the journals. We have been very fortunate in Hastings, having had only about eight cases all told. But we have had the same difficulty to contend with there that they have had elsewhere. I have noticed one thing particularly, that is, that the physicians who have been most vehement in pronouncing it chicken-pox have not seen the cases at all and do not seem to care to. I saw two cases; a man who had not been vaccinated had been exposed to so called chicken-pox down on the Blue. He had a typical case; any sophomore student could have made the diagnosis, and he has the scars to-day to show for it. His child, 4 years old, who was exposed at the same time, had four or five pustules on the face, two or three on each hand, and never went to bed. That child, our friends the antis would say, had Cuban itch, chicken-pox, impetigo, or something else. But there was the father
with typical smallpox. I don't believe there is any doubt about this being smallpox.

Dr. M. A. Hoover, Kearney: As I understand Dr. Hildreth, smallpox patients are not exempt from vaccination. The question that I wish to ask is this, Why is it that vaccination varies so greatly in members of the same family? I have used the same virus in different members of the same family, and the results in many cases have been different, some members requiring four or five vaccinations before taking.

Dr. A. S. von Mansfeld, Ashland: Dr. Hildreth gave us a description of a case of smallpox. That is not mild smallpox. We may have this very same disease in our town to-morrow, and I want to know if we may have to look for smallpox or not. If I was not fully satisfied as to Dr. Hildreth's superior mental acumen, from the descriptions given and from the photographs shown, I should conclude that he did not know how to discriminate between a bad case of chicken-pox, a case of modified smallpox (varioloid), and a case of mild smallpox. The assumption that of two or three hundred cases occurring in a community of 1,500 people only one to three people die of the disease, that almost all of them do not reach the suppurative stage, and that this modification is owing to inherited changes, wrought by the vaccination of the ancestors, smacks of guesswork, compared to which the assumption that these cases are not smallpox at all, but a disease brought into the country from Cuba or elsewhere, is almost raised to scientific dignity. I would have to see these cases before I would consent to call them smallpox, mild smallpox or even modified smallpox.

Dr. H. P. Hamilton, Omaha: I wish to make a few remarks on the subject under discussion. I have been for a little time in a small town. I had about ten or twelve cases of so-called smallpox, and I really think that a great number of so-called smallpox cases are not smallpox at all. When I came to that town there were two physicians from some other town there who made a diagnosis of a case which they called smallpox. In about a week they called me to raise the quarantine and to sign a certificate so that the children could go to school. I looked at the children. They had no marks, and did not look as though they had had smallpox. One had a pimple on the cheek and the other one on the leg, but I signed the certificate. I really do not think it was smallpox. A great number of cases that were reported as smallpox were not smallpox at all.

Dr. R. C. McDonald, Fremont: I have had some experience in smallpox recently. I do not know whether the cases that Dr. Hildreth has had as suggested were chicken-pox. However, a young man, coming from Dr. Hildreth's territory to a ranch near Fremont, had what was thought to be chicken-pox, not being seen or treated by any physician. This young man had been at work, associating with others working at the same place, drinking out of a common vessel, and, strange to say, not one of the other men
took the disease. A little girl living in the family of the man took the same disease and was practically well when I first saw her. I was called to see a middle-aged woman with a rash presenting all of the physical characters of smallpox; it was an unmistakable case of the disease. Later on a child in the neighboring house went through the typical stages of smallpox. These children had been attending the neighborhood school. In the first case the sanitary conditions were wretched. I vaccinated some 300 people and, notwithstanding the great exposure, none contracted the disease except those mentioned. Why were there not more cases?

Dr. Pollard, Nehawka: We had a smallpox epidemic at Nehawka of twelve cases. The station agent's wife and two little girls came home from a visit to Kansas. The lady was taken with the grippe. After she got a little better, she broke out with two or three pox. She was not sick. She went about in every store and house in town. Her little girl attended school, while still broken out. They had a boarder who was taken down with the disease, and he had a typical case of smallpox. The hired girl had two marks. Father had been vaccinated when a little boy. Slept with a smallpox patient, but did not contract the disease. It did not spread outside of this family and one other one. Why it did not I cannot imagine, except that during the epidemic in Nebraska City two years ago everybody had been vaccinated. Not one of the cases had been vaccinated.

Dr. M. L. Hildreth, Lyons (closing the discussion): I give Dr. von Mansfeld some pictures illustrating smallpox. When a man gets gray-haired, he has the liberty to say "I think"; young men must say, "I know." Mansfeld has not gotten over his young days, when he used to say "I know." This smallpox has been very mild, and people are not afraid of it. A year ago 60 per cent. of the children of Nebraska had not been vaccinated. Now the great majority have. The question arises, why are some susceptible to vaccination and smallpox and others not? This is a question that cannot be answered, but can be speculated upon all we wish. I am satisfied that recent vaccination is a safe protection against smallpox.

Dr. S. R. Towne, Omaha (closing the discussion): In this circular which I have you will find one case only of positively umbilicated pustules. You will find in 10,000 cases in the United States but few who have the umbilicated pustule; never had been vaccinated possibly. I saw a little child three years of age; she had two pustules. The next door neighbor was a Christian Scientist. We quarantined the child and the mother. The Christian Scientist, thinking the woman would be lonely, crept through the back door and slept in the same room with the mother. She was a Christian Science healer, but about three weeks later we found that she had confluent smallpox, and six others in the same room had contracted the disease—all from the child which had two pustules. In the same family a person has been exposed again and again to the disease in this state, and
had all the symptoms of smallpox, but no eruption; had been vaccinated ten or fifteen years ago. When the eruption is plentiful on the trunk, superficial, unicellular, collapses with pressure, and the fever has not subsided before the eruption, I think it is chicken-pox. When, however, after a prodromal fever of two to four days, the eruption appears mainly on face and hands, with shotty feel, less on trunk but finally on palms and soles, requiring two weeks or more for full history, with secondary fever if a marked case, I call that smallpox.
NEURASTHENIA.

JAY G. ROBERTS, M. D., HASTINGS.

It has been said, and not without reason, that the American people are fast becoming a race of neurasthenics. If this be true, then a consideration of this condition will not be amiss. It may be that this affection is not more common than heretofore, but that a varied number of symptoms and manifestations now known to be neurasthenic were formerly looked upon as symptoms of an undiscoverable organic lesion. Be that as it may, the fact remains that while but a few years ago neurasthenia was a name scarcely known to the average practitioner, it has now come to rival hysteria in prevalence and popularity. One error formerly committed and often persisted in at this time is the confounding of neurasthenia with hysteria. Nothing could be more wrong, for while it is true neurasthenia and hysteria often co-exist they are two distinct entities; hysteria being a disease with well marked stigmata, if perhaps a doubtful or not well understood pathology, while neurasthenia is a condition merely,—a condition of nervous exhaustion, pathological fatigue, or, as Professor Brower used to very aptly say, a condition of nervous bankruptcy wherein the expenditure of nervous energy has exceeded the supply. The amount of nervous energy in store not being sufficient for the performance of the ordinary mental occupations and for the supply of the various vital organs in the performance of their functions, they are both but poorly done. The various functions of the body which are but little or not at all under the control of that master, the will, are not forced to do their duty as is the mind, and therefore suffer first from lack of the necessary capital with which to do business. Impaired function, with its train of evils, is the result. Indigestion, malassimilation, autointoxication, impaired metabolism, and fail-
ure to supply proper nourishment and material to replace the depleted store of nervous energy form a vicious circle which runs on with ever increasing intensity unless broken by proper management. Osler\(^1\) has characterized this condition as the physical counterpart of insanity, the essential feature of which being the abnormal response to stimuli from within or without upon the higher centers presiding over the mind; so in neurasthenia, the inhibitory centers, through exhaustion, lose control over the various functions of the body, which then respond to stimuli and impulses which would otherwise pass unheeded, thus causing waste of energy and a further depletion of the already exhausted store of nervous energy. Eskridge\(^2\) speaks of primary neurasthenia where an exhaustion and irritability of the nervous system constitutes the chief derangement, and a secondary neurasthenia following organic lesions or acute disease. Such a division, however, is hardly indicated, as neurasthenia is always secondary whether to excessive mental effort, worry, fear, etc., or to exhausting disease. The various disorders of function, however, may be the result of disease or other extraneous causes thus preceding the exhausted condition of the nervous system, or be secondary to the exhaustion which may have been the result, as stated above, of excessive mental effort or other nervous strain.

**Etiology.**—Heredity is always given first place in the etiological consideration of neurasthenia, though of course it is evident that the condition itself is not transmitted, but rather a predisposition in the form of an unstable nervous equilibrium, ambition, impaired physical organization, a disposition to worry and discontent, etc. Education is a potent cause, not only in the irrational and senseless methods of cramming, educating the mind at the expense of the body, indulged in by our public schools, but also in the home, where displays of temper, worry, discontent, and fretfulness soon produce a demoralizing effect upon the younger generation. As stated by DeMerritt\(^3\), neu-
rote parents, being in a constant state of irritability themselves, scold and nag their children incessantly, but have not will-power to enforce real discipline, thus destroying what mental equilibrium their offspring may have been born with. Among the factors which in the parent tend to the transmission of such a predisposition to the child may be mentioned hysteria, neuroses, sexual and other excesses, overwork, excitement, emotions, gout, rheumatism, syphilis, tuberculosis, etc. Anything which lowers the resistance and vitality of the parent likewise tends to lower the resistance and render unstable the mental equilibrium of the offspring, and thus predispose to neurasthenia.

Of the exciting causes not already mentioned the struggle for existence in this age of fierce and unequal competition, entailing worry, excitement, overwork, and disappointment, is a potent factor. Psychic shock or insult of whatever origin, drug habits, and eye-strain are frequent causes, as are sexual excesses and indiscretions, masturbation, gonorrhea, syphilis, or more frequently, syphilophobia, the acute infectious diseases, especially influenza, for there is no acute disease in which the resulting nervous depression is so out of proportion to the severity of the illness as it is in the grippe. As a consequence we may expect to meet with an unusually large number of cases of neurasthenia after each succeeding epidemic of influenza. Injury or trauma is credited with being one of the most frequent causes of neurasthenia, but, as pointed out by me in my article read before you last year, it is undoubtedly the result of the psychic shock or insult rather than the injury itself, which is often so trivial as to be disregarded. Pelvic disorders in the female are important factors in the etiology, for, though Peterson holds that “the pelvic organs themselves play but a small role, the influence of exhausting pain in these organs being no greater than similar exhausting pain elsewhere,” there are few indeed who agree with him. The intimate relation existing between the female generative organs and the nervous
system is too well known to need mention, as is also the fact that the nervous depression attending injury or disease of these organs is out of all proportion to the pain caused by them. Excessive child-bearing and lacerations of the cervix or perineum are factors of some moment, also the disturbances occurring at puberty and the menopause. Another element in this connection which is usually disregarded is that of autointoxication from deficient menstruation. The disturbances following upon impaired or insufficient menstruation are so like the manifestations of autointoxication of other origin as to leave little doubt as to their practical identity. As it is probable that autointoxication is the fundamental cause of the majority of cases of neurasthenia, the nervous system being first to suffer from any toxic substance accumulating in the blood, it is readily understood how important is any form of intoxication. Indeed, too much stress cannot be laid upon this factor in the etiology of neurasthenia, for it is always present, and whether as a primary cause or as a result, the condition once established, it forms the main link in the vicious circle which keeps up the disorder.

Age and sex are of but little importance, though it may be said that cases of an hereditary predisposition usually occur at that first trying period of life, puberty, or between the ages of 16 and 20; while the acquired form occurs most frequently during that period in which the trials of business and family affairs weigh most heavily, the period between the ages of 30 and 45. In women, puberty and the menopause are the most critical times. As to sex, men are more frequently affected than women, which may be accounted for by the greater prevalence of hysteria in women.

Pathology.—Until recently very little was known of the pathology of this disorder, due no doubt to the infrequency of death, which was the result of some intercurrent disorder, and to the little value of the observations made on such cases. The researches of Hodge, Barker, Mann, and others have all tended to
demonstrate that the primary morbid change is not in the nervous system, but in the entire organism. Hodge has noted an actual loss of substance in the cells, especially in the nucleus; this loss of substance necessarily causing impaired function of the individual cells and of the organs they go to make up. Impaired metabolism and impaired excretion of waste products, always the result of activity, physical or mental, and the consequent accumulation of such products in the blood, gives us an autointoxication. The influence of such intoxication, as stated in the etiology, is first felt by the neurons and the nervous system. The depressing effects of the accumulation of the products of activity are well shown, as stated by Eskridge, in the experiment of stimulating a muscle to exhaustion by means of the electric current. After washing out the products of muscular activity its reaction to the electrical stimulus returns, showing the evil influence of such products when allowed to accumulate in the organism. It would seem then that the keynote of this condition was autointoxication, and upon this basis can be readily understood the influence of the toxins of the various infectious diseases in the production of the condition and its frequency following the infectious diseases.

Symptomatology.—From the very nature of the affection the most important symptom is fatigue, which is frequently so intense as to be actually painful. Many, however, though to all appearance pictures of exhaustion, will insist that they are not tired. This lack of appreciation of weariness is a troublesome factor in many cases. Usually, however, a patient will complain that the slightest exertion, either mental or physical, "uses them all up"; that they are unable to concentrate their mind and forget easily, attempts at concentration being followed often by headache, vertigo, and tinnitus.

Mental Symptoms: Fretfulness; irritability; a disposition to worry over trifles, either real or imaginary; frequent attacks of the blues and hypochondria are
common. Patients are often morbid and depressed, sometimes bordering on melancholia, are introspective and believe themselves possessed of all manner of diseases. In advanced cases the disposition becomes entirely changed, a person often becoming envious, jealous, tyrannical, cruel, suspicious of friends and family. Will power is lost. He is easily provoked to laughter or tears; delusions and illusions occur. Indeed, so pronounced do these symptoms oftentimes become as to lead to the suspicion of some mental aberration. Insomnia is one of the most prominent and aggravated features, being complete for long periods, or only partial, the patient being able to get a few hours' sleep in a night which may be broken by dreams, nightmare, or night sweats.

Sensory Symptoms: Headache is one of the most constant symptoms, and may be located in almost any part of the head, being usually, however, frontal or coronal. Backache is also a frequent source of complaint, especially in the female. It is usually located in the lumbar region, but may occur anywhere from the cervical to the sacral regions. Coccygodynia may occur in the female, and there may be localized areas of tenderness over the spine. Pain in the legs is next in frequency, occurring in the knees or calves usually, and may be so pronounced as to suggest rheumatism. It is often present after exertion, as walking or climbing stairs, and may be so severe as to keep the patient awake nights. The skin may be dry and harsh, or damp and clammy. There may be hyperesthesia, formication, sensations of numbness, but not anesthesia. Flushes of heat or localized areas of heat or cold are often complained of. Single localized pains in various parts of the body, as the heart or stomach, occur and are called by Blocq6 "topoalgias."

Of the special senses vision is most frequently affected, common symptoms being an aching or weariness of the eyeballs upon reading. There may be flashes of light, narrowing of the field, difference in size of the pupils, which is usually temporary, and uni-
lateral ptosis, all expressive of exhaustion of the visual apparatus. Hearing is sometimes disturbed, less frequently taste and smell.

Motor Symptoms: The various motor functions display disturbances indicative of physical exhaustion. Muscular power is deficient, though it may be extremely good for short exercises. Upon prolonged exertion the muscular fatigue may become so great as to be actually painful. Tremor is sometimes present. The reflexes are usually unchanged, though the deep reflexes may be increased. There may be unsteadiness of gait, due rather to dizziness or vertigo than to incoordination. It is especially marked when the patient is near a stairway or other open space. There may be short spasmodic contractions of isolated groups of muscular fibers, sometimes in the facial muscle, closely simulating chorea.

Circulatory Symptoms: Palpitation and irregular heart action are usually present, while rapid heart action and decreased vascular tone, as shown by Webber\(^7\), are of prognostic value. Throbbing of the arteries and capillary pulsation may be present and at the same time the extremities be cold. There may be precordial distress or, rarely, false angina.

Gastric Symptoms: So important are these as to give rise to the term "gastric neurasthenia," which is but a form of the disorder in which the gastric phenomena predominate. There may be all grades of gastric indigestion, chronic gastric catarrh, with acid and gaseous eructations and heartburn. The gaseous distention often interferes with the heart's action, causing precordial distress and palpitation. There may be a condition of atonic dyspepsia in which the food lies a long time in the stomach, giving rise to fermentation and eructations. This fermenting and partially digested mass passed on into the intestines causes auto-intoxication and constipation, sometimes alternating with diarrhea. Actual dilatation of the stomach occurs not infrequently, while hyperesthesia, the gastric topoalgia of Blocq, is often present.
Genito-Urinary Symptoms: The urine, according to Fleury, was diminished in 66 per cent. of cases, normal in 20 per cent., and increased in 14 per cent. The specific gravity was increased in 59 per cent., decreased in 11 per cent., and normal in 30 per cent. Acidity increased in 59 per cent., decreased in 12 per cent., normal in 29 per cent. Uric acid was increased in 61 per cent. Urea was decreased in 57 per cent. of cases. The phosphates were decreased in 43 per cent., and normal in 31 per cent. Indican and skatol were present in 73 per cent. of cases. There may be present a condition of lithemia, the so-called "lithemic neurasthenia." Albumin is sometimes present, the "neurotic albuminuria," Bartley, especially after exertion; and need not indicate a grave lesion of the kidneys. Transient glycosuria is also noted. An irritable condition of the prostate is usually to be found and perverted sexual function is nearly always present. There may be spermatorrhea, nocturnal emissions with erotic dreams, impairment or actual loss of sexual power, with great depression after intercourse. Hyperesthesia is often present, giving rise in the male to painful or premature ejaculations, and in the female to vaginismus. In the female there may also occur erotic dreams, sexual excitement, and orgasm during sleep.

Diagnosis.—There is rarely any difficulty encountered in the diagnosis of an uncomplicated case. Cases, however, complicated with organic lesions or hysteria are sometimes puzzling, and, as Osler says, it is not always possible to make the diagnosis. A careful search should always be made for any organic disorder which might have a causative influence in the production of the neurasthenic condition.

Hysteria.—The absence of the various stigmata of hysteria, the globus hystericus, faucial anesthesia, clavus crises, and contractures serve to exclude hysteria.

Locomotor Ataxia.—The preataxic stage may cause some confusion, but the Argyll-Robertson pupil and loss of reflexes do not occur in neurasthenia, the reflexes usually being increased, if at all changed.
Exophthalmic Goiter.—Tremor, rapid pulse, nervousness and irritability are symptoms common to both affections, but it is only in cases without exophthalmos that there can be any difficulty in diagnosis. In such cases the occurrence of Von Graefe's sign, which is often present before exophthalmos, will enable one to make the diagnosis.

General Paresis.—In the early stages this affection presents some symptoms in common with neurasthenia, such symptoms as tremor, impaired articulation, change in handwriting, and inequality of pupils, all of which in neurasthenia are due to fatigue or exhaustion and disappear upon rest. In general paresis there is impairment of intellect and diminished mental activity, while in neurasthenia there is increased mental activity, and whatever impairment there may be is due to exhaustion and is not present after rest. The defective articulation, as is the handwriting, is due to diminished will power and can usually be overcome by an effort which in paresis only increases the difficulty.

Prognosis—The prognosis, under proper treatment, is almost always good, unless organic changes have already occurred in the kidneys or other organs. Lapses are frequent, however, especially in those of a neurotic temperament, so that the physician must ever be on his guard for manifestations of the old difficulty after a cure has been established. The vascular tension is of considerable prognostic value, as shown by Webber, the prognosis being good in cases in which the vascular tone is normal and those in which there is a decided loss of vascular tone, but which rapidly regain a normal tone under treatment, while there is little hope of any permanent benefit in those cases in which the vascular tone is very much below normal and in which, under treatment, it may vary, but makes no substantial gain. In well marked "juvenile neurasthenia" and cases occurring after middle life the prognosis should be guarded, as it should also in cases of profound neurotic tendencies or complicated with hysteria.
Treatment.—This being a condition of exhaustion or pathological fatigue, it necessarily follows that rest should be the first and most important requisite in its treatment, not only in the treatment of the condition already developed but as a prophylactic measure, a proper amount of rest and relaxation in time being sufficient to prevent the majority of cases. In our efforts to secure this much needed rest, both mental and physical, great care must be exercised to avoid a greater expense of nervous energy over the details of treatment, and the worry incidental to a change from an active business life to one of idleness, than would result from the cares of the business itself. Therefore, absolute rest is very seldom indicated, and in many cases is actually harmful. Some advanced cases may require the Wier Mitchell rest treatment, but the majority of cases which come under our management will be most benefited by a short vacation, followed by shorter hours of work, regular meal hours, an hour or two rest in the middle of the day, and early retiring. Isolation is necessary in cases placed upon the Wier Mitchell treatment, but care should be used and the presence of a trusted attendant is imperative. Isolation in other cases is often detrimental, as it encourages introspection and exaggeration of symptoms.

One should beware of the wheel-chair or hammock, for, as Loveland\textsuperscript{10} says, these patients easily become dependent upon props. In connection with rest proper attention should be given to exercise. In cases placed upon the absolute rest treatment this must be replaced by massage, but for cases able to be about outdoor exercise of a light and pleasurable nature is best. Here again care must be used to prevent overindulgence, which will undo all the good which may have been accomplished. Of outdoor exercise there is none that can compare with golf. It takes one out into the open air away from the noise and bustle of the busy streets, does not require great mental effort, and is not apt to be overdone. Bicycling is another form of exercise which is of value, but not to be compared
with golf, requiring greater mental effort and is more likely to be carried too far. There is always a temptation to a sprint or a race which is hard to resist. Horseback riding is also of value. The great difficulty to be met in these cases in regard to exercise is the same as is with their work. They seem to have no appreciation of the limits of their ability, and overplay as they overwork.

Diet.—Next in importance to rest and proper regulated exercise is diet. When we consider that nearly every case of neurasthenia is accompanied by more or less digestive disturbance, which by failure to provide proper nourishment for the exhausted organism together with the resulting autotoxemia becomes one of the most important factors in the causation of the disorder, we can appreciate the importance of giving due attention to diet. The carbohydrates, as giving rise to fermentation and interfering with the digestion and assimilation of nitrogenous foods, should be avoided as much as possible. According to Brower¹¹, beef, mutton, and eggs should form the basis of the dietary. In addition, milk and malted milk, or a combination of the two, may be used advantageously. Plasmon, a new preparation of milk proteid, is a most admirable adjunct to the nitrogenous diet. It is said to contain 90 per cent. albumin, is tasteless, odorless, and can be added to almost any article of diet. It will sometimes be necessary to resort to predigested foods until the digestive organs have regained their tone somewhat. Tea and coffee should be avoided entirely, not only because of their detrimental influence upon the nervous system, but because of their interference with digestion. Fluids in any quantity diluting the digestive juices and impairing their action, should, therefore, be taken at other than meal times, preferably upon rising in the morning and an hour before meals, hot water being best, to which may be added to advantage in some cases a teaspoonful of Carlsbad salts.

Bathing is of great value as increasing elimination,
and for its tonic effect upon the nervous system the
cold shower or sponge bath upon rising has in most
cases an excellent effect. The hot bath and hot air
bath furnish excellent means of overcoming insomnia,
but should not be used except for that purpose, be­
cause of their depressing effect upon the nervous system.

Drug Treatment.—As in all treatments of this con­
dition, the first object to be gained is increased elim­
ination. To this end the salts of lithia are of service.
Lithona, a laxative combination of lithia, is of value.
Vichy or Hunyadi water may be used in some cases.
Constipation should be overcome by the use of phos­
phate of soda or cascara sagrada, either alone or in
combination with aloin, strychnia, and belladonna—all­
ways, where possible, depending upon the cascara
alone. Of tonics, the phosphorus-containing com­
pounds are our mainstays. Zinc phosphide, the hy­
pophosphites, and the glycerophosphates. A new
preparation, with which I have had most gratifying
success, is phospho-albumin. It is prepared from the
brains, testes, and spinal cords of young bulls, and is
said to contain lecithin, spermine, nuclein, and phos­
phorized albumins. The makers lay no claim to organo­
therapy, but use the brain, testes, etc., because from
them they get the principles desired purer and cheaper
than they can be obtained from any other source. The
preparation is perfectly ethical, not advertised even
in the medical journals, and is endorsed by Loomis12,
Potter13, Brower, Murphy, and others. Personally, I
believe it to be the best reconstructive we possess,
being more in the nature of a nerve food than a medi­
cine. Strychnia is of value in some instances, but it
is a whip and must be used with care. I can conceive
of nothing more irrational than goading an already
exhausted nervous system to further effort with
strychnia. Like alcohol, in acute disease it may be
used to advantage to tide a patient over an emergency,
but its continued use for any length of time is very
likely to result disastrously. Alcohol should be stu­
diously avoided, as should as far as possible the
various hypnotics and sedatives, resort being had to the hot bath, the pack, gentle exercise or massage to overcome nervousness or insomnia.

A great deal can oftentimes be accomplished by suggestion and psychotherapy, and here the personality of the physician becomes a marked factor for good or ill as the case may be.

As a last word, don't use morphine. Morphine should only be used for insufferable pain, and that is not what we are dealing with here. God only knows how many of these poor unfortunates, with their weakened will-power and diminished resistance, have received their passport hellward in the shape of a dose of morphine, "just to quiet them."

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DISCUSSION.

Dr. W. O. BRIDGES, Omaha: This paper is a most excellent one, and there is very little which can be said in addition to the ground covered. It is often very difficult to draw the line between the nervous symptoms produced by abdominal troubles, particularly in women, and neurasthenia, and on this account it is frequently impossible to determine what etiological relationship there may be between them in a given case where such troubles are found. I think we should always be guarded in our expression of opinion, for operation too often aggravates the neurasthenia or excites it when the patient is on the border line.

Dr. A. S. VON MANSFELDE, Ashland: I know that the same mistake that Dr. Roberts has made has been made by others as well as by myself. He should time his paper to the limit of the prescribed thirty minutes. I am satisfied that if Dr. Roberts could have had his paper timed within the limit, it would have been one of the best papers of the afternoon. I would suggest that writers of such valuable papers take care to limit their time or ask for more time from the
society, or present only a well-digested synopsis of their papers to the meeting and submit the full paper to the society for publication. They will thus secure justice to their valuable work.

Dr. Roberts (closing the discussion): I want to apologize to the society for intruding on their time. I found that such a subject could not be treated with any degree of satisfaction in so short a time.

In reply to Dr. Bridges, I will say that I deeply appreciate his words of commendation, and am obliged to him for the thoughts which he has brought out and which were but briefly referred to in the paper. As I said before, neurasthenia is too deep a subject to be treated exhaustively in so short a time, especially in its relation to other conditions. I would particularly call attention to the treatment as laid down in the paper, as I believe it to embody the latest advances along that line. In reply to Dr. Philbrick's statement that menstruation is not an eliminative function, I will say that that is a mooted question. There are those who hold that the normal woman during the reproductive period stores up food for two, which food or nourishment, when not rendered necessary by conception, is discharged by way of the uterine mucous membrane in the shape of the menstrual flow. Thus during pregnancy and during lactation there is no menstruation, this excess of nourishment being used by the child. As to the insufficient menstruation being due to the autointoxication instead of vice versa, I referred more particularly to the obstructive forms of impaired menstruation wherein the toxemia from reabsorption is very apparent.
THE COMMISSION EVIL.

H. GIFFORD; M. D., OMAHA.

I had intended to write a paper on the commercial aspect of medical practice in general, but some consideration of the subject convinced me that there was one side of the case which demanded more attention than all the others together. The man who resorts to the various well known artifices for increasing his practice, such as the society, church, or newspaper rackets, only excites the amusement or contempt of his colleagues, with little danger of inciting them to follow his example; but the man who offers to pay physicians or others for sending him cases, or who accedes to requests to divide his fees, yields to a tendency of the most demoralizing kind. If your society considers it an insult for me to discuss before it a question of which the morals are so obvious, let me offer as an excuse the fact that in other societies of equal prominence members have had the audacity not only to discuss but to defend the practice. There have probably always been men on the outskirts of the profession who have paid members of the laity for sending them patients, but only since the advent of specialism has there been any marked tendency for members of the profession to corrupt each other in the same way. But while specialism in medicine must be held responsible for the increase of the practice, the blame must not be laid wholly on the specialist. It will doubtless be conceded that human nature is much the same both in general and special practice; and while it may be true that the trouble began by the unscrupulous specialist offering other physicians bribes for sending him cases, it is a fact that the custom has to some extent been kept up and increased by the demands of a—fortunately small—class of general physicians who before referring a case to a specialist are particular to ascertain what there is in it for themselves. I know that
there are some who do this innocently. Without hav­
ing given the matter any serious consideration, they
argue that because it is a recognized practice in or­
dinary commerce for one man to pay another for bring­
ing him a customer, a similar practice in medicine can
meet with no objection. Even in commerce I think
that much of this practice is not strictly ethical, since
in many cases there is an element of deception; the
man who steers a customer to a particular store by
no means always allowing it to be known that he is
paid therefor. But if this is in the slightest degree
reprehensible, what shall we say of the physician who
accepts the confidence of his patient when asked for
an opinion as to who shall treat his case; and instead
of giving an unbiased opinion sends his patient to
the man who offers a commission? And if he happens
to think that this commission giver is the best man,
let him test his sincerity by telling his patient that
the specialist to whom he is being sent divides the fee,
while some other man does not, and see what effect
this will have on the patient's opinion as to his im­
partiality. Of course it may happen that the best man,
medically or surgically, may also be the most unscrupu­
lous, but in the long run there can be no question that
the practice tends to lower the morality of the profes­
sion and to work against the best interest of the
patient, both physically and financially. An often
repeated excuse for the commission evil is that only
by its practice can the family physician receive a just
compensation for much work which he does, but for
which he cannot send in a bill. Now to my mind this
is plain cowardice and deception. If a physician has
done any work for which he deserves pay, he certainly
is not entitled to it unless he has the backbone to tell
the patient what he owes. And for the physician and
specialist to conspire to extract money from a patient
by such means is nothing short of knavery. The situ­
aton is one which can only be successfully met by a
combination of courage on the part of the family
physician and liberality on that of the specialist. The
physician must have the courage to charge what his services are worth and to enforce his claim; the specialist, on the other hand, must not be so grasping that after his fee and the hospital and traveling expenses are paid there is little or nothing left for the family physician. My own practice, when, as very rarely happens, I am asked whether I pay a commission, is to tell the physician that I do not, but to charge the patient whatever is right for any services that he may render; and if there is any question as to the financial ability of the patient, the family physician's claim must be prior to my own; and if only one of us can be paid, I prefer to give my services gratis rather than have the other bill cut down; and from conversation with many other men in special lines, know that I am no exception in my views on the liberality which should be conceded to the claims of the general physician. Let me say further, that I have no personal grievance in this matter. To the best of my belief not one of my immediate competitors ever pays commissions for cases sent him; but I am impelled to write this paper because from what I hear through surgeons, especially in other states, I believe the evil practice is to some extent gaining ground and that our society ought to set upon it an emphatic seal of disapproval.

DISCUSSION.

DR. A. S. VON MANSFELDE, Ashland: Dr. Gifford, I would ask that you hand that suggestion to the secretary to add to our by-laws. If anyone should ask a fee from me because he had sent me a patient, I should certainly feel insulted. Dr. Gifford is certainly right. In fact, it has been my misfortune, one of the most disagreeable incidents of my medical career, to be asked for $50 of a $300 fee paid me for an ovarian tumor case. I paid the money, or its equivalent, to avoid unpleasant explanations. This is simply robbery, either of the consultant or the patient.

DR. R. MCNAUGHY, York: The paper was very short. We might have had the introduction, which the doctor says he omitted. I have had little experience with specialists. I have sometimes recommended patients to specialists, but have never ran against a specialist who wanted to pay me a fee. I want to say that I do not agree with Drs. Mansfelde or Gifford in introducing this matter in the meeting. I want to say that if such a resolution be passed, the "State
John A. Creighton / V I eil Ceil CovCeg.

THIRTY-THIRD ANNUAL SESSION.

99

Journal” and all the papers of the state will come out with it. What will they think of the standing of the regular medical profession of Nebraska? It seems to me that they will class us as not standing very high, either professionally or morally. It may be true that such a thing exists in this state, but I have never seen any signs of it. I should not like to have the people think that as a profession we are carrying it on.

Dr. W. B. Ely, Ainsworth: There is a notion rather widely prevailing in my section of the state that the country doctor who sends his patient to the city specialist receives a commission upon the fees derived from the case; but, so far as I have any knowledge, this notion is wholly false, for I have never known a specialist to offer, or even to tender, a commission for business sent to him. No; that’s not quite true. I’ve misspoken myself. I did know of such a case once upon a time. Some years ago, I think it was in ’93, an Omaha oculist, a one-time member of the state board of health, made an itinerary through the sand-hill region, using the doctors’ offices as places in which to receive his patients. He occupied my office one day—I’ll not stop here to explain how it happened, beyond saying that the circumstances were peculiar. Having finished his work, he sat down to talk “business” with me, and in that talk he made me the offer of 50 per cent. of all fees collected from any patients I might send to him, and I know that he made similar offers to all the doctors in my immediate vicinity. Though I have never mentioned the subject to any one till now, ever since that trip of Dr. Allen’s, the people in general have come to take it for granted that every specialist pays commissions to the general practitioner for sending “business” to him.

Dr. M. H. Garten, Lincoln: I am inclined to think that nearly all of Dr. Ely’s people go to Omaha. In Lincoln we are very rarely asked for a commission. We do not let the question enter into our business relations. The gentleman to whom Dr. Ely referred made the same suggestion to jewelers as well as the medical profession.

Dr. W. O. Bridges, Omaha: This question is more far-reaching than most realize. When in Chicago one year ago I was told that almost every surgeon in Chicago paid commissions, and it was true also of some prominent surgeons in New York. If anybody is to be rewarded, it ought to be the patient, and not the physician who recommended him; and if there is to be a commission, it should be in the form of a discount to the patient. This would throw all three together and still permit the physician and specialist to maintain their self-respect. How one can either pay or receive a commission and still have any self-respect, is beyond my comprehension. I believe the commission business originated with the specialists, and they are the ones who should destroy it.

Dr. Jay G. Roberts, Hastings: I do not think the publication of such a resolution in the daily papers would create
the impression among the laity that Dr. McConaughy thinks. They can see no harm in such a transaction, and would look upon it merely as a matter of business. The average individual cannot understand the code of ethics of the physician and cannot appreciate its teachings. If they should learn that we had passed such a resolution, they would not place it to our credit. They might consider it further evidence of our lack of business sense, or another of our “fool-sacrificing notions”; for, as I said, they can see no wrong in accepting a commission, and I doubt if they can be made to.

Dr. H. Gifford (closing the discussion): I can understand Dr. McConaughy’s point. In reporting this motion the newspapers very likely will give the impression that the practice is much more common than it really is. The harm which this will do, however, seems to me trifling in comparison with the good which will result from our taking a decided stand on the subject. Dr. Garten is right. It was an Omaha man who attempted to corrupt the neighborhood to which Dr. Ely refers. It was also an Omaha man who made the motion, which this society carried unanimously, demanding from the governor the dismissal of the corruptionist from the state board of health, of which he was one of the secretaries. So you see the society has already gone on record in this matter, and the adoption of the resolution, which I urge, will simply be putting upon a definite and unmistakable basis the principle which has already been maintained.
CIRRHOSIS OF THE LIVER.

W. R. LAVENDER, M. D., OMAHA.

An increase of fibrous tissue in the organs is an essential change in old age, yet in any individual a slight irritation will produce inflammatory change, ending in fibrosis.

Classification of cirrhosis at present is unsatisfactory, being based upon the morbid changes found in the tissues, and whether these changes occur primarily in the cellular elements or in the connective tissues is still doubtful. Experimental and clinical evidence as to obstruction of the bile-ducts being a primary causative factor in cirrhosis of the liver do not agree. Ligature of the left hepatic duct in the lower animals is followed by unilobular cirrhosis in the ligatured area. In obstructive jaundice, in congenital abscess, or in atresia of the common duct in children, there may be cirrhosis varying from a slight hyperplasia to a high degree, yet post-mortem findings prove that biliary obstruction in man does not result in a cirrhosis sufficient to give symptoms.

Etiology.—Three important causative factors have long been recognized in cirrhosis of the liver, viz., alcohol, syphilis, and malaria. To these might be added toxic agents from the action of micro-organic products, or from drugs acting through the circulation, either affecting directly the hepatic cell-elements or the connective tissues of the organ. Again, conditions producing or favoring an osmosis of bile from its natural channels into the lymph-spaces, where admixture with the circulating lymph renders this secretion more irri tant, may produce an inflammatory action upon the tissues, causing hyperplasia; the final contraction of this may become the starting point of a considerable fibrosis.

Pathology of Alcoholic Cirrhosis.—Owing to the distribution of the pathological fibrous tissue in the or-
gan it is named as follows: I. Multilobular.—Changes are around the main portal veins in the portal canals. II. Unilobular.—Changes are upon the small portal branches which approach each lobule from all points of its periphery.

I. Multilobular Form.—Macroscopical.—Organ at first is probably enlarged, highly fatty; later, it is often, but not always, reduced in size, weight is increased, and its shape is altered from the contraction of the newly-formed fibrous connective tissue, the capsule is thickened, and there may be adhesions to the diaphragm. The natural and cut surfaces are studded with nodules, from size of a pinhead to a pea. Pressure of the new growth upon the portal vein and its branches causes a dilatation of the anastomotic branches of the portal and general venous system.

Microscopical.—Early inflammatory changes are found in the tracts of connective tissue supporting the ramifications of the portal veins throughout the whole organ, the portal canals being packed with leucocytes and proliferated connective tissue cells. The vessels at first are dilated, later contracted; the new connective tissue also undergoes contraction. In some cases there is an apparent new formation of bileducts, and nodules of hepatic tissue are found in the trabeculae of newly-formed connective tissue; these latter consist of many fused lobules. In advanced cases the liver-cells are degenerated, granular in appearance, some with pigment, nuclei are unstained, or subject to fatty infiltration. This interstitial change starts around the main branches of the portal vein, there being but slight evidence of cell degeneration and death of the hepatic elements from the toxic factor; the increase of fibrous tissue present is out of all proportion to the cellular death found. This new formation of fibrous tissue is not anemic. This is proven by its capability of being injected through the hepatic artery and its capillaries, thus explaining the slight functional interference present in cirrhosis.

II. Unilobular Form.—Macroscopical.—The organ is
increased in size and weight, normal in shape, edges sharp, capsule thickened; the natural and cut surfaces are smooth; color, mottled brown and white; when jaundice is present, yellow, or olive-brown; firm and hard to the touch, but not leathery.

Microscopical.—Uniform growth of new fibrous tissue enclosing, and in some places invading, a lobule from the periphery towards the center. This tissue is poor in nuclei, but shows a rich plexus of bile-ducts. Near the portal vein at the center of the triangular interlobular space there are one or more localized irregular spaces lined with columnar epithelial cells. Near the margin of the lobule a series of smaller ducts is arranged around, or parallel with, the edge of the lobule, and from these other ducts pass at right angles toward, and apparently become continuous with, hepatic cell-columns. These ducts are lined with cubical cells, their lumen being packed with detached cells; these are complete vessels, as they can be injected from the hepatic ducts. Cornil claims they consist of biliary canaliculi, becoming apparent as the liver tissue recedes, and the epithelium of the extralobular ducts growing up into them forms this regular epithelial lining. Such an arrangement is also found in syphilitic scars and tubercle of the liver, and in the lymphoid masses present in leucocythemia.

Pathology of Syphilitic Cirrhosis.—Acquired Form.—

Macroscopical.—Liver is studded more or less with gummata from the size of a pea to a walnut, or fused into masses which may involve large areas of the organ, and are found upon the surfaces or deep in its structure, but most frequently are situated at the junction of the right and left lobes. The organ may show slight puckering from scars, or great deformity, produced by changes in these gummata, or traversed in all directions by broad fibrous bands, surface irregular, or lobulated, capsules thickened, with adhesive bands to diaphragm.

Microscopical.—Involved areas undergo atrophy, the bulk of the liver tissue being unaltered, vessels
free, and portal canals normal. The center of gumma is filled with caseous material, and surrounded by a zone of new connective tissue, short bands from which radiate into the surrounding liver tissue.

Hereditary Form.—Macroscopical.—The organ is uniformly enlarged, heavy and hard, appears structureless, and is liable to be mistaken for lardaceous liver; the natural and cut surfaces are smooth and bloodless; color, pale or reddish-gray.

Microscopical.—Whole organ is packed with formative cells and developing fibrous connective tissue, affecting the portal canals and invading the individual lobules, separating both columns and individual cell-elements from each other.

Pathology of Malarial Cirrhosis.—Macroscopical.—Whole organ is enlarged from blood engorgement; color, dark-red; natural and cut surfaces smooth, bleed freely on section. There is very little contraction of the delicate connective tissue present.

Symptoms of Cirrhosis of the Liver.—In cirrhosis of the liver from any cause, the symptoms are similar from clinical observation, simply varying with the amount of pathological new formation present; yet there are some interesting differential diagnostic points between the two varieties of alcoholic cirrhosis.

Multilobular Form.—(1.) In the early stages disease may not be recognizable until pressure from contraction of the new growth occurs. Dyspepsia, with loss of appetite in morning, nausea, vomiting, tongue coated, sense of heaviness or distention after meals, gaseous eructations, bowels irregular, costive or loose, conjunctiva occasionally yellow in color, a tendency to hemorrhoids. Later, ascites, which is present in about 80 per cent. of the cases, fluid clear, straw color, alkaline reaction, specific gravity 1010 to 1015, containing from 0.4 to 2.0 proteid, sugar a trace. (2.) There is a passive hyperemia of the stomach and intestines, with a resultant persistent and constant catarrh of their mucosal coats. Hematemesis occurs, from general oozing of blood from the congested
capillaries, or from ulceration and rupture of the varices formed in the cardiac end of the stomach. (3.) Digestion becomes more imperfect, with gastric fermentation, and flatus, bowel motions pale in color, diarrhea profuse, and at times uncontrollable. (4.) Spleen enlarged and indurated, jaundice usually absent, urine diminished in quantity and loaded with urates, sometimes bile pigment present. Fever is usually absent, face pale, malar bones prominent, later in the case epistaxis, purpura, bleeding from the gums, delirium, drowsiness, coma, and death. Varices which occur are found at three points, viz.: (1.) Plexus of veins, cardiac end of stomach, anastomose, with a similar plexus at the lower end of the esophagus, and open into the Azygos veins. (2.) One or more small par-umbilical veins, constantly found, pass from the left division of portal vein, in the round ligament accompanying the obliterated umbilical vein to the umbilicus, communicate with the epigastric system. (3.) Communication between inferior mesenteric and hemorrhoidal veins. Diagnostic points in connection with the communicating veins: A network of dilated superficial veins around the umbilicus; a continuous venous murmur immediately below ensiform cartilage; formation of hemorrhoids.

Unilobular Form.—Tendency to severe jaundice, with little or no evidence of portal obstruction, the disease usually well advanced before some sudden illness causes patient to seek advice, when an enlarged liver is found. Early symptoms, some general failure of health, slight weakness, loss of appetite, sense of weight in right hypochondrium, jaundice present sooner or later, but is occasionally absent; when present, it is intense and persisten until death. Spleen normal, or slightly enlarged; liver enlarged, hard, smooth, and easily palpated, filling up more or less a large part of abdominal cavity; ascites absent, or very slight; no direct or indirect evidence of portal obstruction, hematemesis or varices. There is often present an evening rise of temperature (an important sign),
102° to 104°F., which may follow a hectic course similar to an hepatic abscess. The urine and urea diminish; leucin and tyrosin may be found. Diarrhea is common and uncontrollable near the end. Temperature rises, followed by progressive feebleness and emaciation; tongue becomes dry, pulse rapid, petechiae of skin appear, coma and death, the latter is often sudden.

Symptoms of Syphilitic Cirrhosis.—Acquired Form.—If disease is extensive and changes in gummata pronounced, inequalities upon surface of the organ may be palpated through abdominal walls; later, all the pressure and other symptoms found in alcoholic form of cirrhosis are present. In mild cases the general health is only slightly disturbed. There may be a sensation of weight in the right hypochondrium and some pain.

Treatment.—No general plan can be laid down. Each case must be treated for conditions present. In administration of drugs care must be observed in case of their effect upon the cellular elements. Marckwald’s investigation upon frogs, rabbits, etc., proved that frequent injections of small amounts of antipyrin produced cirrhosis of liver, and injections of large amounts of same drugs caused acute destruction in the organ. Regulate the daily life of patient; plenty of fresh air; moderate exercise; milk three to five pints daily, diluted with an alkaline water; white meat or fish in small quantities; vegetables or fruit without much starch. Mild preparations of iron, acids, and bitter tonics. Stomach irritability, bismuth, etc. Flatulence, thymol. Diarrhea, subnitrate, or salicylate bismuth. Hematemesis, absolute rest of body, stomach and esophagus—feeding by rectum. Ascites, paracentesis, especially when upward pressure upon lungs is present.

Aids to Diagnosis.—Uranalysis, with microscopical investigation of sediment, is essential to differentiate albuminuria from simple pressure of ascitic fluid upon renal veins, from that of a co-existent nephritis. Blood
examinations are not reliable, the bile present in the blood interfering with a correct hemoglobin estimation; the leucocytic diagnosis being of little use, except perhaps in the so-called hypertrophic cirrhosis with jaundice.
THE DRUG HABIT: ITS CAUSE AND RESTRICTION.

JOSEPH M. AIKIN, M. D., OMAHA.

Next to alcohol as a poison to the nervous system in common use stands opium with its derivatives, especially morphine. This most useful and very efficient drug for the relief of pain is likewise a most fruitful cause of relentless physical and mental suffering. The effects of the poppy, when introduced into the human body, have been in vogue and utilized for many centuries, but the subcutaneous use of morphine was not known until the middle of the past century, and but sparingly used, until the great body of physicians now in actual practice began their medical career. The oriental nations used the crude preparations of the poppy plant among all classes, as a source of pleasurable excitement. Not, however, until recent years has the drug found common favor among Caucasians for its stimulating effects to the intellectual powers. The English and Americans who prior to the present generation became devotees to opium were men of letters whose intelligence directed them to its use for the mental stimulus produced. The baneful effects of the opium habit were not pronounced until the progress of chemical science gave us the active principle, morphine, and resort was made to its abuse hypodermically. So widespread is this abuse, especially among the cultured classes, that present conditions are truly alarming. It was primarily a disease of luxury, for the drug is relatively expensive, and, too, only those who have the intelligence to know its effects are likely to initiate its use. There are more than one hundred thousand known chronic users of morphine in this country, and of these no one class furnish so large a per cent. as physicians. The rate of increase among its votaries far exceeds our growth in population. Physical and mental degradation from cocaine
abuse has developed so rapidly that even some of the large cities are striving to legislate it away from the public. When chemistry was forced to give up this useful alkaloid for rightful use, intelligent men, many of whom were and are physicians, seized the opportunity, under guise of relief for human suffering, of placing all manner of erythroxylon preparations for promiscuous administrations by the public. The coal-tar preparations, in their myriad combinations, are habit-forming drugs, causing more baneful than beneficial results. Slaves to the chloral habit are not a few among persons whose vocations cause insomnia, yet whose intelligence and conscientious convictions restrain them from using or administering any extract from the poppy. Another class, esteeming themselves still more conservative, seek the seductive influence of chloroform or ether to ease their neuritic pain and soothe their mental unrest. I name but a few of the common habit-forming drugs, regarding it as presumption on the intelligence of those who compose this society for me to do more than direct your attention anew to the prevalence and growth of the drug habit, and solicit your intelligent co-operation to a rational solution of its cause and restrictions.

It is not only true that physicians, more than any other class, are the slaves to narcotics, but it is a fact that those who do nearly all their work in a country practice furnish the larger per cent. of morphine users. Modern civilization either produces more and greater aches and pains, else the present generation is less tolerant. The present requirements of business and social conditions increase the demand for and lessen the resisting power against narcotics. An imperfect nervous system craving stimulation or narcotization is no less a physical defect than the imperfect eye, yet what person would tolerate for a day even a treatment to the eye the ultimate results of which he well knows are injurious? The query then is, why do persons of equal or greater intelligence permit the use of stimulation or sedation to the nervous sys-
tem, well aware that mental obliquity is added to physical derangement by the continuance of such drugs? Immediate relief for acute suffering and temporary benefit in chronic painful conditions is a strong argument by the patient, but unless possessed of the intelligence directing him how and what to use for relief, he will not initiate its use. Once instructed in the successful application of a remedy, without the additional information that relief came by the use of a habit-forming drug, invites its repetition. Responsibility is traceable, then, to the intelligence placing the remedy at the disposal of all who apply, if the user has not had equal instruction as to its baneful effects.

The cough syrups and lozenges, catarrh powders and kola drinks, when not supplied to all by the druggist and soda fountain vendor, can be had at the grocer's, with printed instructions extolling their virtues. Progress in the science and art of compounding drugs enables pharmaceutical houses to exhibit myriads of preparations, many of which are very harmful to use. These concerns, founded for purely business ends, use numerous avenues of introduction for the consumption of their products. They are represented by shrewd managers who know well the advantages gained by endorsement from medical men. The general public cannot exercise intelligent discrimination, but, trusting to the "written testimonial of the doctors," they subsequently discover the deception. In this country, the ease with which the name "doctor" is acquired, and its indiscriminate application, greatly lessens the ennobling and beneficial influences rightfully belonging to the thousands of able medical men, past and present, whose knowledge, wisdom, and integrity concerning the physical and mental welfare of the human race surpasses every other profession. A more liberal education of the people is a commendable suggestion, but it will serve only as a little greater safeguard against dishonesty among the better educated in science and art. We take high place as one of the learned professions, yet within our ranks
is found—the largest proportion of chronic drug users. They are among us, but not of us.

The best evidence possible confirming the high value of our currency is seen in the frequent attempts at counterfeiting. The multiplied pathies, like parasites, are but an excrescence on the great body of honest workers in our profession. It sometimes happens that a person possessing the mental, educational, and legal requirements for practicing the healing art becomes infected with the parasites of popularity and commerce, which completely masks all conscientious appreciation of the patient's subsequent condition. The exceptions verify the rule, and we must look to the great body of men within our ranks whose integrity of character cannot under any circumstances be purchased for the source of relief. Education is demanded, but character is imperative. Wholesome legislation is good, but those in our ranks who rise to the privilege of our opportunities in not only relieving but preventing disease are the men who ennoble our profession, and are infinitely superior, as public benefactors, to the legislators who enact, or the chief executive who endorses, class legislation. The intellect may see an evil and its remedy, but without the man of character in control such knowledge is harmful.

Not a few physicians, zealous to accomplish cures, overmedicate; and finding other patients surfeited by the drug habit, withhold the exercise of equal therapeutic measures for liberation. It sometimes happens, too, that the busy practitioner, wishing to expedite the interview with some undesirable patient, suggests an efficient remedy, but puts no restriction on its continued use. This is more frequent in chronic neuritic patients, not so ill but that they can go about their work and make periodical visits to see the doctor. We are all familiar with chronic drug users, who trace their slavery directly to the advice of some doctor, whom we well know is a competent and thoroughly conscientious physician, yet in an unguarded moment gave unwise counsel. I am not, how-
ever, unmindful of the fact that such accusations are many times more numerous than the truth warrants. What everybody says is usually not true.

In Colorado, the medical profession has shown what a united and continuous effort in politics can do; and I feel sure we will not neglect our privilege in using the ballot advisably in Nebraska, should our future suffrage be sought by an aspiring executive who delights in ignoring requests from the best thought in our profession. Wholesome legislation is desirable for protection of the innocent, but we cannot legislate into man the character that impels him, with or without law, to right actions toward himself or his fellow men. The man in medicine, as in every vocation of life, is controlled by motives higher than civil law. Medicine is an exacting and jealous mistress; the public demands much of us for scant reward. If we would rise to the opportunities of our profession for relief of human suffering, we must daily live the life, exhort the precept, and practice the truth which we as medical men know concerning drugs and their use, for liberating, rather than enslaving human beings.

DISCUSSION.

Dr. A. R. Mitchell, Lincoln: It seems to me that such an important subject should not be left so soon. We are often charged with a grave offense, and probably rightly too. It is a question how we shall clear ourselves of these charges. It is probably true that physicians are largely responsible for these habits. The doctor has laid the way to some characteristics in this direction. But there are other faults. The medical profession are largely responsible on account of timidity. If the knife were used more frequently, our patients would not need the use of narcotics for weeks and months. The doctors in our town have furnished one of the best examples in the formation of the drug habit. One of the Omaha druggists got up a catarrh snuff and we had many using it here. Another good way to circumvent these difficulties is to instruct the patient not to have his prescription refilled unless he have the permission of the physician. Then there should be restrictions upon the druggist himself. It is for the relief of pain that people usually resort to drugs, not for mental stimulus.

Dr. W. B. Ely, Ainsworth: Some years ago I came to hold views upon this general subject, which, I suspect, are
somewhat peculiar to myself. Since they are the result of my own personal experience and observation upon myself, I may be pardoned, perhaps, for holding to them somewhat strenuously.

Following a severe attack of the grippe in the fall of 1889, I had a protracted siege of sciatica. My limb was not so painful during the day but that I could be around and attend to my work, but as soon as I took to my bed at night, that sciatic nerve, clear out to all its minutest ramifications, seemed to wake up to all its possibilities of torture. At the beginning, my first thought was of my hypodermic syringe. Now the stimulation of morphia upon me is something indescribably delightful. I can form no conception of anything so enticingly bewitching. But I have always had a horror of the morphine habit, and, even since my entrance upon my profession, have lived in perpetual fear, since the stuff is always with me upon my person, that I might fall into its clutches. You see, then, that my situation was embarrassing; very. I couldn't endure the pain, but was afraid of the only available means of relief. I tried other vaunted remedies for two or three nights, but without effect, and the time finally came when I must sleep. Then, but not till then, it flashed across my mind that, perhaps, I could give myself a dose so large as to obliterate the period of stimulation by an overwhelming anodyne effect. Till that time it had been my habit to begin the administration of morphia with one-eighth or one-sixth grain doses, but now I determined to take a half grain at once. The result was that all my pain was gone within ten minutes and soon afterward I was sound asleep. The severity of my attack lasted nearly two months, and every night of that time I took my hypodermic of a half grain of morphia; with much fear, I can promise you, as time passed and my pain showed no signs of abating; but it was my only available resource. My dose was never increased nor repeated the same night. At last, however, there came a night when my pain failed to come on, and I slept till morning without my customary dose. I was a little longer in getting to sleep, however, it may have been by two or three hours—I remember that the time seemed interminable,—but I was free from the cursed pain, and I felt no temptation to take a single unnecessary dose of the morphine. Surely, I had escaped formation of the habit. Why? I believed then, and the experience of a dozen years has congealed the belief into a conviction, that I escaped because I took full analgesic doses only—no dabbling with mere stimulation. Had I taken minimum doses merely, with all their witchery of intoxication, I feel certain that I would have fastened the morphine habit upon my self irremediably. Ever since that experience, in the exhibition of morphia, or of opium in any form, for the relief of pain, I have made it my chief study how to keep within the limits of safety in the administration of full doses. I rarely give less than one-fourth grain, oftener
it is one-third grain, frequently one-half grain, and not so very rarely three-fourths or even a whole grain. I have never yet witnessed a sign of overdosing, and even in protracted cases I have never seen evidence of habit formation. Full analgesic dosage, however, is not my only safeguard. If possible, my patient is not permitted to know what he is taking. Not infrequently, to satisfy the curiosity of some overly inquisitive patient, I invent fictitious names for it, which usually are satisfactory in proportion as they sound erudite and scientific. I believe that the doctor who is afraid to produce the physiological effect of his drugs, when occasion demands it, more than any other single cause, is responsible for the prevalence of the morphine habit, and by nature is unfit for the practice of our profession.

Dr. W. O. Henry, Omaha: Sometimes we are too prone to give hypodermic injections. It is unfortunate that some of our young men get into this habit of using morphine for themselves in tiding them over some form of extreme excitement. On the other hand, if there is a severe amount of pain, morphine is perhaps the only means we can use. But I do think we should all be more careful in ordering hypodermic injections and always use the milder means of relieving pain before resorting to it.

Dr. A. S. von Mansfeld, Ashland: How many people do you know who are opium fiends? I have known just three people in thirty-four years that were the users and abusers of opium and its derivatives. I fear the medical profession is blamed unjustly as initiating by their prescriptions the drug habits spoken of. I am convinced that almost all of these people, when brought down to a careful analysis, will be found to be weaklings in body and mind, not balanced rightly; and this defect, and not the physician's initiative, is the cause of their downfall, whether they become drunkards, morphine or cocaine fiends, or suicides. Of course, no intelligent physician will hand a hypodermic syringe to such people; it would be as rational as giving a year-old child a box of matches to play with and then leave both of them to their fate. There may be, unfortunately, physicians who belong to this class of paranoiacs, and they may be instrumental in making drug fiends before they themselves go to their ruin, but the profession is not guilty of such practices and should not be blamed in wholesale fashion.

Dr. J. L. Greene, Asylum: Are there any accurate statistics that physicians are more prone to the use of morphine than other people? You can find a large percentage of other people in this city engaged in this habit.

Dr. W. O. Bridges, Omaha: The question of the drug habit is like the question of the alcohol habit. It acts upon the nervous system, so that there is very little will power to restrain the influence. You have to go to the innermost nature of the man to explain the cause. Every inebriate or drug habitué is degenerate and the trouble is hard to reach on this account. The occurrence of the drug habit may
be very often traced to the taking of the drug prescribed by the physician. We are too careless in prescribing drugs of this class. I must say that every case I come across with difficulties in his makeup such as would make him susceptible to such a habit, I watch pretty closely. Morphine is probably prescribed by me far less than any other drug. Sometimes I leave a tablet containing morphine, but I never write a prescription for it. When leaving such a tablet I never make known the fact that it contains morphine. If I give a hypodermic injection of morphine, I refer to it, if at all, as atropin, for they are most always combined as I give it.

Dr. J. M. Aikin, Omaha (closing the discussion): I wish to thank the gentlemen and members of the society for the kind criticism on my paper. Dr. Mitchell’s suggestion is a good one; unauthorized refilling of prescriptions is criminal. I did not, however, attempt to give suggestions invoking legislation as the remedy against this evil. It exists in the medical profession. A greater proportionate per cent. of chronic drug users exists in the medical profession than in any one class of people. Dr. Ely spoke of using the maximum dose. I consider that dangerous practice. A physician in Omaha, a very careful man, said that at one time, not very long ago, he was called to an accident case. A young physician who was anxious to do a great deal in a short time gave the child of eight years a hypodermic injection of one-half grain of morphine. The physician who had been called and also the young doctor did all in their power to save the child, but it died from shock. There is a tendency, among our young men especially, to take chances on the maximum initial dose. I urge that we use it more carefully, repeating the dose if needed, for its physiologic effects. Dr. Bridges is eminently correct in assuming an existing degeneracy in many chronic drug users. The excess actions in our profession cause much physical and mental depression which physiological rest would restore. Ability for immediate activities is gained by the use of drugs and we, not they, become the servants.
THE TREATMENT OF PNEUMONIA IN CHILDREN.

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This subject has been chosen on account of the frequency of this disease and the often lamentable outcome due to its mismanagement. Not that the treatment of acute croupous pneumonia in children should differ strikingly from that in adults, but its diagnosis and termination have their own distinct characteristics.

This paper, for practical purposes, as it concerns itself mostly with treatment, will make no special distinction between acute broncho and croupous pneumonia, remembering that during the first two years the great majority of cases, or 75 per cent. according to Holt, of primary pneumonia is catarrhal, as also are secondary pneumonias following the infectious diseases throughout childhood. However, it has seemed that la grippe is an exception to this rule. After this disease most of the cases have been of the croupous variety; we find this, too, in the majority of primary cases after the age of three years. While the two forms of inflammation are separate and distinct, yet there are seen many cases which partake of the characters of both, and it is with difficulty that they may be classified. It is frequently seen that both varieties may be present in the same case at the same time. These mixed forms are observed during the second and third years, but after that and during the first year the types are more distinct and well marked. Throughout the latter part of winter and during the spring months, especially April, this disease is so frequent that when called to see a child suffering from high fever and rapid respirations, it is well to suspect pneumonia, although it must be understood that every little catarrhal affection of the
respiratory tract should not be considered as such. During this time of year, when a child suffers from one or more convulsions, we should not be in too great haste to assure the parents that the child will be all right the next day, after administering an emetic and a purgative, but rather warn them that convulsions are very frequently the beginning of pneumonia, which may not manifest itself markedly for from twenty-four to seventy-two hours. Chills, or even a cold state, are seldom present in children as the initiatory symptoms of the disease, but, on the other hand, gastro-intestinal disturbances are frequently observed, especially in infants. Sometimes tenderness over the abdomen and diarrhea, but more often nausea and vomiting, are the first indications of the disease. Cerebral symptoms, as before mentioned, are marked in many cases, more especially in lobar, less so in broncho-pneumonia. Late convulsions are more frequent in the latter disease, especially those cases complicating pertussis. Often the cerebral symptoms are so prominent that the child is treated for meningitis throughout the whole course of the disease without the true nature of the malady even being suspected.

We cannot, in children as in adults, depend largely upon physical signs and symptoms for diagnosis, especially in the beginning; even cough may be slight or absent, in this respect resembling the pneumonia of old age. From this it is seen that we must depend largely, for diagnostic purposes, upon exclusion and generalization, rather than rely upon pathognomonic characteristics.

As to the treatment of pneumonia in children, the first thing we should learn is to avoid too much medication, thereby lessening the patient's chances of recovery. For the sake of better understanding what we wish to accomplish it may be well to classify the treatment under different headings. The hygienic treatment is of first importance, although it almost
invariably receives too little attention both from the physician and the attendants. While very little can be done for the disease, much can be done for the patient in the way of hygiene and careful nursing, many mild cases requiring no other treatment. The child should of course be placed in a large, well ventilated room where he does not come in contact with drafts and cold damp air. The patient should be kept in bed, no matter how mild the case. It is the practice of well meaning friends and curious neighbors to crowd the sick room, but as the patient needs all the oxygen that can be procured, this unnecessary vitiation of the air should positively be prohibited. One attendant is amply sufficient, and when not engaged, that one may better be in an adjoining room where the patient can be watched. A frequent change of position is necessary, no child being allowed to lie for any great length of time on the back; the bedclothing should be warm, but light.

As to local applications, if there is considerable pain in the beginning, it may often be relieved by the application of a mustard paste, but later in the disease it has been our practice to apply a flannel fitting well around the chest, saturated with equal parts of turpentine and lard, once or twice a day, and we have had no reason to regret the use of this simple remedy. Over this flannel should be placed a cotton jacket, covered with oiled silk or some impervious material. Some of the text-books, and even modern ones, recommend the application of hot flaxseed poultices. This practice must be looked upon as a relic which should long since have fallen into disuse, and especially so when such applications are made continuously.

During the first twenty-four or forty-eight hours, but a small quantity of food, if any, should be taken. Indeed, throughout the disease, less food and more water should be given. In many cases the food should be diluted and partly digested. This, too, must be
given at regular intervals, never oftener than two hours, usually three to four hours apart. Milk is the best food, when it can be taken. In regard to medicinal treatment, certain remedies to meet certain fixed indications are required, and can usually be depended upon. In the first place it is well to remember that a number of very mild cases require very little medicine beyond the cleaning out of the gastro-intestinal tract and the maintenance of excretions.

The temperature, so long as it does not exceed 103½° or 104°, has but little or no bad effect upon the patient and needs no special attention. Should, however, hyperpyrexia be a feature, that is, a temperature of 105° or over, it is best controlled by the application of cold to the head, and cold sponging, generally avoiding the application of water to the chest. In this day of coal-tar products their use in pneumonia cannot be too strongly condemned, and they are, to my mind, responsible for the majority of deaths occurring from primary pneumonia. This class of drugs interferes with oxygenation and elimination, produces fatty degeneration and granular cell destruction. This, together with their depressing effect upon every vital function, should place these antipyretics beyond the thought of administration in pneumonia.

When a case of pneumonia is seen early, the gastro-intestinal tract needs our first attention. This is best cleared out with small doses of mild chloride associated with an intestinal antiseptic, of which guaiacol carbonate is perhaps the best. In a disease of general infection like pneumonia, thorough elimination and enteric antiseptics are of primary importance. For this purpose two remedies may and should be continued until recovery is well at hand. Salicylate of sodium, in rather small doses every two hours, for its cholagogue and antiseptic effect, and aromatic fluid extract of cascara sagrada, are the two drugs to which we refer. Over twelve hours should not pass without a free bowel evacuation. The use of normal salt ene-
mata once or twice a day should not be neglected if bowels become sluggish in action.

The kidneys are next in importance. The irritation of these organs by concentrated urine loaded with toxines must be prevented by the free use of liquids and the administration of a non-objectionable diuretic. Here we have liquor ammonium acetatis, slightly alkaline, made fresh daily and good doses given every two hours. This is the remedy par excellence, and will never disappoint those who employ it. Spiritus etheris nitrosi is also sometimes indicated. Stimulants should in all cases be given from the first; or rather, the stimulant, which is strychnia sulphate, must be given first, last, and all the time, in rather small doses. To a child one year old 1-300 grain is administered every three or four hours, and oftener for a short period if needed. Later in the disease alcohol may possibly be combined with strychnia to bridge the patient over for a short time, but if strychnia has not been neglected, this will scarcely be necessary.

As for direct cardiac and respiratory stimulants, these, as a rule, are not needed. Should indications for their use be manifest, reliable preparations of digitalis for the former and belladonna or atropia for the latter are about the only remedies of any avail.

Sudden cases of general collapse, which are apt to come on at any time in broncho-pneumonia, may be successfully combated by the use of strychnia and nitroglycerine hypodermatically. Sometimes nitrite of amyl for its almost instantaneous effect and the continuous use of inhalation of oxygen are indicated. The hot mustard bath is valuable in those cases of cardiac or respiratory failure with cyanosis, cold surface, rapid pulse, respiration, and extreme nervousness. The child is placed in the bath at a temperature of 100° F. and the temperature gradually raised to 105° or 110°, if desired. The bath should usually not be continued longer than ten minutes and repeated in an hour if thought necessary.
To combat nervous irritability and sleeplessness, the application of cold will suffice, even if temperature is not very high. Nervous symptoms may arise in the latter part of the disease from want of nourishment or from toxemia. In a case recently under my care two convulsions occurred after the temperature had become normal; patient had not regained consciousness and pulse was rapid and feeble. He was given bromide and chloral by rectal injection and placed in a hot mustard bath, which latter produced an almost immediate palliative effect.

Although late convulsions are an unfavorable symptom, indicating, as they do, toxemia, exhaustion, or the beginning of meningitis, this patient now is in a fair way to recovery.

For sleeplessness large doses of sodium bromide are preferred. Nothing has been said about expectorants, and they are mentioned simply to be condemned, as they derange the stomach and are more or less depressing. If cough is troublesome and painful, codeia sulphate is the best remedy because it does the least harm. Sometimes much good is accomplished by giving small doses often, as it allays the patient's pain and fear. It should, however, always be given sparingly and dispensed with as soon as possible. Complications very seldom arise under this treatment, hence will not be discussed. Cerebral complications must be met promptly by cold applications to the head, and mercurials. We must never neglect to be on the lookout for empyema, which of course requires surgical attention; its prompt evacuation under the use of local anesthesia is demanded. Abscess of the lungs sometimes occurs in young children as a result of pneumonia. Many, however, recover in time with a comparatively useful lung.

Under this treatment, of seventy-eight cases, of which record has been kept, one death occurred. The case was seen late, and it is our opinion that the patient was pouliticed to death. To sum up, strychnia and alcohol as stimulants, mild chlo-
ride, sodium salicylate, and aromatic fluid extract of cascara sagrada as antiseptics and laxatives; freshly made and slightly alkaline liquor ammoniae acetatis as a diuretic; cold applications to the head and cold sponging for fever and nervous irritability; codeia sulphate guardedly for pain and cough, and our mortality of the primary pneumonias in children will be almost nil.
THIRTY-THIRD ANNUAL SESSION. 123

ROUND ULCER OF THE STOMACH.

N. S. DAVIS, JR., M. D., CHICAGO.

Members of the Society—Gentlemen:

I wish to thank you most sincerely for the invitation which you gave me to meet with you and for this opportunity to speak to you. I have accepted the invitation with some hesitation, as I have no new discovery to describe to you. However, there are many new lessons to be drawn from old subjects, and I trust that before I finish what I have to say, I may leave with you a thought of real value.

A little less than fifty years ago Cruvelhier first described round ulcer of the stomach in a memoir of uncommon merit. So complete was his description that comparatively little has been added to our knowledge, of its symptomatology or treatment. I hope, however, to point out some symptoms which have been discovered in recent years and which are important for the recognition of obscure cases. Our knowledge of the causation of the malady is so imperfect that it is useless to recapitulate it. Cases of round ulcer of the stomach fall into three categories. These are: (1) those which display the characteristic symptoms of the malady; (2) those which develop gastric symptoms, but symptoms which are not usually regarded as pathognomonic; and (3) those which are entirely latent, in which there are no gastric symptoms. The symptoms which make this malady easy to recognize are so well known that it is superfluous to do more than recapitulate them before this audience.

Hematemesis between the 16th and the 40th year; pain in the epigastrium, aggravated by eating solid food; anemia, gradually deepening; and progressive loss of flesh and strength are the most important positive symptoms. There are equally important negative symptoms, such as absence of gastric tumor,
of a cachectic hue, or of such a cause of acute ulcer as the drinking of acids or caustics. These symptoms may develop suddenly, as a storm does in a clear sky, or be preceded by various grades of gastric discomfort and evidences of indigestion.

While enumerating the evidences of round ulcer I have not spoken of the most constant one, namely, the persistent presence of an excess of free hydrochloric acid in the stomach. When the other characteristic features of gastric ulcer are present, this one is usually not looked for, because the occurrence of hematemesis is rightly regarded as a contraindication to the use of the stomach tube.

Hematemesis, upon which we chiefly rely for the recognition of this malady, occurs in about one-third of all cases (certainly in less than half of them). When it is remembered that pathologists have shown that in many communities this disease occurs in more than 5 per cent. of the population, sometimes even in 8 or 10 per cent., the number of cases which are unrecognized by physicians is evidently great. In a considerable number of instances in which hematemesis does not occur I believe a diagnosis can be made; in a small proportion, the existence of the malady may be suspected; in others, it must remain unrecognized. A careful study of the symptoms which commonly occur prior to hemorrhages from the stomach, and which persist in cases of chronic ulcer after the hemorrhage or during the occasional long intervals between hemorrhages, reveals the group of symptoms upon which a diagnosis must be based when hematemesis does not occur. These symptoms are revealed by a study of (1) the pain and tenderness which accompany the disease, (2) the vomiting and the character of the stomach contents, and (3) peculiarities of the urine. A diagnosis based upon these symptoms can frequently be made still more certain by searching for important blood changes.

Gastric pain is due to irritation of the raw surface of the stomach by the acid gastric juice, by solid foods,
and by stretching the wound when active peristalsis
is excited. It is variously described as burning, bor­
ing, or gastric distress. The center of pain is in the
epigastrium, immediately below or a little to the left
of the lower end of the sternum. A degree of pain and
of tenderness may be felt over an area as large as the
palm of one's hand, but it is most intense in the same
place whenever it recurs, and commonly at the point
just described. Pain and tenderness are very often
great. Of more importance for diagnosis than is the
character or location of the pain is the time when it
begins after eating. It usually begins immediately after
a meal, sometimes even before a repast is half com­
pleted, and to be characteristic it must begin at longest
in thirty or forty minutes after solid food is eaten.
The pain persists until the stomach is nearly or quite
empty, and it usually grows less and less severe as the
food passes into the duodenum.

Aside from this gastric pain, neuralgias elsewhere
are frequently observable. Pain and tenderness is ex­
tremely common just to the left of the tenth, eleventh,
and twelfth dorsal vertebrae. Much less frequently
neuralgias in the brachial plexus or in the upper por­
tion of the thorax, or upon both sides of the chest are
felt. In rare instances these referred pains occur when
gastric pain is wanting. Usually the pain which is felt
in the dorsal nerves is sharp, lancinating, or penetrat­
ing in character, but sometimes it is burning, or is a
hyperesthesia so great as to make the weight of cloth­
ing a discomfort.

Vomiting occurs more or less frequently in all rec­
nognizable cases of gastric ulcer. It is commonly of
frequent occurrence and is quite as apt to be soon after
eating as several hours after.

Vomited matter should always be examined with
care. From it, in cases of gastric ulcer, we may be
able to learn the very important fact that the stomach
is secreting an excess of free hydrochloric acid. In
other pathologic conditions, if vomiting occurs im­
mediately after meals, free hydrochloric acid is sel-
dom found in the stomach’s contents, but in ulcer at least a small amount can usually be discovered. If vomiting occurs some time after eating, an excess is easily demonstrable, often as much as from three to five parts per one thousand. The presence daily of an excess of acid can be demonstrated much more certainly by washing out of the stomach through a tube the remnants of test meals. When ulcer of the stomach is suspected most clinicians use the stomach tube reluctantly, because of the danger of producing hemorrhages or even fatal perforation of its wall, and consequently they rely upon examinations of vomited matter. While a study of the literature of the subject shows that these accidents are possible, it also shows that they are extremely rare. Hyperacidity in some cases occurs only during digestion, but it is demonstrable soon after this process begins. In many other cases a large amount of free hydrochloric acid is present in the stomach at all times. It may increase, however, during digestion. Because of the constant presence of this acid in the stomach or its quick formation after eating, the digestion of carbohydrates is very imperfect and the digestion of proteids is hastened. Abnormal fermentation is not very considerable and often does not occur at all. Organic acids, therefore, are not detectable in the contents of the stomach, or if at all, only in small amounts.

A microscopic examination of what is vomited or washed from the stomach often reveals the presence of blood corpuscles in considerable numbers, even though in too small numbers to color the whole. Such a demonstration is an important corroboration of a diagnosis based upon other symptoms.

A patient’s tongue may be coated, but frequently is unusually clean, and red because it is irritated by the repeated vomiting of acid fluid. The appetite is variable. Eating is so painful that patients often refuse food, although their appetite is quite normal. Anorexia is not common. The bowels move irregularly or infrequently, because little food is eaten or retained by the stomach.
The urine in gastric affections is not studied with the care that it should be. However, I know of no malady of the stomach which illustrates better than round ulcer the value of such study. Frequent vomiting reduces the daily excretion of urine, but in those cases of gastric ulcer which are not accompanied by vomiting it is normal in amount. It very rarely happens that albumin, tube casts, blood, or pus are discoverable in it. Two changes in the normal constituents of urine occur which are important, because they indicate a hyperacidity of the gastric juice. If they are detected before the latter is examined, they should suggest its examination. If because of hemorrhage it does not seem wise to use the stomach tube or to express the gastric juice or to provoke vomiting, these urinary changes will throw light upon the chemical state of the stomach's secretion. These changes are, first, a reduced acidity of the urine and a well-marked alkaline wave after meals. The production of a large amount of acid by the glands of the stomach increases the alkalinity of the blood, and therefore reduces the acidity of the urine and often makes it alkaline. When vomiting occurs after eating and a large amount of the acid formed in the stomach is lost, the urine will become alkaline almost with certainty. Alkalinity, or very marked reduction in acidity, is noticeable soon after a meal and lasts during the period of digestion. When there is persistent gastric hyperacidity, a reduced acidity of the urine is also persistent. The second change is a periodic variation in the amount of chlorides voided in the urine. As the chlorides which are eaten are decomposed in order to produce hydrochloric acid in the stomach, less of them will be absorbed by the blood for excretion by the kidneys when an excess of free hydrochloric acid is formed by the glands of the stomach. Therefore, in cases of gastric ulcer the amount of chlorides in the urine will be reduced and will especially be reduced during periods of digestion. These fluctuations in the degree of acidity and in the amount of chlorides of the urine
are the same as in health, but they are greater. They are chiefly valuable as diagnostic signs, because in the other gastric disorders which are most frequently confused with round ulcer of the stomach, such as chronic gastritis and cancer, the formation of free hydrochloric acid by the glands of the stomach is greatly lessened, or ceases altogether. Under these conditions the urine keeps strongly acid, an alkaline wave during digestion is not produced, and the chlorides are excreted in normal amounts. In order to determine the existence of a fluctuation in the acidity of the urine and in the amount of chlorides in it, a specimen should be taken for examination before breakfast, about two hours after that meal, immediately before dinner and again about two hours later.

Often when round ulcer first produces symptoms which make it recognizable patients do not seem weak, but if the ingestion or retention of food is much interfered with they rapidly lose strength and flesh. In chronic cases emaciation is frequently great, and weakness may be so considerable that a patient is compelled to remain in bed. In acute cases there is little loss of color unless hemorrhages occur. They produce anemia rapidly. So great may these gastric hemorrhages be that they will cause sudden faintness, extreme weakness, and a quick, small pulse. Very infrequently they are the immediate cause of death. Generally only a well-marked and suddenly-developed anemia follows them. In cases of chronic ulcer anemia is the rule, but it may develop slowly. A microscopic examination of the blood is of value, as the relative changes of its components are usually quite different in ulcer and in cancer.

Leucocytosis is the rule during digestion in cases of round ulcer and is the exception in cancer and chronic gastritis. The average number of leucocytes in the blood of patients with gastric ulcer is normal or moderately reduced. The same is true of gastric cancer when the tumor is small; but if the tumor is large, or if there are metastatic growths, or if the disease is
advanced and cachexia is marked, the number of white blood-cells is usually greatly and persistently increased. They then range from 15,000 to 50,000 per cmm. Even in one-third of the cases in which the tumor is small there is a moderate leucocytosis. After hemorrhage from the stomach the white corpuscles are increased in numbers. This increase, however, disappears in three or four days. The amount of it is in proportion to the severity of the bleeding. In acute gastritis a moderate leucocytosis is the rule; in the chronic malady the number of white blood-cells is more apt to be reduced because of malnutrition than increased, and no increase, or if any, only a very slight one, occurs during digestion.

In cases of round ulcer of the stomach the number of red corpuscles may be normal at first, but in chronic cases it is much reduced. Cabot says of it: "There is no single disease, so far as I am aware, in which the red cells are so apt to be so low, except pernicious anemia." The reduction in their number is due partly to frequent hemorrhages, but occurs in cases in which there has been no bleeding; therefore Cabot suggests that the anemia and the ulcer may have a common cause, and the former may not be altogether the result of the latter.

In the early stages of acute ulcer the percentage of hemoglobin in the blood may be quite normal, but later and in chronic cases it is low. The ratio of corpuscles to hemoglobin is the same as in chlorosis, that is, the amount of hemoglobin is reduced in each corpuscle. Quite the reverse of this is true in most cases of cancer of the stomach. In them the amount of hemoglobin per corpuscle is normal, or often, as in pernicious anemia, is increased. After hemorrhages, both in cases of ulcer and of cancer, the amount of hemoglobin in the blood and the number of red corpuscles diminish equally.

When making blood examinations these rules should be observed: (1.) Examinations should be made upon several different days and on each, if possible, immedi-
ately before meals, and also from two to three hours later. (2.) If examinations are not made in this methodical way, at least a record should be made of the time when the blood is examined, and especially of its relation to eating and to the occurrence of hematemesis.

It is seldom necessary to differentiate cases of gastric ulcer from acute gastritis. A sufficient cause of the latter malady is usually discoverable, and its course is so distinctly different that a direct diagnosis can be made without trouble. It is, however, not always easy to distinguish round ulcers from chronic gastritis. This can usually be done by attention to the changes in the gastric juice, urine, and blood. In chronic gastritis there is generally more mucus in the matter which is vomited, and it is also more apt to be fetid. Distention with gas and its eructation is the rule in chronic gastritis and the exception in round ulcer. Pain develops long after eating rather than while eating or immediately after. The pain and points of tenderness are less circumscribed and are not so fixed. The effect of diminished secretion of gastric juice or its absence upon the urine has been noted and is in strong contrast to the conditions developed in ulcer. The absence of leucocytosis during digestion is also in marked contrast to the condition observable in gastric ulcer.

Of all gastric affections it is often most difficult to distinguish between cancer and round ulcer. Both affections are chronic, both are painful, both are often accompanied by hematemesis or bloody stools, both produce anemia and weakness. The difficulty is greatest in cases of cancer in which a gastric tumor cannot be felt.

It is true that ulcer is extremely common in early life when cancer is rare, but Welch's tables show that of 607 cases, 119 occur between the 20th and 30th years, 107 between the 30th and 40th, 114 between the 40th and 50th years (or years when cancer is common), and 108 between the 50th and 60th years, 84 and 35 respectively
in the two following decades. Gastric ulcer is therefore not uncommon during the years when cancer occurs most frequently. Nothing helps so much to establish a diagnosis as careful study of the gastric juice, the urine, and the blood. Boas and Hemmeter lay stress upon the pain points of gastric ulcer.

Great diagnostic difficulties are encountered in those cases of cancer of the stomach in which there is hyperchlorhydria rather than achlorhydria. These are fortunately uncommon cases. In many of them a palpable tumor makes diagnosis easy. When a tumor cannot be felt a differential diagnosis cannot be made. But as the number of these cases of cancer is extremely small the probability of round ulcer is great. The course of the malady and the result of treatment will ultimately make a diagnosis clear. It is also true that with equal infrequency cases of gastric ulcer are met in which hyperchlorhydria does not occur.

It is indeed difficult to differentiate some cases of round ulcer from gastralgia, especially from those cases of frequently recurring stomach pain in individuals in whom there is hyperchlorhydria. An excessive secretion of free hydrochloric acid and gastralgia are frequently manifestations of the same neurosis. In these latter cases the pain has not the constant, close relationship to eating that it has in round ulcers. Hemorrhage never occurs in them. Tenderness is less constant and much less circumscribed and there are usually numerous symptoms of a nervous origin.

It must not be forgotten that there are cases of gastric ulcer which cannot be recognized. The lesion sometimes exists without producing pain, hemorrhage, vomiting, disorders of digestion or nutrition. In such instances the malady is truly latent. Such cases, however, are not numerous.

There are also atypical cases. For instance, occasionally hematemesis may be the only symptom of the malady; or we may find a case with all the symptoms except gastric pain. The atypical cases must be
studied with care. The puzzle which they present is usually solvable by the application of the laboratory methods of investigation upon which I have laid stress.

Although the statistics of pathologists show that recovery from round ulcer of the stomach is the rule even in cases which have not been recognized, proper treatment contributes so much to the comfort of patients, and so helps to avert complications, that it should be instituted whenever a diagnosis is possible.

Most frequently gastric ulcer first comes under medical observation after a hemorrhage. At this time food and drink must be forbidden, for they may start again the bleeding. If the stomach is filled, the bleeding surface will be stretched and the clot dislodged, starting the hemorrhage again. When the stomach is resting and empty, bleeding is surest to stop. Nor is it best to give enemata immediately after hematemesis, since they are apt to excite peristalsis in the stomach as well as in the intestines. Still, if hemorrhages have been profuse and frequent, it may be necessary to maintain strength during the first few days or weeks by nutritive enemata, but they should be given infrequently. In most cases the drinking of water may be permitted in small amounts at a time. After thirty-six or forty-eights hours of absence from food, a small amount of milk may be given. The amount may be slowly increased. While such dietetic care is necessary to check gastric hemorrhage, it need hardly be said that rest in bed should also be insisted upon. An ice bag upon the epigastrium will help, too. Styptics taken into the stomach, and ergot administered hypodermically, must be used in the severer cases.

Hemorrhages are often slight and not repeated. A physician is sometimes not consulted until several days after the occurrence of one. It is then possible to institute at once the regimen for gastric ulcer. This should consist of rest in bed for from two to eight weeks, except in the mildest cases, in which gentle exercise only and long hours of rest and sleep must be prescribed. In all cases milk should be the only food.
If a patient comes under treatment at the time of hemorrhage from the stomach, I am accustomed to order, after forty-eight hours of abstinence from food, milk diluted with lime water, administered in tablespoonful doses every half or three-quarters of an hour. As a rule the quantity can be rapidly increased to half a glassful and given at intervals of every two hours. In two or three days a glassful can be taken at a time. To each glass of milk from two to four tablespoonfuls of lime water should be added. If the exclusive milk diet is begun in this way it is but seldom that large curds form in the stomach. The organ is gradually habituated, as it were, to this food, and learns to manage it well. On the other hand, if a glassful at a time is taken at the start, it is often curdled into large lumps and rejected. The vomiting increases the danger of renewed hemorrhage. In the mildest cases at first a quarter or half glass of milk may be given every two hours. The milk may be taken either warm or cold, as preferred by the patient. The pain and distress of a gastric ulcer lessen and cease usually with surprising rapidity after the milk diet is begun. This diet should be continued for two or three weeks in mild cases, and must sometimes be continued more than two or three months in severer ones.

Milk is to be preferred to other liquid foods because it does not excite the stomach to energetic muscular action as others do, is very easily digested, helps to neutralize the acids of the stomach, is locally unirritating, and nutritious withal. If the milk diet is begun as has just been advised, even most of those persons who cannot ordinarily digest milk easily find little difficulty in using it. To a few, indeed, it is so distasteful either from the start or after it has been used long, that other foods must be substituted for it, in part or altogether. If it coagulates into large lumps of cheese, it may be necessary to peptonize it before it is drunk. Ice cream may be given to those persons who are especially prone to vomit. It is not a proper exclusive diet, but may be used exclusively for one or two
days, and afterwards occasionally. Matzoon, koumiss, buttermilk, and other milk preparations will prove nutritious and afford variety. During convalescence Mellin's food, malted milk, granum, and similar liquid foods may be substituted for milk, or used in addition to it when a variation in food is begun. If milk cannot be used at all, these foods and alternating with them beef juice chewed from meat, or such as is prepared by Wyeth and Valentine, may be substituted for it. Egg albumin in water can also be taken. Somatose and similar preparations can be added to these foods with advantage.

During convalescence, besides the foods just mentioned, a raw egg in milk, or custard made of egg and milk, or scraped meat, may be eaten, and later squab, the breast of chicken, oysters, fish, zwieback, pulled bread, rice, tapioca, sago, farina, vermicelli, and broths thickened with these farinaceous foods. A little orange and lemon juice may also be allowed. But it should be insisted that at first a few mouthfuls only of solid food be eaten. When a small meal is permissible these foods should be taken at usual meal times and a glass of milk at 10 a. m., 3 p. m., and at bedtime. In order to prevent relapses, which are common, a light and very simple diet should be adhered to for several months. This regimen is usually much aided by a glass of hot water with Carlsbad sprudel salts the first thing in the morning. The salt is important to insure regular and full movements of the bowels, besides being useful to neutralize the acid of the stomach and cleanse it. It is rarely necessary to give much medicine. Resorcin is a useful adjuvant to diet when there is much abnormal gastric fermentation or nausea.

Several drugs, such as nitrate of silver, salicylate and subgallate of bismuth, are also highly recommended. The first of these is sometimes spoken of as a specific for the malady. It is not this, however. I have tried it many times, but have had no better results with it than without it. The bismuth preparations are antiemetics and also lessen the formation of gastric
juice. But acids other than lime water are frequently prescribed.

Rest and milk diet are, however, the essentials of treatment. Hot fomentations applied to the abdomen are a help. In the severest cases during the first few days of treatment no food should be given by the mouth, only nutritive enemata. By some clinicians all the food given to those who have round ulcer of the stomach is given by the rectum for weeks at a time. Prolonged rectal feeding is made a routine treatment for all cases.

During the last few years surgical treatment has been devised for certain cases, which increases very greatly the chances of recovery of those formerly regarded as desperate. The indications for surgical treatment are perforation of the wall of the stomach by the ulcer, and repeated, dangerously profuse hemorrhage. Certain of the sequelae of gastric ulcer, especially stenosis of the pylorus, can also be corrected by the surgeon.

A guarded prognosis must always be given in cases of round ulcer. Its great liability to recur must be remembered, the possibility of fatal hemorrhage, of perforation into the peritoneum, and general, fatal peritonitis, must be kept in mind. Much oftener the cicatrix formed after the ulcer heals causes pyloric obstruction. A small number of chronic cases do not heal spontaneously, but progress to a fatal termination. Although all these results must be feared, it is true that in a large majority of cases recovery takes place and there is left after it no functional derangement.

I selected the subject of round ulcer of the stomach for this occasion because I am convinced that the malady is a common one and one which in a majority of cases is not recognized and therefore not treated as it should be. But I am convinced that it lies within our power to recognize a majority of all these cases, instead of a minority, if we apply to their study all the means at our disposal.
I may be told most practitioners have not the laboratory equipment, the technical skill, or the time to make the necessary exhaustive study of individual cases which I have indicated. We should have the technical skill to make these examinations, but unfortunately, because of lack of time, we must often have them made in public laboratories. I selected this theme partly in order that I might emphasize the need of co-operative or of public laboratories. A hospital to-day is not complete without a laboratory which is well equipped and managed by a skilled pathologist. In the near future the co-operative or public laboratory for the general practitioner will be regarded as quite as essential. Physicians and surgeons should establish so many of these institutions that within twenty-four hours any practitioner can obtain a report from one of them. Such laboratories of clinical pathology will give to the practice of medicine a degree of exactness never before obtained. They are essential for the prompt diagnosis of many maladies, notably tuberculosis and diphtheria. And the need of prompt diagnosis in these and many other diseases, in order that treatment may be as successful as possible, is too well known to require much comment. For instance, the comparatively low mortality in diphtheria which is assured by the use of antitoxin during the first two or three days of its course, and the rapid increase in mortality if this treatment is postponed, is well known.

Laboratories are essential for the diagnosis of many obscure diseases, not alone some cases of gastric ulcer and gastric cancer, but a list of ailments too long to enumerate here. The cost of the equipment of such laboratories is not great and would be little felt when it is shared by several or many, nor is it difficult to find young men competent and glad to take charge of such institutions while they are waiting for a practice, provided they are assured a moderate compensation.

Co-operative laboratories should be organized by societies and controlled and managed by them, but they should be at the disposal of all practitioners. I believe
that with an initiation fee of $10 and dues of the same amount fifty practitioners could equip such a laboratory, pay a director, and have examinations made of everything which they wished examined without extra charge. Others who might desire the services of the director and the use of apparatus should pay a reasonable fee for each examination. I do not mean that every examination of urine for albumin or sugar should be made in a public laboratory, but when a quantitative examination is needed it should be; and sputa, the contents of the stomach, pus, fragments of tumors, and other pathological material, should be sent to them.

I wish that I could inspire you to organize such a co-operative laboratory in every county of this great state.

If numerous co-operative or public laboratories, such as I have suggested, were established they would be as great a stimulus to a better scientific study of cases in all communities as heretofore hospitals have been where they have been founded. A practitioner in a village could study his cases with the same completeness as his fellow who is upon the staff of a metropolitan hospital.
THE MEANING OF RECENT DISCOVERIES CONCERNING MALARIAL ORGANISMS.

HENRY B. WARD, A. M., PH. D., LINCOLN.

It may fairly be said that no scientific discoveries of recent years possess greater importance for the medical profession, coupled with equal interest for the biologist, than the discoveries with reference to the life history of the parasites which give rise to various forms of malarial fevers. These fevers, which have been with the human race since before the beginning of history, and which are distinctly recognizable from the descriptions given by the oldest medical authorities, are of the greatest economic importance. They have made vast regions of the earth's surface uninhabitable for the white race at least. They have invaded parts of the civilized world, and have rendered life there so miserable as to all but remove these regions from human habitation. They have set barriers to the advance of civilization, and any light upon the means of their dispersion, or any hint which may serve to limit their extent, is of vital importance to all nations.

These fevers, known under various names, are particularly prevalent throughout all the tropical regions, excepting such limited areas as may be dry and elevated. They extend also far into subtropical lands, being abundant in southern Europe and the southern part of this country. In India they claim literally millions of victims yearly, and even in Italy the annual mortality from such diseases reaches fifteen thousand, while several millions of the population are annually incapacitated for labor. In some particularly seriously infected regions, as, for example, certain counties (communes) of the province of Rome, a recent author states that "more than twenty cases of malarial fever occur annually among each hundred inhabitants" (Santori). In our own country the disease,
THIRTY-THIRD ANNUAL SESSION.

though less serious, is of grave importance, the mortality statistics showing that in 1860 one death out of every twenty-five was attributed to malarial fevers, while in 1880 the proportion was one to forty.

It has long been the common belief that the transmission of the disease was in some way or other to be attributed to the mosquito, and such an idea has been cherished equally by the Italian peasants and by the negroes among the savage tribes of Africa long before their contact with Caucasian races. In this country the idea seems to be deep rooted in popular belief. As long ago as 1848 Dr. Nott, of New Orleans, writing of yellow fever refers to the transmission of malaria by the mosquito as an established fact, and expresses the belief that yellow fever reaches the human system in the same manner,—a prediction of much interest in view of recent investigations of the United States Commission on this subject. In 1883 Dr. A. F. A. King, of Washington, D. C., delivered a scientific address in which he endeavored to demonstrate the culpability of the mosquito, and furnished a great mass of evidence on the question. The interesting discussions on this matter are given in full by Nuttall.*

It was in 1891 that Laveran proposed his mosquito-malaria theory, while Koch in 1892, Manson in 1894, and Ross in 1895 gave their adherence to the same idea in one form or another. The details of each theory and the modifications in form which the idea underwent at their hands need not be considered here, since more recent investigations have demonstrated the precise character of the relationship which exists between the insect and the disease. As a recent writer says, “Now we know with a certainty rarely attained in medical matters that malaria, instead of being inhaled with the night air as a noxious miasm from marshy countries or being ingested with the water, as was at one time suggested, is caused by the direct injection of animal parasites into the blood by

mosquitoes previously infected by some human being suffering from the fever."

It is my intention then to review succinctly the main features in the life history of the organisms, and to indicate as clearly as possible the relation in which these stand to the disease, and the points at which they may be most readily attacked, as well as the means by which this attack may be made. It is evident that I shall not be able to refer in detail to all the authors who have contributed to this important discovery, nor is it possible within the limits of a brief address to give specifically the part which each has played in the solution of such a complicated problem. Among the Italian investigators, Grassi, Celli, and Bignami; among the German, Robt. Koch; among the English, Manson, Ross, and Nuttall; and in our own country, Thayer, MacCullum, and Ewing are the investigators who, in addition to a host of others, have contributed to the recent literature on the subject.

The life history of the malarial parasite presents two fairly definite cycles which are passed under different circumstances: the one in the human blood, the other in the body of the mosquito. The first (Fig. 1) has long been known, and the recognition of the organism in the blood has been employed as a distinctive means of diagnosis of true malaria for many years. The parasite, whose significance in malaria was first proclaimed by Laveran in 1880, makes its appearance as a minute organism on or in the red blood corpuscle. It manifests amœboid movement, and is frequently seen in the form of a signet ring, in which the hollow of the ring represents probably a large vacuole, often having apparently within it the nuclear matter of the organism. The parasite increases in size until it approximates that of the corpuscle, when there appears a migration of, and rearrangement of, the chromatic substance of the nucleus so that a number of secondary nuclei arise. These are arranged more or less irregularly in a single or double circle
about the mass of pigment grains which have accumulated at the center of the parasite. These pigment grains, which consist of melanin, are believed to come from the destruction of the hemoglobin of the corpuscle. They are accumulated in large masses in the liver during a severe attack of malaria.

The new nuclei once formed, the protoplasm of the parasite arranges itself in masses about them. With the destruction of the corpuscle these become free as so-called spores (merozoites). It was Golgi who discovered the periodicity in the process of reproduction, and demonstrated that the sporulation of the parasites takes place nearly synchronously. At the time of sporulation there is doubtless set free in the blood,

![Fig. 1.—Schizogony of the quartan parasite, Plasmodium malaris (Lav.): a, young parasite with single nuclear mass; b, older form, with fragmented nuclear matter; c, nuclear multiplication; d, later stage, with spores fully formed; e, release of spores (merozoites) and pigment mass by destruction of the erythrocyte, which is designated in the earlier figures by the dotted outline. (After Bastianelli and Bignami.)](image)

in addition to the spores and pigment already referred to, toxic substances which have been produced by the parasites during their growth, and it as a result of sporulation that the febrile paroxysm comes which is a characteristic feature of the disease. The spores thus set free may or do attack other corpuscles and begin again the cycle of asexual development which has been pictured. This schizogenic phase in the life history might properly be called the pyretogenetic phase, by virtue of its clinical aspect. Its evident result is merely to multiply the number of organisms present in the blood of the patient.

If uninterfered with, the schizogenic cycle repeats itself, but not without limit, for in the course of time it gives place entirely to another process, on which the further life history of the organism is based. The
young spores, instead of developing to parasites which split up again into spores, and which are consequently denominated the asexual forms, change into such as give rise to the so-called sexual individuals, the gametocytes. In the type of malarial fever known as estivo-autumnal or pernicious these sexual forms are distinguishable as crescents from the asexual, and have long been known under this designation.

In the other types of malarial parasites the crescent form is not assumed, and the gametocytes manifest but slight variations from the fully developed schizogenic forms. It was noticed some years ago that when the blood of a malarial patient was removed, and studied under the microscope, or kept in a moist chamber, there were produced from certain of the parasites spheres from which were formed flagellate bodies, the significance of which was not understood until MacCallum observed, while studying the malarial parasite of the crow, that such flagellate forms swarmed towards other spheres distinguishable in appearance from those from which the flagellate forms had been produced, and that one of them fused with such a sphere. The interpretation of the forms became then evident: the flagellate forms must be regarded as the male elements or microgametes (Fig. 2), while the spheres with which they fused were evidently the female forms or macrogametes.
The production of microgametes and macrogametes from the schizogenic forms in the blood, which had thus been produced under abnormal conditions, is brought about normally by the ingestion of the blood by the mosquito. It was observed first in the stomach cavity of the mosquito by Ross, and has been followed out in detail by himself and other investigators. When as a result of the mosquito bite a quantity of blood from a malarial patient is taken into the stomach of the insect, there follows soon the formation of microgametes and macrogametes. After the union of the one with the other, the cell produced by copulation, the copula or ookinet, becomes somewhat elongated, and in correspondence to the form has been known for some years as the vermiculus. It makes its way through the epithelial lining of the mosquito's
stomach (Fig. 3) and between this and the epithelial lining of the body cavity encysts. In this stage it is known as an oocyst. Growing rapidly it appears, when the stomach is viewed from the exterior, as a knot on its wall, and more than five hundred such have been observed on the stomach wall of a single mosquito (Fig. 4) in a malarial region. Within the cyst, which has been formed either by the parasite or about it by the activity of the tissues of the host, the protoplasm undergoes a series of changes, in that the content falls into a number of masses known as sporoblasts. These do not acquire a separate covering like the homolo-

![Diagram of sporozoites](image)

Fig. 5.—Ripe oocyst of the tertian parasite, *Plasmodium vivax* (Gr. and Fel.), in optical section, showing sporozoites in series and residual masses. *B*, isolated sporozoites of the pernicious parasite, *Laverania malaris* (Gr. and Fel.). Somewhat diagrammatic. (After Bastianelli and Bignami.)

...gous sporocysts of the Coccidia, but produce directly (Fig. 5) by multiple division of the nucleus and separation of the protoplasm a multitude of needle- or spindle-shaped sporozoites. The number of such produced in each oocyst is extraordinarily large, and although variable has been calculated by Grassi as exceeding ten thousand.

Such sporozoites are regular, elongated, spindle-shaped, with pointed ends, having an elongated nucleus in the middle, and reaching at most a length of only 0.014 millimeter. They surround in regular manner in each sporoblast a small residual mass of protoplasm. At maturity the rupture of the oocyst sets free the ripe sporozoites in the body cavity and
they are transported by the blood current, rather than by active movement, into all the organs of the insect. Ultimately, however, they show a tendency to accumulate in the salivary glands into which they migrate, probably actively, and are found not only within the glandular cells, but also within the secretion formed by the cells. With this they reach the duct of the gland and accordingly are injected with the bite into the blood of the host, and herewith the first described phase of the life history begins once more. That phase of the life history which is passed in the body of the mosquito is known as the sexual phase, by virtue of the process of copulation already described as taking place at its outset in the mosquito's stomach. There is manifested accordingly in this life history a regular alternation of asexual and sexual phases in the life history of the organism, an alternation which is associated, as occurs so frequently in parasitic forms, with an alternation of hosts. The mosquito is evidently, if we follow the nomenclature elsewhere employed with reference to parasitic forms, the definite host, while man is the so-called intermediate host. In Figure 6 the entire life history of the parasite is represented, in connected form to show the character and relation of the various stages as described above.

From the brief sketch of the life history which has been given it is evident that man can be infected only by the bite of the mosquito or some other insect which can inject into the blood the spores by which the intrahemal or schizogenic cycle of the life history is begun, and it is equally evident that the mosquito can be infected only by the entrance into its alimentary canal of the parasite in development ready to form the sexual phases of the organism in order that the sexual or sporogenic cycle of the life history may be inaugurated. It may be noted here that, by virtue of the existence of the disease in regions into which man has penetrated apparently for the first time, the assumption of another intermediate host than man lies near
Fig. 6.—Development of _Laverania malarie_ (Gr. and Fel.), the pernicious parasite, somewhat diagrammatic. A to K, schizogenic or asexual cycle in blood of man. A to G, growth in erythrocyte. K, free spores (merozoites) in blood. G' to T, development in mosquito, sporogenic or sexual cycle, with formation of microgametes (G' to K'), and macrogamete (G'' to K''), their fusion (L to M) into the copula or vermiculus (N) in the stomach of the mosquito; the formation after entry into the alimentary wall of the oocyst (O), in which develop the sporoblasts or blastophores, each producing numerous blasts or sporozoites (S), which subsequently become free (T), and constitute the means of infecting new erythrocytes when introduced into the human blood by the bite of the mosquito. (After Neveu-Lemaire.)

at hand, and it may well be that on the existence of such other intermediate host or hosts the abundance of the disease may depend, since thereby the mosquitoes are uniformly infected with the parasites rather
THIRTY-THIRD ANNUAL SESSION.

than depending upon occasional infection as a result of drawing blood from a malarial patient. Recent investigations in Africa have shown that the natives suffer little or none from the disease; that great numbers of malarial parasites are present in the blood of children, from 80 to 90 per cent. of which are infected, and that there is a gradual decrease in number with the growth of the children indicating an acquired immunity which is rarely if ever found among individuals of the Caucasian race. Proximity to a native village is accordingly an evident menace to the white man if the mosquito is present as a means of transmitting the disease, yet it has been a regular custom for explorers in tropical countries to pitch their tents and even live permanently within a short distance of native huts,—an association which is not only likely but practically certain to result in acquiring the disease.

It is of importance now to consider the different varieties of malarial parasites. While some difference of opinion exists here, it may be said that zoologists and many pathologists are agreed in accepting at least three different species of human malarial parasites, which fall within the limits of two genera. Other investigators, chiefly medical students less acquainted with the zoological side of the question, are inclined to the belief that all represent but varieties of a single form. After careful study on both sides of the question it appears to me clear that at least three species are sufficiently distinguished by clinical and morphological features, although all three may carry out their sexual cycles in the same mosquito. The three species which may be regarded as definitely distinguishable are the parasite of the Quartan fever, *Plasmodium malarii* (Laveran), the parasite of the Tertian fever, *Plasmodium vivax* (Grassi et Felletti), and one parasite of the Autumnal fever, *Laverania malarii* Grassi et Felletti, which latter is also known as the pigmented quotidian parasite. It is possible that, as has been maintained by Grassi, there are other
species, but the demonstration of their specific rank has not yet been satisfactorily made.

I may also say in passing that the nomenclature of the parasites is very much confused. The names given here are those which according to the law of priority accepted by zoologists have the prior right. It is unfortunate that in things zoological medical men feel called upon to set up their own standards, and depart from accepted rules and usages to the disadvantage of our work and to the great confusion of the entire subject rather than being willing to accept in matters which are outside of their personal knowledge and outside of the field of their activity the opinions and rules prevailing among those who are familiar with these subjects.

The genus *Plasmodium* is distinguished by the following features: The gametocytes have the same form as the sporocytes, and the latter are found in the peripheral circulation, whereas in the genus *Laverania* the gametocytes have the special form known as crescentic bodies, and the sporocytes are only found in certain internal organs. The main features which distinguish the different species are presented in tabular form* herewith. (See page 149.)

Other species are said to exist in man, and especially in the pernicious form a number of such have been distinguished by some investigators; at present, however, their specific individuality cannot be said to have been established. It may be mentioned that other species, and indeed other genera of closely allied forms occur in other mammals, as well as in birds, reptiles, and amphibians. Certain of these forms have been carefully studied, and have yielded comparative data of great importance. Others are scarcely known.

*Taken, with modifications, from Neveu-Lemaire.
Dr. E. J. Bragg

THIRTY-THIRD ANNUAL SESSION. 149

<table>
<thead>
<tr>
<th>Name</th>
<th>Plasmodium malariae</th>
<th>Plasmodium vivax</th>
<th>Laverania malariae</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hæmamœba malariae</td>
<td>Hæmamœba vivax</td>
<td>Hæmomonas praecox</td>
</tr>
<tr>
<td></td>
<td>Hæmamœba laverani</td>
<td></td>
<td>Hæmamœba praecox</td>
</tr>
<tr>
<td></td>
<td>Hæmatomonas malariae</td>
<td></td>
<td>Hæmatamœba immaculata</td>
</tr>
<tr>
<td></td>
<td>Hæmatozoon malariae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best known synonyms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Fever | Quartan, simple, double, or triple | Tertian, simple or double | Pernicious or es-tivo-autumnal; irregular tertian in type (often called quotidi-an) |

<table>
<thead>
<tr>
<th>Period</th>
<th>72 hours</th>
<th>48 hours</th>
<th>24 hours or irregular</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of spores</td>
<td>6 to 12</td>
<td>15 to 20</td>
<td>Very variable</td>
</tr>
<tr>
<td>Ripe gametocytes</td>
<td>Smaller than a normal erythrocyte</td>
<td>Larger than a normal erythrocyte</td>
<td>Variable in size</td>
</tr>
<tr>
<td>Infected corpuscles</td>
<td>Diminished in size, but retaining color</td>
<td>Increased in size, and very pale</td>
<td>Variable in size and color</td>
</tr>
<tr>
<td>Pigment</td>
<td>Large grains, with little or no activity</td>
<td>Fine granules, very active</td>
<td>Fine granules, little activity</td>
</tr>
<tr>
<td>Amœboid movements</td>
<td>Very slow in young forms</td>
<td>Active in young and half-grown forms</td>
<td>Generally very active when parasite is not yet pigmented</td>
</tr>
</tbody>
</table>

In the next place it is of importance to consider the facts with reference to the abundance and varieties of mosquitoes. These facts have been brought together by Howard in his recent paper,* which not only summarizes, but also adds very greatly to previous knowledge concerning this important group of insects. The main facts have also been given in a more popular article written in most attractive form in a recent magazine (The Century, April, 1901). Other facts of importance have been contributed by other observers, among whom I may mention particularly Nuttall and his colleagues. Regarding the United States it may be said that mosquitoes have been recorded from all parts of the country, and during every month in the year. The adult insect lives but a short time in captivity; in nature, however, its length of life is unknown, but is probably more considerable. It is cer-

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* Bulletin 25, Division of Entomology, U. S. Department of Agriculture Washington, 1900.
tain that they do not fly far, but are transported over considerable distances by various agencies, including prominently railroad trains. The eggs are deposited in small pools of a permanent or temporary nature and develop within a short time. So far as is known they cannot develop without water, and are destroyed if the puddle evaporates during the process of development. It is the female alone which is temporarily parasitic upon man, and the males either do not feed at all or are dependent upon the juices of soft plant tissues. In view of the countless number of females and of their production in localities far from human habitation, it may confidentially be asserted that untold numbers never taste human blood, so that this cannot form a necessary factor in their life history.

Within the limits of the United States there have been reported about 30 of the 250 known species, and all of those thus far reported fall within five genera. Only two of these genera have yet been tested with reference to their relation to the malarial parasite, and of these it may be said that the evidence is unanimous in showing that Culex can neither harbor or transmit the parasites which are indeed digested in its alimentary canal, while the other genus, Anopheles, affords satisfactory conditions for the development of the malarial organism. The adult insects may be distinguished by the following generic synopsis, which is taken from Howard after Coquillett:

"The following table contains all the genera of the long-beaked mosquitoes known to occur in North America. The males are readily recognized by the antennae being densely covered with long hairs, in the females the antennae are short and very sparse:

1. Palpi in the male at least nearly as long as the proboscis, in the female less than one-half as long ........................................... 2

Palpi in both sexes at least almost as long as the proboscis ........................................ Anopheles
Palpi in both sexes less than one-half as long as the proboscis .......................... Aedes
2. Proboscis straight or nearly so, colors of body brown and yellowish .................. 3
Proboscis strongly curved downward toward tip, colors bluish and greenish...Megarhinus
3. Legs bearing many nearly erect scales ........
Psorophora
Legs destitute of such scales............. Culex"

A brief sketch of the life history of the two genera, Anopheles and Culex, will show the differences between the two forms at various times, and in various stages. These two genera are those which have been investigated with reference to their connection with the disease in various parts of the world, and the conclusion has uniformly been reached as to the blamelessness of Culex, and the responsibility of

Fig. 7.—Half-grown larva of Culex in natural (breathing) position at the surface. (After Howard.)

Anopheles. In Culex the eggs are laid in boat-shaped masses containing from two to four hundred eggs, and hatch within sixteen hours. The larvae (Fig. 7) remain near the surface, with which they form a distinct angle, the siphon alone projecting. They retire at times from the surface but remain below only a brief period, ascending with difficulty. Seven or eight days are sufficient to bring the transformation to the pupa, which is characterized by the great size of the
thoracic segments, and which floats at the surface, descending only by a violent wriggling. The perfect insect (Figs. 8, 9) emerges from a crack in the thorax of the pupa after a pupal life of about two days.

Anopheles (Fig. 10) breeds by preference in permanent pools containing an abundance of small algae. It is only rarely found in buckets and vessels of water, in which Culex breeds abundantly.

The eggs of Anopheles, which are very different in size and appearance from those of Culex, are deposited loosely on the surface of the water, and are not attached together, while the lot contains only 40 to 100 eggs. The larvae (Fig. 11), which hatch in two to four days, habitually remain at the surface of the water, with which the body is held parallel, rather than as in
Culex, at an angle. The small head and inconspicuous breathing tube (siphon) of Anopheles are furthermore in striking contrast with the enormous head and long siphon of the larval Culex. The larval life of Anopheles is of some sixteen days duration and the pupal stage lasts about five days, so that the life cycle is noticeably longer than in Culex.

Though not recorded in Nebraska the genus is present both north and south of us and probably occurs here, since the majority of species of mosquitoes are cosmopolitan in distribution rather than restricted in area. The adult insect differs from the adult Culex, not only in the structural points mentioned, but also in its habits. Whatever the position assumed, whether on horizontal or vertical surface, the head, thorax, and abdomen of Anopheles form a straight line, which is usually at an angle with the surface on which it rests, while in Culex the abdomen stands at a decided angle.
with the proboscis and anterior end of the body. The hum of *Anopheles* is also lower and not so clear as that of *Culex*.

As has been shown by experiment, malaria may be transmitted by transfusion of blood containing parasites in any stage of development, save that blood which contains only crescentic forms will not transmit the disease, a peculiarity which is easily explained when one bears in mind the relation of the crescents to the life history of the parasite. It has been shown experimentally that the disease is induced not only when blood is transferred to the veins of a healthy individual, but also when it is injected subcutaneously, and that less than a single drop may bring about febrile paroxysms in the healthy individual within from four to twenty-one days after its introduction. Extensive experiments of recent date also show very clearly the necessary association of the mosquito and the disease. Thus, under the direction of the Italian investigators, various persons have passed the entire year in the most dangerous regions without suffering from a single attack of malaria. They have breathed the air, drunk the water, and lived the life of those who were sufferers from the disease, with the single precaution that they protected themselves at all times from the bite of mosquitoes.
As a result of these experiments the Italian investigators are confidently proclaiming that protective measures against mosquitoes rigidly executed will free the country from the disease.

On the other hand, mosquitoes infected with malarial parasites have been sent from Italy to England, and in the latter country have been permitted to bite men who were living in non-malarial regions, and never had suffered from any disease of malarial character, with the result that the persons bitten have within a short time suffered from typical attacks of malarial fever. The experiments of Grassi furnish the most convincing proof, if indeed further evidence be necessary. Selecting a stretch of railroad along the western shore of Italy south of Salerno, where the slow flowing streams and great areas of swamp furnish the best of breeding places for the mosquito and where the valley of the Sele has been a veritable death valley to the strongest who have tarried if only a short time within it, he set to work to protect the railway employees in this deadly region from mosquito attacks. The houses were provided with netting at every orifice and with double screen doors; the men were obliged to wear gloves and head-coverings while at work, and if despite this any one was bitten, suitable doses of quinine were at once administered. As a result the entire force of 104 persons, save only three who disregarded the regulations, remained perfectly healthy and free from malaria, while the other inhabitants of the region, one and all, were taken down with the disease in its usual severe form in this territory. In view of these facts it can scarcely be reasonably doubted that mosquitoes of the genus Anopheles are both the possible and the ordinary means by which man is infected with the disease. Of course it is evident that so far as our knowledge extends at present an infected individual of the human species must be present in a given region, together with mosquitoes of the genus Anopheles, in order that malaria may become prevalent in that region, and it is
evident that the incoming of such an infected man will serve to produce a malarial epidemic provided *Anopheles* is present in that region. Nuttall has recorded, to be sure, that in all his search for *Anopheles* throughout England he was never bitten, nor did he ever notice a single insect of this species in the open, although the larvae were abundantly present in various stages of development, and the adult insects were captured in different localities.

In his study of the distribution of the two species this writer was able further to show that *Anopheles* persists in districts of England formerly malarial, but is also present where no malaria is recorded, so that the distribution of this mosquito is at least wider than that of malaria, so far as records are in existence. It is probable that the claim of Grassi with reference to the precise coincidence in distribution between malaria and *Anopheles*, which he found in Italy, and believed to be true for the world, must accordingly be somewhat modified. Nuttall regards the disappearance of ague from England as due probably to several causes operating together. He mentions: "a. A reduction in the number of these insects (*Anopheles*) consequent upon the drainage of the land, this being in accordance with all the older authors who attribute the disappearance of ague largely to this cause. b. Reduction of population in infected districts as a result of emigration about the time when ague disappeared from England. This would naturally reduce the number of infected individuals and thus lessen the chance of *Anopheles* becoming infected. c. It is possible that the use of quinine has reduced the chance of infecting *Anopheles* through checking the development of the parasites in the blood of subjects affected with ague."

It is, I believe, important to note that the number of *Anopheles* varies in connection with climatic variations in different years, being apparently greatest in dry years. It would accordingly be necessary to see whether such climatic conditions were not also fac-
tors in connection with the disappearance of malaria in England, as they have certainly been effective in one direction or the other in other regions.

Finally, a few words should be added with regard to the destruction or limitation of the mosquito pest, which acquires additional importance through the connection of the insect with this disease. It is certainly true that no practical means has yet been suggested for reducing the number of mosquitoes by increase of their natural enemies. Nor does it seem practical to secure more than temporary relief within the rooms of a dwelling by attempting to kill the adult mosquitoes through any of the means which have been suggested. I may mention here that burning pyrethrum powder and catching the insects from the ceiling in a little flat can top containing a layer of kerosene seem to be the most successful means of removing them when they have gained entrance to the house. For mosquito bites indigo and glycerine have been highly recommended. The destruction of the mosquito larvæ, however, has proved practicable, and this is brought about best by one of three methods: first, draining the breeding places; second, introducing small fish of voracious type, such as the stickleback, into permanent bodies of water in which the mosquitoes breed, and third, treating the surface of the breeding places with a layer of kerosene. It requires about one ounce of crude kerosene to fifteen square feet of water surface, and the application needs to be renewed not more frequently than once a month. By such simple means the mosquito nuisance has been abated in many communities, and when such easily applied and inexpensive methods have proved thoroughly successful, it is not too much to expect that in a short time no community can be found which will permit itself to suffer from this complaint.

No illustration could demonstrate more clearly than this the dependence of medicine upon the development of general biological science and the line
which modern medicine has followed, and, indeed, must follow, if it is to secure a solution of the problems before it. In these days the eyes of this new world are directed with intense interest upon the lands of the tropics. Who could describe or even picture to himself the tremendous revolution which would be effected in a sociological way if as a result of this and similar victories of scientific investigation the tropical world should be thrown open to the Caucasian, and if over great areas of the most fertile land on the surface of the globe there no longer brooded the death angel and his swift messengers, the fevers of the jungle. What greater gift could science have brought to the advancing civilization of a new century than this unveiling of an ancient mystery and the promise of release from the fear of centuries.
TREATMENT OF ACUTE OTITIS MEDIA BY THE GENERAL PRACTITIONER.

F. S. OWEN, M. D., OMAHA.

The purpose of this paper is not to introduce new procedures for the relief of acute inflammation of the middle ear, but rather to summarize rational and well-known methods and endeavor to stimulate a feeling of greater responsibility on the part of the profession in the management of a disease which sends so many of its victims to untimely graves and blights the career of so great a percentage of our population.

The laity is woefully lacking in appreciation of the gravity of an ear-ache. Its common occurrence in children is considered one of the necessary ills of childhood. Aside from the pain it occasions to the patient, little concern is given it, and when relief is sought from the physician the sole purpose is usually for relief from the severe pain. The danger to the life of the patient and to the future integrity of the ear is hardly considered. Frequent experience has shown me that many general practitioners share and help to perpetuate this indifference. The great circumspection with which they treat other diseases is too often withheld in their treatment of acute inflammation of the ear. In treatment of appendicitis the procedures recommended by the masters are well known and universally followed, but in the treatment of acute inflammation of the middle ear, a disease scarcely less important, the methods recognized as the best by otologists are not so well known nor so generally adopted. That more careful attention should be given to this subject must be apparent to every observing physician.

From inquiries among three otologists of the city of Omaha I learn that they have had a record of twenty-seven mastoid operations done in the past three months, with a fatality of two. These cases were all complications in the course of an acute suppuration
of the middle ear. This is mentioned to illustrate the frequency of grave complications; but it must not be forgotten that the sum total of grave complications holds only a minor place when compared to the other sequelae, chronic suppuration and deafness. This record should place the treatment of this disease on a higher plane than is now often accorded it, and should stimulate the physician, not only to exercise greater care on his part, but also to impress upon the laity a proper recognition of the gravity of middle-ear suppuration. The majority of the cases are seen by the family physician. He should treat them with the same intelligence and care he does a case of pneumonia or typhoid fever. Not only should he be able to do this, but he should ever be on the watch for, and prepared to guard against, ear involvement in all general diseases in which experience has shown it is liable to occur. From 20 to 25 per cent. of all cases of scarlet fever and diphtheria and nearly all of the cases of measles and smallpox are complicated with aural inflammation. In the course of these diseases, and many others, the physician should watch and note the conditions of the ears with the same regularity and care he does the pulse and temperature, and not wait for the complaints of the patient to warn him of trouble. If he will do this, and use timely and proper treatment, he will be able to save perhaps a life and at least much deafness and many chronic otorrheas. It is not necessary to be a skilled aurist to do this with the greatest measure of success. With a head mirror and speculum and a little patience and effort on his part he can soon acquire sufficient skill to enable him to tell a diseased membrane from a healthy one and thus carry out the treatment intelligently.

The first effort of treatment when the case is seen early should be an attempt to abort the diseased process. The patient should remain quietly in bed in a room having a warm and equable temperature. The old-time hot foot-bath is still to be recommended. As
a routine, a purgative should be given, and I know of nothing so good for the purpose, particularly in the case of children, as a full dose of castor oil. Indeed, I have seen the pain subside and the whole process stop so often after the full effect of a dose of the oil has been obtained that I have sometimes thought there must be a special or selective action of the drug aside from that of depletion.

At the outset of the disease, when the pain is not severe, inflation by the Politzer method may be found to be of great benefit, but it should be employed with caution and gentleness. When the procedure gives relief to the pain, it may be repeated twice daily; but when the pain is increased thereby or not benefited, it should be discontinued until later in the disease, when the active inflammation has subsided.

Two or three leeches applied just in front of the tragus and allowed to fill until they drop off will diminish the hyperemia of the middle ear and greatly modify the course of the disease and often cut short the whole process. When the leeches are not at hand, any small cupping-glass will serve the purpose very well. The punctures in the skin should be made in the same location in front of the tragus and the glass allowed to remain until about two ounces of blood have been abstracted. A nicer but perhaps not more efficient method would be the employment of an artificial leech.

If the temperature is high enough to demand attention, antipyrin is the logical remedy, but it must be used with caution, on account of its depressing effect upon the heart. Tincture of aconite, given in small and frequent doses, and phenacetin act well.

Opiates should be avoided. They should never be given in the later stages of the disease, as their dulling effect may mask conditions which demand immediate attention. At the onset, if the pain is severe and not quickly controlled by other means, a dose may be given, but it is not wise to repeat it. The application of heat is a helpful measure, but it should never be in
the form of a poultice, so commonly employed. The use of flaxseed and other moist poultices is a vicious practice that can hardly be too severely condemned. While adding nothing to the comfort of the patient as ordinarily employed, they promote the rupture of the drum membrane by maceration of its external layer; and if the drum membrane rupture, which it is almost certain to do under such treatment, the process is almost sure to be complicated by infectious germs conveyed to the middle ear by means of the poultice. The heat void of the dangers and more grateful to the patient is dry heat applied by means of the India-rubber hot-water bag, or a bag of salt heated to the proper temperature answers the purpose very well. So also are the various oils and greases combined usually with laudanum and camphor worse than useless. Aside from the heat they convey they are of no earthly good, and they may be the means of positive harm by reason of the septic material and infectious germs which they are liable to contain. The remedy which fills the purpose better than any I know of is a 5 to 10 per cent. solution of carbolic acid in glycerine. The pain is lessened by the benumbing effect of the acid and the auditory canal is rendered aseptic, so that if paracentesis is performed or spontaneous rupture of the membrane occurs, there is no danger of infection from this source. It also offers a heavier medium to that of the serum of the blood, and thus tends to reduce hyperemia by osmosis. I very much doubt that the aqueous solution of cocaine and eucaine have more than a transitory influence over the pain, aside from the influence exerted by the warmth of the water used. In the beginning of the mild cases, to fill the auditory canal with warm water will sometimes give grateful relief, but as it tends to soften the membrane if left in contact more than a few minutes, the solution of carbolic acid and glycerine is to be preferred. The custom of forcibly syringing the ear with warm water before perforation has taken place cannot be too strongly deprecated. Cer-
tainly the delicate structures of the tympanum in a state of acute inflammation must suffer great injury by such a procedure.

Experience proves that by these rational measures it is not only possible to palliate the suffering, but in a great many of the cases to prevent the perforation of the membrane and to arrest the whole process. However, if these simpler means fail to relieve the pain, and it remains intense even after a very few hours' trial, or if, when called later in the disease, we find the drum membrane bulging, we should without hesitation resort to paracentesis. I know of no operation in surgery that yields better results than this simple operation. When timely and properly done, there is little danger of the grave complications, or the permanent impairment of hearing or the chronic suppurative discharge which is so common in neglected and improperly treated cases. Indeed, when it is timely done and every detail is carefully carried out, we feel with almost a certainty that the case will recover with little or no impairment of hearing. I cannot recall a case in my practice wherein the paracentesis had been performed early that was attended by the extension of the process to contiguous structures, or was followed by a chronic otorrhea or great impairment of hearing. Its performance is not so difficult that every well-qualified practitioner should not, with a little pains, be able to acquire the necessary skill. To be able to see a membrane through a speculum is the chief requisite to its performance, and he who is compelled to treat many of these cases unassisted and does not acquire this knowledge, does not perform his whole duty to his patients.

The technique of the operation is given in all textbooks. Suffice it to say here, the incision should be a free one, including, when located in the membrana propria, not only the drum membrane, but also the thickness of the membrane of the inner wall, that not only the drainage may be efficient, but also the over-filled vessels of the middle ear depleted. In the ma-
iority of instances the proper site for the incision is in the posterior and inferior quadrant of the membrane, but should the bulging be in Sharpnell's membrane, the incision should be made at that point and upward, while in the former location it should be carried downward.

Before the operation the auditory canal should be sterilized as carefully as the parts would be for an abdominal section. It should be freed from all cerumen and debris and carefully irrigated with a 1 to 2,000 solution of bichloride of mercury. A small wick of cotton is then dipped into a 12 per cent. solution of carbolic acid with glycerine and passed into the canal until it rests against the membrane and is allowed to remain for several minutes. The benumbing action of this will render the operation less painful, but no application will make the operation painless. With very nervous individuals it is sometimes best to employ general anesthesia. It is needless to say that the syringe and all instruments and the hands be thoroughly sterilized, and that the same care and attention should attend every step in subsequent dressings if success is to be expected.

After paracentesis or spontaneous rupture the ear should be inflated by the Politzer method, to restore the membrane to its normal position and clear the ear of retained secretion. If the secretion is found to be serous, which is usually the case when paracentesis is early, it should be allowed to remain; but if it is found to be purulent, the canal should be very gently irrigated with a warm solution of bichloride, 1 to 4,000. In either case the canal is gently packed with a piece of iodoform, borated or sterilized gauze, which has been cut into strips one-third of an inch in width. This should be carried into the canal until it rests gently against the drum membrane, with a probe, or preferably with curved forceps having long and narrow blades. The concavity of the ear should then be packed with a pledget of cotton and a large pad placed over the ear and secured in place by a roller bandage.
This dressing should not be disturbed until the following day, when it should be removed and reapplied after the ear has been syringed with a 1 to 4,000 bichloride solution. If it is found that the solution used enters the pharynx through the Eustachian tube, it will be best to use a 2 per cent. solution of carbolic acid instead. The ear should be gently inflated at each daily dressing, and after the discharge has ceased it should be repeated at first daily, and later every second or third day, until the hearing is restored. After the first two or three days the large pad of cotton can be dispensed with and the concavity of the ear filled with a pledget of cotton which can be removed and replaced by a fresh one, as it becomes moist with secretion.

Each dressing should be made by the surgeon. If from any cause he is unable to see the patient daily after paracentesis or rupture of the membrane and must entrust the treatment to the parent or patient, it will be best to adopt the open method and keep the canal free from pus and maintain drainage by the use of the syringe. His instructions for carrying out this method must be positive and well studied. He should instruct how to sterilize the water, how to properly syringe the ear, how much and how often,—in fact how to carry out every detail of the treatment in an aseptic and proper manner. The water used for cleansing the ear should be sterilized and rendered antiseptic by the addition of carbolic acid or some other good antiseptic. The frequency with which the ear should be cleansed will depend upon the quantity of the discharge. If it is scant, two or three times a day may suffice; but if it is copious, ten to twelve times will not be too many.

It must not be forgotten that the treatment of the nasal passage must go hand in hand with that of the ear, which means that they should be kept clean by the use of alkaline and antiseptic washes and such measures adopted as will meet the requirements of each individual case.
Preventive treatment should receive the most earnest thought and attention of every practitioner of medicine. When it is remembered that acute inflammation of the middle ear is caused by a germ infection reaching the tympanic cavity in nearly all cases through the Eustachian tube from the nose and pharynx, it will be seen how important it is, for the preservation of the integrity of the ear, to render and maintain these cavities in as normal and healthy state as possible. Stenosis of the nasal passages from whatever cause should be relieved by appropriate means. The acute inflammations, especially those forms which are concomitant with the exanthemas, should receive ardent and careful treatment. Adenoid vegetations, which are so potent a factor in the causation of acute inflammation of the ear, should be heroically dealt with. In short, every condition which may contribute to the disease of the ear is worthy of earnest consideration.

DISCUSSION.

Dr. H. Gifford, Omaha: This is certainly a very timely and useful paper on a disease which deserves more attention from the general practitioner. The most important thing, of course, in connection with acute otitis media is to prevent it as far as possible. To do all that we can in the way of prophylaxis we must begin by paying more attention to colds in the head, for these are the cause of a large proportion of the cases of middle-ear disease. In this connection I want to put in a word in favor of large doses of aconite; 10 to 15 drops of the tincture for an adult, taken just before retiring, will do more to head off a cold, especially if repeated two or three nights in succession, than any other one thing that I know. But if the disease once shows itself in the ear by the occurrence of earache, then in addition to aconite the most important thing is the use of heat; and although the method described by Dr. Owen is useful, no amount of dry heat applied to the outside of the ear will be as effective in actually checking the inflammation, as keeping the external meatus filled with hot water for from twenty minutes to half an hour at a time, several times a day. This can be done by using a medicine dropper, a fountain syringe or by Buck's method, in which the ear is filled with hot water and then a hot bag placed over that. Where suppuration has actually occurred, nothing but a paracentesis will accomplish more than nature can do. This simple operation is one which every practitioner ought to be prepared to do, but which is very seldom done except
by the specialist. I always advise young graduates to include a paracentesis knife among the things which they absolutely ought to have when starting out to practice.

Dr. A. D. Nesbit, Tekamah: Sometimes it is impossible to use hot water applications. The patient will not keep still long enough to permit the use of hot water bags. I would like to know what can be done with such cases?

Dr. D. C. Bryant, Omaha: The general practitioner should and generally does know everything about the treatment of these cases, and the mistakes that are made are not on account of lack of knowledge or lack of skill, but because the practitioner practically does not consider these little diseases. Instead of following out the treatment as he should do, he often stops before the disease is entirely eliminated. A great many of these cases follow diseases which are very severe, as scarlet fever, diphtheria, etc. The time is taken up with the original trouble. The life of the patient is in danger and all of his attention is devoted to saving the patient's life. Ear trouble coming up is not noticed until the rupture of the drum membrane. Attention of the attending physician may be called to the ear trouble before rupture occurs if the pain is very severe. In these cases it is the rule for the attending physician to treat the ear trouble. If the original trouble, which is greater, disappears, the patient convalesces and often does not continue the ear treatment as long as he should. When the patient is convalescing, it does not seem necessary either to him or to the family that they should go to the expense of having the physician call and treat the case every day as these cases should be treated. The consequence is that instead of carrying out the treatment until the disease is eradicated, the case is left to itself, and we afterwards have a chronic instead of an acute disease to deal with. A suppurative process in the middle ear is at first confined to the mucous membrane. If the disease can be checked before there is an extension of the inflammatory process to the deeper structures the patient will recover, and hearing will be restored. If the suppuration is allowed to go any further than the mucous membrane greater and more lasting damage will be the result. The general practitioner can examine these cases well enough to know whether or not the suppuration has stopped. The discharge will nearly always tell him that. A final careful examination should be made to be sure not only that the discharge is stopped but that the perforation in the drum membrane is healed up and the hearing restored. If cases of suppurative inflammation of the middle ear be neglected extension to the mastoid cells or cranial cavity may occur, endangering life and often causing death. It is a fact that the general practitioner is treating these cases very much better than fifteen or twenty years ago. We don't see the number of chronic cases now that we did formerly. We do not see the more serious condition of cranial trouble existing. I am very much afraid that in the course of time there will be nothing left for the
specialist to do if the general practitioner keeps on improving.

Dr. M. H. Garten, Lincoln: I will allude to the use of ice. Many will not bear the heat but will bear the ice applied to the ear and mastoid region. I have used ice with good results. These middle-ear difficulties should be taken up early and followed up closely. Do not let the people gain the impression that an incision of the drum membrane ends an acute inflammation of the middle ear, neither should they be taught that it is a trivial operation.

Dr. S. E. Cook, Lincoln: One question that has been brought up has been the manner of long continued treatment. One point I would like to bring out is that experience with these cases shows us that long, patient and continuous treatment until the patient is really well, is what is demanded. I have in mind now a patient, a lady school teacher, who came to me about a year ago last Christmas. One ear was deaf from a sclerotic condition of the middle ear. She came with the suppurative ear trouble following an attack of grippe. I supposed I had an ordinary case of otitis media to do with. I punctured the drum earlier than in an ordinary case. I had to puncture that drum membrane every two or three days. The suppuration was not continuous but it still persisted. She did not get well although she came every day. She had very little rise of temperature. She could not go to a hospital because she was not really a hospital case. I followed that case up and thought she never was going to get well. Her symptoms gradually improved and temperature disappeared; there was suppuration due to changed condition. For six months I gave her a daily treatment. I was afraid the condition would become chronic. She was practically deaf in both ears. Two or three times the mastoid was involved, but by the use of ice the symptoms disappeared. In order to stop the suppurative process I suggested to her that it might be necessary to open the mastoid and get at it from behind. I suggested that she might have to be operated upon on account of her hearing. She consented to have anything done to restore her hearing. However, I did not do it. I continued the treatment. She got well from that time. If this case had not been continued faithfully and honestly it would have terminated in one of these chronic suppurative cases. We must treat these cases until they are well; until every particle of suppuration has disappeared. This woman recovered her hearing perfectly. The drum is perfect and no trace of the disease remains although it lasted six months. I have never seen a case of middle-ear trouble that has been treated faithfully and followed up assiduously but what it has turned out well.

Dr. J. A. Andrews, Eustis: I find out that in these cases one of the most necessary instruments for trouble of this kind is the consent of the family and patient to open the drum. I find that it is the most necessary instrument in our country. I remember quite well one case where I
wanted to open the membrane. Permission was refused. The patient went to Holdrege to consult the big doctors. Came home feeling good. In about a week they came to Lincoln to consult the bigger doctors. They came home and stayed a while and then went to Omaha to see the biggest doctors. Still they had no relief. They consulted all advertising mediums. Still no relief. When I saw the case a third time, after they had been to Holdrege, Lincoln and Omaha, the whole cavity had an opening large enough to receive an egg. I asked Dr. Gifford what to do. He said if the family was not able to buy a coffin we should take up a collection. The bones became necrosed. I was not permitted to make any investigation and they are now scolding me because I did not let out the pus that had formed. If we could have done as we wished, we could have handled the case with some assurance of success.

Dr. M. L. Hildreth, Lyons: This instrument of consent is easy to obtain. I have rarely had a case where I have been refused permission to do what I want to. I believe that we have to demonstrate our honesty. The necessity of faithful, persistent treatment is very evident. We have made the mistake of dropping the cases too soon. In scarlet fever, where the trouble is generally looked for, I watch the ear more than any other part of the body. I have the cases looked after until they are entirely cured. I have a patient now whose ear-drum has a large hole in it. I have been treating it for eight or nine years and I am watching that ear yet. I have learned to watch the ear more than any other part of the body, in scarlet fever especially. The application of cold seems to me to be a good point, used during the stage of acute congestion. I will say again that though I don't operate much on the ear, I certainly feel that the instrument of consent is the easiest thing in the world to obtain.

Dr. W. B. Ely, Ainsworth: Dr. Hildreth's easy confidence in obtaining the "instrument of consent" was producing a most uncomfortably depressing mental effect upon me till he dropped the side remark that he never operates upon the ear. That explains the cheerfulness of his confidence. Let him but attempt to incise an ear-drum of a child, and I can promise him, unless his clientele belongs to a different race from mine, that he will "see a light." My experience as a country doctor has been that it is absolutely impossible to obtain consent from the responsible parties to incise a child's ear-drum. The people in general have an insuperable horror of puncture of the ear-drum. The impression is practically universal that any breach of its continuity means certain total deafness; an impression so firmly fixed as to resist every argument to be urged by a common, ordinary country doctor, however yielding it may be to the suavity of the city specialist. It is not two weeks since one of my staunchest professional friends flatly refused to permit me to incise the ear-drum of his child for relief of acute middle-ear disease, in such words as these: "It will take a good deal bigger man than you are, doctor,
to convince me that cutting the ear-drum won't make that child stone deaf." It is beyond question that a large percentage of the ruined ears might have been saved by timely incision of the drum by the general practitioner, who, in most cases, is the one who gets to see them in the earlier stages of acute purulent disease, but I am convinced that their destruction is due, not so much to lack of knowledge and skill on his part, as to the ignorant fear of the laity, and their refusal to permit it to be done.

Dr. Owen (closing the discussion): As to the instrument of consent I will say that I never had a case where the patient was unwilling to have the operation performed, on account of the intense pain that is suffered, when I carefully told him that it must be done and that the infection made by the knife is not so great. The general practitioner should explain to the patient that the drum membrane will break anyway and it is not a dangerous operation. I have never had any trouble of this kind at all. To stop the pain they will do anything. In reference to the remark of Dr. Cook. The continuing of the treatment is correct; but the practitioner must not always have just one thing in view—that is, the stoppage of the discharge. When the discharge is stopped you have deafness to overcome, the treatment of which you should take means to relieve until hearing is fully restored. As to the application of ice there is no particular objection to its use. It accomplishes the same purpose as the application of heat. Heat gives more comfort to the patient, and while I do not object to the use of hot water in the ear canal, it has one disadvantage, of macerating the membrane. The use of glycerine may be substituted, as it does not macerate the membrane but draws the secretions from the ear. I do not believe that Drs. Garten and Cook wished to say that early paracentesis was not the proper step. They only cited these cases simply to show the importance of continuous treatment.

Dr. Cook: I did not mean to infer that early paracentesis was not necessary. It is one of the most important steps.
THIRTY-THIRD ANNUAL SESSION.

A PLEA FOR GREATER CARE IN THE TREATMENT OF CASES OF OPHTHALMIA NEONATORUM.

D. C. BRYANT, M. D., OMAHA.

That there is need for something in the shape of a warning to those under whose care the great majority of these cases come was forcibly brought to my mind by three unfortunate cases which came under my care during the past winter. In none of these cases were the eyes entirely lost, but in two of them the corneæ of both eyes had ulcerated, perforation had taken place, and the iris prolapsed into the wound. In the third case the ulceration, though not having perforated, had resulted in a large central leucoma of one cornea. None of these cases were seen by me until after the corneal complications had occurred, but from the history of each case, as given both by the attending physician and the mother, I judge they were not above the average case of ophthalmia neonatorum in severity. Orthodox treatment had been employed in each case, the attending physicians were able men, and yet the treatment fell just a little short of saving perfect eyes, as our text-books would lead us to believe can be done in nearly all, if not all, of these cases. The one thing required, I verily believe, to have brought these cases to a successful issue was a little more care. That the lack of care was mostly due to the parents and friends of the infants we will admit, and yet the attending physicians perhaps were, as all of us sometimes are, a little lax in emphasizing their instructions as to the constant care and eternal vigilance which is required on the part of the nurse, or the mother, to bring these cases through unharmed. The good prognosis given in our text-books, in ophthalmia neonatorum, and the flattering reports often seen in our medical journals during the past ten years have given us, I fear, a feeling of too great security
as to the sureness of a favorable outcome in these cases, and a feeling of security here, as in other matters in this life, is liable to produce that letting up of vigilance so necessary for success in everything.

I think no physician of the present day has any difficulty in making a diagnosis of ophthalmia neonatorum. The age of the patient at the onset of the disease, the rapid swelling of the eyelids and conjunctiva, the thin watery discharge tinged with blood, in a few hours changing to pus, yellow and abundant, leave little doubt in the mind of the medical attendant as to the nature of the disease. Fortunately, in the majority of these cases the family physician, who attended the mother in her confinement, is still making his daily visits when the eyes of the infant first show evidence of having been infected and the inflammatory trouble is beginning. The welfare of the newborn should be, and nearly always is, looked after by the physician, and at each visit the eyes of the infant should be carefully scrutinized so that treatment may be instituted almost simultaneously with the onset of the disease. It scarcely seems necessary for me to mention any particular line of treatment of these cases, as our text-books are sufficiently explicit in regard to the management of cases of ophthalmia neonatorum, and yet, in order to emphasize the care with which all these cases should be managed, it may not be out of place to give a brief resume of the course followed in our own practice.

After being satisfied as to the nature of the disease, the manner of treatment is as follows: First, thoroughly cleanse the conjunctival sac. This we do by using a lotion of boric acid, saturated solution, to which is added cyanide of mercury 1 to 8,000. The nurse or mother is instructed to wash out or irrigate the conjunctival sac with this lotion every twenty minutes or half hour, as the amount of pus collected demands. Always insist upon the care being the same during the night as in the daytime. There is no rest for the mother, the nurse, or other attendant when a
case of this kind is properly cared for. Eternal vigilance is certainly here the price of success. Next in order and in importance until the acme of the disease is reached comes, I believe, the application of cold. This is usually best done by the use of small pads of absorbent cotton or gauze kept on ice and changed as often as from one to five minutes, according to the amount of swelling present and the stage of the disease, the early stages requiring more frequent changes. I believe that applications of cold not only prevent and reduce swelling of the lids and conjunctiva, but also retard the rapid multiplication of the gonococci or other pyogenic germs which may be present. The third important agent is nitrate of silver. Silver can be used as an antiphlogistic as recommended by Crede, especially in the cases in which the attending physician has reason to suspect or knows of the presence of a purulent vaginitis in the mother. Prevention is always better than cure, and no doubt the most of these cases, where a physician is present at the birth of the child, could be prevented by a little extra care and watchfulness on the part of the medical attendant for the first three or four days after the confinement. Silver is also of very great importance after the disease is fully established. As soon as pus appears in the discharge the application of nitrate of silver to the conjunctiva should be begun. The lids should be everted and a solution of silver applied not only to the palpebral conjunctiva but also thoroughly to the retrotarsal fold. The strength of the solution should vary according to the stage of the disease and the severity of the given case. In the ordinary case in the early stages, and up to the time where the disease has reached its height, a solution of from five to ten grains to the ounce of distilled water applied once or twice in twenty-four hours, is sufficient. In the severer cases solutions of from ten to twenty grains will sometimes be needed. The stronger solutions should be neutralized by salt solution before allowing lids to return to normal position. Ordinarily, it is
not so much the strength of the solution as the care with which it is applied that brings about the desired result. As the discharge lessens and the swelling subsides, the strength of the solution should be diminished as well as the frequency of application. The fact that 25 per cent. of the inmates of the asylums for the blind throughout the world were brought to their unhappy condition as a result of ophthalmia neonatorum is sufficient argument for the urging of more care in the management of these cases on the part of the ones under whose care the majority of these cases first come.

Burnett, in his article in Norris and Oliver's great work, in summing up the importance of this subject says "that not only one quarter of the blindness of the world is caused by this disease, but the blindness, beginning as it does with life itself, so handicaps the person affected that instead of becoming a producer he remains, in all but a small number of cases, during the remainder of his life, a consumer only and a charge upon society."

There are in the United States, according to the last census, over 50,000 blind persons. By figuring that 25 per cent. of this number have been brought to their present condition as a result of ophthalmia neonatorum and counting the cost per capita of maintenance in our public asylums, together with the amount the average day laborer earns in a year, Burnett shows that the total loss to this country as a result of the ravages of this disease are seven and a half million dollars annually.

Then there is the humanitarian and moral side of the subject which need only to be mentioned to be realized. The teaching of the present day tells us that were these cases properly treated from the time of birth, the disease could be prevented or cured with vision preserved in every case. Probably that statement is correct, but it will not be proven or disproven in our day, as the opportunity for treating all of these cases properly from the beginning will never be
afforded the medical fraternity. Many cases of confinement are attended by illegal and unqualified practitioners, by midwives or by no one at all, and of the cases in which eye trouble occurs in the newborn many are not seen by the regular practitioner until the disease is well advanced, or perhaps past the stage where proper treatment will be of any avail. Therefore, it would be folly to expect to see the day come soon when this disease will be entirely eradicated. We can do much, however, toward lowering the now far too high percentage of cases of blindness caused by it, and I believe the one thing necessary to bring about this desired result is the exercise of more care by the attending physician in his own personal treatment of the case and his urging and demanding a more explicit and perfect carrying out of his directions as to the care and management of the case during the time between his daily visits. It seems to me that the failures are not due to the kind of treatment prescribed, but to a lack of care in seeing that the directions are thoroughly and systematically followed from the beginning to the end.

DISCUSSION.

Dr. H. Gifford, Omaha: In treating this disease it is generally agreed that some one of the preparations of silver should be used, but the method of making the application is of the greatest importance. For any one without a large experience in the handling of eyelids, it is a very difficult matter to evert the baby's lids properly, as the lashes are too short to be of any assistance; and for even an expert to hold the lids everted with one hand and apply a solution of silver properly with the other, is an impossibility in my opinion. I am sure that better results will be obtained if, in making these applications, the physician will employ both hands in everting the lids and working into the recesses of the folds the medicine, which should be put on by an assistant, either with a dropper or with a loose cotton swab. Another point which is worth remembering is that in many cases two applications a day of a strong solution of nitrate of silver will cut the disease short, when the same remedy used only once a day will not accomplish a cure within a week or two.

Dr. W. B. Eny, Ainsworth: I recognize the importance of all of Dr. Bryant's suggestions, but my experience has
been that it is practically impossible to reach the retro-tarsal conjunctiva of a young baby by any mode of instillation at my command, or even to get a satisfactory washing out of the conjunctival sac when the baby's lids are much swollen. The first touch of a five-grain solution of nitrate of silver produces so rigid a spasm of the orbicularis that I have never been able to overcome it. I shall be greatly obliged if the doctor will describe in detail the technique to be employed in such cases.

Dr. J. L. Greene, Asylum: My experience with this has been confined to one case which occurred last fall. The home was fourteen miles away from my office. I supposed I would be sent for. There was no time to send a message to me, and the next thing that I knew of the case was when the father came into my office and said that the baby was four days old. He said the eyes were closed and streams coming from either eye. Now I would like to know what I could have given that mother and father that they might have ameliorated the condition. Where births are liable to occur without a physician present, there should be something left in the house and some especial remedy for the baby's eyes.

Dr. H. M. McClanahan, Omaha: I have seen two of these unfortunate cases. In the last one I adopted a treatment which was suggested by an article which I think appeared in the Journal of the A. M. A. A glass dropper, with rubber cap removed, is attached to the nozzle of a fountain syringe containing a warm saline solution. The nozzle is inserted at the inner canthus of the eye and the water is allowed to flow out at the outer corner. In this way the eyelid can be thoroughly washed. In this case, examination proved the infection to be due to the gonococcus, and the treatment was highly satisfactory. After irrigation, I made an application of the nitrate of silver solution. In two days the inflammation was under control.

Another thought that came to me as I listened to Dr. Bryant's paper was that many cases come under the care of the midwife. In the state of New York they have passed a law that any midwife who shall fail to report the case of a newborn infant having any form of ophthalmia shall be heavily fined. Would it not be well if such a law were enacted in each state?

Dr. Bryant (closing discussion): In regard to evertting the lids, it is a very difficult matter to explain and often to do. The physician often does not see the case at the time when the most good can be done. The family physician is like the oculist: he is not always there. Quite a good many cases are attended by old women and midwives. Those cases you will not see perhaps until half over. If chloroform is used, then you can evert the lid well. Cyanide of mercury, 1 to 8,000, could be used as a wash several times a day without any harm. It induces the parents to wash out the conjunctival sac, and in washing it out it does away with the gonococci. The ordinary
solutions that we use do not destroy the gonococci at all. The use of ice helps to reduce the swelling. Instruments have been devised to render more accessible the conjunctival cul-de-sac. Irrigators are used in England. They have one that is good, in that it is absolutely aseptic. The trouble with the ordinary rubber irrigator is that it is not aseptic. This aseptic irrigator is shaped like the ordinary gravy-dish. It is very nice to irrigate in these cases, and is used in all forms of eye trouble. In regard to the legislative procedures, in many of the old countries the midwives are supposed to report these eye troubles. Their per cent. is higher than ours. They have more of these troubles in the old country than we have in this, for which we should be thankful.
I was prompted to prepare this paper on account of the fact that many times this disease is confounded with the much more grave disease, trachoma, the one entirely curable without sequelae, and the other never. This, perhaps, may seem a broad statement to some, but I speak advisedly. A true trachoma once established is never cured so that the conjunctiva is left in as good a state as before, while in the disease under consideration the conjunctiva is left in a perfectly healthy and normal condition. It is not my purpose to enter into a detailed study of this affection, but to discuss some of its features and especially its therapeutics.

The writer regards this disease as a hypertrophy of the closed lymphoid follicles of Krause, as set forth in his, the writer's, article on "Trachoma" as it appears in the 1896 transactions of this society. The true etiological factor in its production is not fully settled in the minds of the profession. It is particularly prone to attack those who live in uncleanly and crowded quarters and are of a lymphoid tendency, though it is frequently encountered in this same class of individuals who live in the rural districts, and sometimes under very favorable environments so far as hygiene is concerned. That the disease is feebly contagious I think there can be no doubt. Many of the cases reported as granulated lids are cases of follicular conjunctivitis. Not a few of the cases coming to me for refractive work state in response to the question, "Have you ever had sore eyes?" "Yes, I have had granulated lids," when an examination shows a perfectly normal conjunctiva, thus making it absolutely certain that they never had trachoma, which always leaves its mark in the conjunctiva.

Follicular conjunctivitis may be the inheritance of
an attack of catarrhal or purulent ophthalmia, but more frequently its onset is so insidious that the host is scarcely aware of its presence, so little is he inconvenienced by it. There is usually, however, some inconvenience in using the eyes, especially by artificial light. There is a heaviness about the lids, and in most cases some secretion, which causes more or less gumming of the lids in the morning. The individual usually has a sleepy look and the caruncles are more or less congested. Both eyes are almost invariably affected, though one is not uncommonly much worse so than the other. It is the conjunctiva covering the lids and the retrotarsal folds that is affected, and the lower, as a rule, more than the upper. The most common picture is a few pink follicles ranging in size from a No. 12 to a No. 6 bird shot, and arranged in longitudinal rows on the lower lids. The conjunctiva is transparent and not pathologically adherent to the tarsus, as it always is in true trachoma. In these mild cases there are usually a few scattered follicles at the beginning of the retrotarsal fold of the upper lid. There are cases, however, in which the entire palpebral conjunctiva is thickly studded with the enlarged follicles and when the lower lid is depressed, or the upper raised, the loosely attached conjunctiva of the retrotarsal fold is so thickly set with the follicles that it rolls out almost to the cornea. In this case the palpebral fissure is very much narrowed and the physiological sulcus beneath the brow is lost so that the lid appears swollen. This may obtain in one eye while the other is only slightly affected. The bulbar conjunctiva is very rarely, if ever, affected, except its extreme border, where it leaves the ball to cover the fold.

The affection is one of childhood and the adolescent period, and is entirely curable. Mild cases may be cured in a few months by the application of irritant astringents; these cause the absorption of the inflammatory products by causing temporary hyperemia, thus increasing the nutrition. For this purpose a
smooth crystal of sulphate of copper or a stick of alum may be rubbed on the everted lids and the excess of the former washed off with sterilized water. The application should be made two or three times a week. During the interval a one to two grain to the ounce solution of sulphate of zinc should be instilled into the eye three times a day. Many other remedies have been used with success, but these are probably the best. But the treatment par excellence, the one that will cure your patient in a short time, is operative. Thoroughly cleanse the external eye with castile soap or a solution of green soap and sterilized water, and the conjunctival sac with a saturated hot boric acid solution, apply thoroughly a 4 to 6 per cent. solution of cocaine; this if your patient is courageous, but in most cases a general anesthetic will be necessary. Then with the Knapp roller forceps, or what I prefer, the forceps devised by my friend, Dr. Gifford, proceed as follows: Evert the upper lid, pass one blade of the forceps well back into the conjunctival cul-de-sac, taking care not to wound the cornea, and the other over the everted conjunctiva, and while making quite firm pressure on the forceps, pull them away from the eye; this breaks down and squeezes out the accessible follicles. Then the mucous membrane of the retro-tarsal fold is caught up in the forceps and stripped in the same way. This will not get all the diseased follicles, however, and it has been my experience that the mucous membrane covering the lower tarsal cartilage is very difficult to treat properly with the forceps. Here the handle of the Gifford forceps comes into use very nicely. It is finished very carefully and brought down almost to a cutting edge and can be used to scrape or curette the mucous membrane here as well as on the upper tarsus, thus removing the follicles not gotten rid of by the other process. Near the canthi are points not accessible to the Knapp forceps, here the little projection or bill on the Gifford instrument is admirably adapted for picking out the follicles. After the lids are carefully gone
over in this manner it is the writer's practice to mop
the entire lids with a 1 to 500 solution of bichloride
of mercury, protecting the cornea as much as possible,
the excess of the solution being washed off with a
boric acid solution or sterilized water. This is re­
peated every day for a few days, when the patient is
dismissed with a one or two grain to the ounce solu­
tion of sulphate of zinc and instructed to instill it into
the eye one to three times a day. The results follow­
ing this procedure are alike gratifying to the patient
and surgeon.
THE RELATION BETWEEN DENTAL AFFECTIONS AND THOSE OF THE EYE.

GEO. H. BICKNELL, M. D., OMAHA.

This is a subject of considerable importance to the oculist and the dentist upon which comparatively little has been written. Dr. Nathan J. Weill, of Pittsburgh, has lately written an excellent article which has been of great assistance to me in looking up the few widely scattered papers which comprise the literature of the subject.

The intimate nervous connection through the trigeminus of the eyes and teeth fully account for the numerous reflex neuroses recorded, and the vascular and lymphatic conditions existing in the head and face render easy of transmission from the alveolar process to the orbit any infectious process occurring therein. The subject then may be classified under two heads: (a) Reflex neuroses traversing the fibres of the fifth nerve; (b) infections spreading by continuity of tissue. Cases coming under the latter classifications are much more serious, and will be considered first.

Infections which travel from a diseased tooth upward to the orbit by continuity of tissue may result simply in an orbital cellulitis, subsiding in a few days without doing harm; but if the infection be more severe, and the pressure be more intense and of longer duration, the vision may be injured, and is at times totally and permanently lost. In some cases the infective process extends by various routes into the cranial cavity, giving rise to brain abscess or to a fatal meningitis. Hirsch found in the literature up to 1894 twenty-five cases of orbital abscess caused either by infection following the extraction of teeth or by purulent alveolar periostitis. Hallauer and Dagaliski have since reported similar cases. Many
cases have no doubt occurred which have either gone unrecognized or have never been reported.

Infection usually reaches the orbital cavity in one of two ways: (a.) It may travel from a diseased tooth under the periosteum on the anterior surface of the superior maxillary bone until it reaches the orbit. Infection by this path is, according to the researches of Gurwitch, facilitated by the plexus of veins which passes upward under the periosteum in this region, forming an anastomosis with the ophthalmico-facial, this in turn communicating with the inferior and superior ophthalmic veins, thus completing the ophthalmico-facial plexus. (b.) The second and much more common method is that in which the antrum of Highmore is first invaded, then the orbit through the thin orbital plate of the superior maxillary bone, or by the vessels passing outward or upward to anastomose with the orbital vessels. Once having gained access to the orbit, infection may easily reach the brain, and it is not surprising that many of these cases die from cerebral complications. The brain may be infected via the optic foramen, the frontal sinus or ethmoid cells, or the process may pass backward along the ophthalmic vein through the sphenoidal fissure, thus quickly reaching the cavernous sinus.

The gravity of phlegmon of the orbit may be appreciated by considering the sixty-nine cases cited by Hermann. In thirteen of the sixty-nine cases vision was very much reduced, seven became totally blind in one eye, and four died from brain abscess or meningitis. Of the three cases reported in this paper, one died from brain abscess and two became totally blind in one eye.

The case coming under my own observation was: W. B., aged 7 years, first seen January 28, 1901. He had been taken four days previously with moderate toothache. The next day the pain was more severe, he had a chill, and the side of the face became moderately swollen. The following day he had a rigor of
extreme severity, the face became more swollen and the eye protruded slightly. In the afternoon of the third day he was taken to a physician, who advised the parents to see a dentist, which they did. The dentist removed the offending tooth, which was the first upper molar on the left side. On the evening of the fourth day he was brought to Omaha. He had a temperature of 101° at this time, the left side of his face was swollen and indurated, the eyeball turned out slightly and protruded to such a degree that closure of the lids was impossible; chemosis was marked and the cornea was rapidly becoming roughened by exposure. Thinking from the history and appearance of the case that the antrum of Highmore and perhaps the ethmoid cells had been infected from the diseased tooth, an exploratory puncture was made through the alveolus into the antrum in the vacant space left by the extracted first molar, but no pus was found. Deep exploratory punctures were made in the orbit around the eyeball without result. The following day the symptoms were worse, and a deep incision was made into the orbit above the eye, which was followed by a very small amount of pus. The third day after he was first seen, the eye protruded still more and was more markedly deviated outward. Under cocaine a deep puncture was made into the orbital tissues just at the inner canthus, which was followed by a large amount of fetid pus. Careful probing demonstrated the fact that a large portion of the internal bony wall of the orbit was denuded, also that it was one of those rare cases in which the infection had traveled upward from the molar tooth following the venous plexus mentioned by Gurwitch, under the periosteum on the anterior surface of the superior maxillary, and had reached the orbit in this manner. A glass drainage tube was kept in the last incision and in about six weeks all suppuration had ceased. During this time he had a rise in temperature almost every day. When first seen the patient could count
fingers at from eight to ten feet with the eye on the
affected side and ophthalmoscopic appearances, other­
wise than slight blurriness of the nerve, were normal.
His vision gradually became worse, and when last
seen about three weeks ago he had no light perception
in the eye, the optic nerve was completely atrophied,
and the eye was still slightly turned outward. Dur­
ing the first two weeks the protrusion of the eyeball
being so marked that the lids could not be made to
cover the cornea, a thick layer of pure white vaseline
was kept constantly in the palpebral fissure and no
further trouble was experienced from corneal ero­
sions.

The following two cases are from the practice of
Dr. Gifford and have not heretofore been published:

Case I.—Benjamin B., aged 27, had an abscess of
the left antrum of Highmore. A tooth was removed
and the antrum opened through the alveolar process
July 20, 1900. This was followed by much swelling
of the eyelids on the same side and a discharge of pus
through a sinus in the upper lid. When he came to
Omaha, August 14, there was a profuse discharge of
pus through several sinuses in the left upper lid. A
probe detected bare bone and loss of substance in the
bony roof of the orbit. The right eye was normal, the
left eye had no perception of light, but was objectively
normal, except for a slight blurring of the optic disc.
After a free opening into the orbit through the upper
lid and the insertion of a glass drainage tube, the
pain, which had been severe, disappeared for a day
or two, but returned with much general depression,
so that on August 17 it was decided to eviscerate the
orbit. This was done, and the frontal sinus and
ethmoidal cells were opened and the latter found to
contain pus clear to the posterior extremity. After
this the temperature ranged from 98° to 99°, the pulse
from 70 to 48, and the pain in the head continued
more or less constantly, making it altogether probable
that a brain abscess existed; but while discussing the
desirability of searching for it in the anterior part of the frontal lobe at the seat of the defect in the orbital roof, the man died very suddenly on the morning of August 22. The autopsy disclosed an abscess in the anterior part of the frontal lobe containing about half an ounce of fetid pus. This communicated by a small opening with the lateral ventricle. The sphenoidal sinus was found to be half full of mucous pus.

Case II.—A woman, aged about 40, had the second upper bicuspid on the left side extracted on account of caries. This was followed by an inflammation on that side of the face, accompanied by swelling of the lids and protrusion of the eyeball. Soon after, an abscess broke through the upper lid; when the swelling of the lids subsided she was found to be blind on that side. She was not seen by Dr. Gifford for two or three years after this happened. At that time the left eye was found to be normal externally, but with an atrophic nerve and no perception of light. The right eye was normal. The left lower lid was drawn down and out by a scar adherent to the malar bone.

Hirsch mentions a case in which the second left upper molar was extracted by a veterinary surgeon. Infection and phlegmon of the orbit speedily followed, and when the orbital swelling subsided the patient was totally and permanently blind in one eye. German literature is rich in similar cases, and one author mentions the frequency of the infections which follow the manipulations of veterinary surgeons and barbers who it seems do a great deal of tooth extracting in European countries.

In Sattler’s case there had been pain for three months in the region of the left nasolabial fold. November 6th the second left upper molar was extracted. The next day the left eye was swollen shut, pain on left side of the head, tenderness about orbit, swelling of submaxillary and preauricular glands, eyeball protruding out and down and only slightly movable. Infection of antrum of Highmore, ethmoid cells, and
frontal sinus followed in rapid succession, and on November 16 patient died with symptoms of brain abscess. The autopsy showed intense congestion of the meninges, with perforation of dura over the cribiform plate and an abscess in the left frontal lobe.

Neuroses.—Knied says that between the first and seventh year almost everything is attributed, and not alone by the laity, to teething; hence the literature is rich in this respect.

Power, in concluding an address before the Odon­tological Society of Great Britain upon the connec­tion between ophthalmic and dental disorders, spoke as follows: "Having, however, established the existence of reflex irritation of the eye it will perhaps be the best mode of treating of the subject if we consider it under the following heads: 1. Reflex irritation affecting striated and unstriated muscles. 2. Reflex irritation affecting the mucous membrane and cornea. 3. Reflex irritation affecting the optic nerve, retina and intraocular tissues. In regard to reflex irritation affecting muscular tissues we have: 1. Paresis of ciliary muscle. 2. Paresis of intraorbital muscle. 3. Paresis of muscular fibres of iris. 4. Paresis of ocular muscles. 5. Paresis of orbicularis palpebrarum muscle." He says further, "In conclusion, I think then it may be laid down as a maxim to be generally observed that in all cases of threatened glaucoma, especially when this is associated with ciliary neurosis and obscure pains in temple and maxillary orbital regions; in all cases of mydriasis and probably of myosis originating without apparent causes; in all cases of sudden paralysis of either of the orbital muscles (in absence of cerebral symptoms); in all cases of phlyctenular disease of the conjunctiva; in all cases of sudden failure of accommodation, especially in young children; and finally in cases of exophthalmia, the condition of the teeth should at least be examined."

In a lecture on the relation of ophthalmic to dental
disorders, Dr. Galezowski, the well known Paris ophthalmologist, dwelt on the close correlation between some eye troubles and caries of the upper teeth. He said that in young children the slight inflammation and discomforts accompanying the cutting of the first teeth produced keratitis and small corneal ulcers, and that these could sometimes be cured by treatment of the teeth; and that in the shedding of the first teeth a spasm of the orbicularis was sometimes observed which could be removed by extracting the teeth. With the shedding of the wisdom teeth corneal inflammations occur. In adults, the commonest result of dental caries on the eyes is a weakening of accommodation by reflex action through the fifth pair of nerves. Of this Galezowski gives two examples: An American lawyer had had for two years such weakness of accommodation as to make his work almost impossible. There was no hypermetropia or astigmatism, but two of the molars of the upper jaw were decayed and stopped with gold. Dr. Galezowski advised their extraction and in a few days his patient was able to resume his work. From this it was concluded that the patient's troubles arose from compression of the dental nerve. In another case in which the weakness had lasted for three years, it improved greatly soon after the extraction of a single molar. There was also a case of temporary but almost complete functional blindness following extraction of an upper molar in a man aged 20, who was under the care of Professor Richet at the Hotel Dieu. Conversely, in a nervous woman, a patient of Galezowski, who had amaurosis of one eye, perfect sight was immediately recovered by removal of a carious molar tooth on the same side. Dr. Gifford's case book contains the history of a man who became gradually almost totally blind in his right eye in 1888, and remained so for some months until the removal of a carious upper molar on the same side, when he quickly recovered. The case reported by
Allport in which poor vision of some years' standing was permanently cured by the removal of carious upper teeth is somewhat similar.

Schmidt found in ninety-two patients with toothache, seventy-three who had restriction of accommodation on the affected side. He thought this disturbance of accommodation to be due to increased intraocular tension, but Knies believed it to be due to lack of vigorous innervation caused by the distressing pain. Priestly Smith, who measured the tension with his tomometer in sixteen cases, could detect no inequality in the two sides, and later found the tension in eyes under similar conditions in some instances harder and in others softer than that in the opposite eye. Hutchinson reported a case of panophthalmus from spasm of the levator palpebra superioris during toothache. Weill reported a case in which one eye had an excessive flow of tears which greatly annoyed the patient. The lachrymal apparatus appeared to be entirely normal, but upon examination of the cheek on the same side it was found to be slightly swollen and tender. One of the upper bicuspids was found to be reduced by caries to a snag, and after removal of the roots the epiphora ceased.

Amblyopia.—Hermann reported the case of a girl 5 years old who suddenly became totally blind after extraction of the second upper molar of her first teeth. She was found to have choked disc in each eye and the left abducent was paralyzed. After two days she began to have light perception, and after about four months, vision in her right eye was a little over 20/100 and that of the left was 20/50. This is perhaps analogous to the blindness which has been known to follow surgical procedures on the turbinate bodies.

Swanzy, the Dublin oculist, writes: "Reflex amblyopia is said to have been observed in connection with irritation of the fifth nerve, especially the dental branches; but I have not seen such a case and am
skeptical as to their occurrence.” On the contrary, De Wecker relates the case of a seamstress in whom the sight of both eyes was reduced to mere light perception after repeated severe attacks of toothache. Extraction of carious teeth from the upper jaw resulted in restoring normal vision to the left eye, and later, extraction of those in the right jaw restored vision in the right eye. Many more of these cases are reported by various authors.

Knies says that pains in the upper teeth are frequently symptoms in the so-called ciliary pains of keratitis, also that neuralgic toothache is sometimes a prodromal symptom of glaucoma. Redard recites the case of a woman 28 years old who had glaucoma in her right eye. The tension was very high, while the left eye was normal. Dr. Abadie did sclerotomy upon two different occasions, with only temporary benefit. Examination showed carious teeth in the right upper jaw, upon the removal of which the tension of the eye became normal.

This does not by any means exhaust the subject, but merely touches upon some of its more important phases. A consideration of the numerous cases in which diseased teeth may be the authors of serious mischief should admonish us to look well after these valuable members and to recommend the services of a good dentist in all doubtful cases.

The author has preferred to omit the rather extensive bibliography in order to economize space.
PRACTICAL SUGGESTIONS IN THERAPEUTICS.

W. D. SHIELDS, M. D., ASYLUM.

The first agent to which I shall call attention is protargol, which is certainly one of the best remedies at our command in cystitis, in solution of one to four grains to the quart of warm water; it dissolves readily, is not irritating, and is non-toxic. It is also valuable in conjunctivitis resulting from infection. Its non-precipitation by solutions of albumin and chloride of sodium make it especially valuable in the treatment of gonorrhea, and its neutral reaction renders it unirritating to the mucous membranes. As an injection in gonorrhea it is used in $\frac{1}{2}$ per cent. solution and in the later stages 1 per cent. It is used by many ophthalmologists in 10 per cent. solution for ophthalmia neonatorum in preference to silver nitrate. In acute conjunctivitis a 2 per cent. solution is preferable to start with, and if required gradually increased to 10 per cent. There is much more that might be said on protargol, but I hope we may get the experience of other members on its further value.

Strychnine is a remedy of unsurpassed value, and which I use almost from the beginning in typhoid fever. It was my privilege, last fall, to meet one of the first general practitioners in this state in a case of typhoid fever; the disease was in its incipiency; he made an examination with the Ehrlich's urinary test and proved the diagnosis. But the thought is that he suggested a 1-20 grain of strychnia to be given every three hours. This plan is in harmony with my experience and belief. Keep up the heart with strychnia. Sterilize the alimentary canal early before there is danger of hemorrhage. Lower the temperature by bathing and washing out the bowel by warm or cold water, according to the fever. Leave off antifebrin, unless it be a very few doses in the beginning, and we
shall not have the cases of heart-failure that were so common a few years ago, when we began with the coal-tar remedies.

Strychnia, if properly used, will take the place of alcoholic stimulants in the convalescence in acute fevers. I have not had as good results with whisky and brandy as with strychnia and nux vomica. Potter says: "Nux vomica is a most efficient remedy in impending cardiac failure from almost any cause. Even with the pulse imperceptible, the extremities cold, and death apparently imminent, the administration of a drop of the tincture (nux vomica) every five minutes has frequently given renewed strength to the cardiac contractions after five or six doses, and initiated an improvement which resulted in eventual recovery." It is by far our best remedy in toxic amblyopia and chronic alcoholism. The nitrate in small doses, hypodermically, is the principal part in all the so-called "gold cures" and it does seem to remove the desire for stimulants.

Acetanalid is mentioned only to be condemned as an antipyretic and also as a remedy for all kinds of headache. I admit that it is an analgesic and mildly antispasmodic, but these properties are sought by the self-prescribing patient and magnified by the counter-prescribing druggist and thus increases its insidious and deleterious effect. The first toxic symptom is cyanosis, resulting from the liberation of free anilin in the blood. Anilin in a measure destroys the oxidizing power of the red blood corpuscles. It is stated that when it has caused death from poisoning, the heart, liver and kidneys have been found in a condition of fatty degeneration. I think it is safe to assume that the frequent use of it for chronic ailments will result in a diseased condition of part or all of these organs. So we should not use acetanalid alone or in combination promiscuously for chronic complaints.

I have had occasion recently to test the therapeutic claims of conium; its action is the production of motor paralysis without loss of consciousness or sensation.
It lessens the excitement in acute mania, by slowing or partially paralyzing the cerebral centers, and also it is efficient in paralysis agitans, by depressing the motor nerve centers. It cannot be continued any length of time, on account of gastric irritation.

In this connection comes hyoscine hydrobromate, which is also a cerebral and spinal sedative as well as a potent hypnotic, and it does not depress the heart action materially. In the most nervous cases of a maniacal character, conium in five to ten drops fluid extract every two hours through the day, and twenty grains sulfonal with 1:100 grain hyoscine at bedtime, will give restful sleep.

Before leaving the subject of hypnotics it may be well to emphasize the almost specific action of the deodorized tincture of opium as a sleep producer in melancholia; beginning with five drops at bedtime and increasing one or two drops every evening until your patient gets good restful sleep. These cases must have sleep.

It has never been my custom to give a remedy in rheumatism simply to relieve pain, but we have one that relieves and at the same time helps to control the diseased condition without checking the secretions. It is salophen. If you have not tried it, you will be agreeably surprised.

Salol cannot be passed by unnoticed. Its reputation comes from its tendency toward sterilization of the bowel. It is reputed to cure rheumatism, but it does not act well in all cases. It acts on the toxic elements and ptomaines in the intestines by setting free car­bolic acid. Hence it is reasonable to believe that the cases of rheumatism in which salol acts as a specific are of toxic origin, as is lithemia.

Lithemia is better counteracted by sodium phosphate than by any other remedy. Why it is, is rather speculative.

As we are all specialists on diseases of children, I give Cowling's prescription rule for children. The quantity is on the basis of 1:24 adult dose for a child
a year old and this adult dose multiplied by the age of the child gives a dram in a three-ounce mixture; thus, for a patient five years old,

R. Strych. sulphas .... grs. $\frac{5}{6}$ or $\frac{1}{2}$
Aque destil. .... q. s. ad. $\frac{5}{2}$ iij

M. Sig.—Teaspoonful after meals.

Alkaloidal medicines are preferable in part, but not exclusively. The strength and therapeutic action is more uniform, dosage is more convenient, and they are more readily used hypodermically.

Our surgery is rapidly becoming almost mathematically accurate, and medical diagnosis, augmented by the microscope, is rapidly following on, but drug therapy is not accurate. Many times we give medicines that are inert. This comes, for the most part, from want of a national standardization of drugs that is authoritative as to definite character, established purity, and regular strength. When this plan is systematized and formulated into a national law, we shall have attained to the highest possible plane professionally. And this plan carried to a logical conclusion will more nearly eradicate patent frauds and all forms of quackery by honest effort, thorough knowledge and positive results, than anything in our power; since it is not possible for us, as a protection to the people, to buy a majority of the legislature and to give the lay press a financial support.

If you will allow another digression, I shall call attention to lavage of the stomach as a therapeutic measure, which is indicated: (1) in excessive acidity of the stomach; (2) constipation due to atony of the stomach; (3) diarrhea resulting from excessive production of mucus in the stomach; (4) obstruction of the intestines from whatever cause; (5) habitual constipation. So says C. D. Spivak, who claims to have made the discovery that lavage of the stomach causes an evacuation of the bowels the next day. I have recently tried this method on a case in the hospital and was surprised at the result. The washing of the stomach
brought away a great deal of mucus; and while wash­
ing daily no laxative was required and the tongue
cleaned up which before wore a foul coating. The
suggestion is worth a more extended trial where it is
indicated.

There is great benefit in colonic flushing in typhoid
fever, and very little is said of it in any of the litera­
ture. It has a threefold action. If there is constip­
ation, it assists in overcoming that symptom; if there
is diarrhea, it aids in relieving it, without checking the
secretions, as does opium; it also lessens the fever
very materially. The reason why the high enemata
relieve these symptoms is obvious when we know the
morbid anatomy. Osler says: “A catarrhal condition
exists throughout the small and large bowel, and to
this is due, in all probability, the diarrhea with the
thin pea-soup-like stools. Associated with this ca­
tarrh there is some epithelial desquamation, " " hyperplasia, which involves the glands of Peyer in the
jejunum and ileum, and to a variable extent those in
the large intestines.” This plan of treatment has
helped more than any other remedial agent in shorten­
ing the course of typhoid fever in my cases. The plan
followed is to begin with small doses of calomel, given
frequently until the bowels move freely, then use all
the water the patient will stand lying on the left side.
Begin with calomel again the next day, and when it
acts use the enema as before, and again the third day
if the symptoms are not becoming less intense. It is
impossible to absolutely asepticize the alimentary
tract without poisoning your patient, but every effort
tending to sterilization of the intestines should be
utilized.

DISCUSSION.

Dr. W. F. Milroy, Omaha: I would like to say a word in re­
gard to the use of strychnine. The point I wish to make is
that it is not given by many in large enough doses. To give
1-60th of a grain three times a day, as is often done, is not
enough to produce the desired effect in cases in which the drug
is really demanded. Used in doses up to the physiological
limit, we get its greatest therapeutic effect, though I would
not use it always in so large an amount as this. I have
seen the greatest benefit in the early stage of pulmonary tuberculosis from full doses of strychnia. I begin with a small dose and gradually increase it, and am confident it can be carried to the limit without danger, if ordinary care is used. I have had a patient take three-fourths of a grain of the sulphate of strychnia every day for three months. I have a patient who has taken it in large doses daily for five years. I believe she owes her life to it. It is of great benefit in typhoid fever, though I would not favor its routine use in every case, particularly at the outset.

I am pleased to hear the doctor endorse the use of cold enemata in typhoid fever. Some years ago I made some rather careful observations with respect to this treatment at Immanuel Hospital in Omaha. I found that almost every person could take at least three quarts of water, when slowly injected, if not at first, after two or three trials. This water, given at a temperature of 50° or 60°, came away at the temperature of the body, and seldom failed to reduce the temperature of the patient from 1° to 3°. The amount absorbed has an exceedingly valuable effect upon the kidneys, and to thus wash out the colon may do good.

Dr. W. D. Shields (closing the discussion): In reply to Dr. Wilson’s statements. I think that by constant watching and observation of patients using the coal-tar products more or less continuously you will find that the statement made in the paper is correct. I was very much pleased to have so competent an observer as Dr. Milroy make the statement that he has on the use of strychnia; also on the use of enemata in the treatment of typhoid fever. They are very powerful remedial agents if properly used.
SOME LOCAL USES OF FORMALIN.

A. B. ANDERSON, M. D., PAWNEE CITY.

I have two reasons for presenting this very short paper for this section. One is the fact that this section, among all found upon our program, is usually the most neglected. The chief reason is, however, that such common conditions as those treated of are frequently very important to the average practitioner; yet they are generally considered of such minor importance that very little is found in medical literature concerning them. It may be that the doctor who successfully treats these little ills really thinks that every one knows as much about them and their treatment as he does and deems the matter of not sufficient importance to put upon record. However, he who is successful in meeting these apparently trivial things will find that nothing of this kind is too small to add to or take from his success in the practice of medicine.

Whether the term "semi-malignant," as applied to abnormal growths upon the skin or mucous membrane, will bear the scrutiny of a critical pathologist or not, will not be discussed in this paper. As long, however, as the exact pathology of malignant growths is a matter sub judice, I think we may be allowed the term "semi-malignant" as applied to those excrescences which have the appearances and characteristics of malignancy. The effect of formalin upon certain excrescences was first brought to my notice by Dr. Horne, of Mt. Ayr, Ia., in 1899. Since that time I have been using this solution to the exclusion of all other applications for the destruction of these growths. To illustrate I will cite a few cases:

Case I.—A small tumor three-eighths of an inch in diameter and raised one-fourth of an inch from the surface. The appearance was that of a bloody wart, but with a smooth round surface, and practically pain-
less. The location was upon the cheek beside the nose. The patient was 77 years old. After frequent solicitations I applied fuming nitric acid, but it soon reappeared and in a little while was as large as before. I was convinced that it was malignant and expected a return whatever was done. About this time formalin was brought to my notice and I thought it worth while to give it a trial. After about three applications it was entirely gone and has not returned in two years; and what is a little remarkable, no sign of a scar remains.

CASE II.—A few months ago an old man asked my advice concerning a small ulcerated spot on the side of the neck just below and behind the ear. It had been coming and going, as he said, for some time, apparently healing and getting sore again. At this time it had the appearance of a small excrescence that was ulcerated on the top. Formalin was applied three times. It has remained healed.

A blind rectal fistula that had resisted pure carbolic acid and tincture of iodine healed with two applications.

Fissure of the rectum is readily cured by rubbing its base with formalin, after cleansing with peroxide of hydrogen.

Any suppurating surface to which it can be readily applied will be stimulated to healthy granulations more quickly than by any other agent with which I am acquainted.

Sinuses, wherever found, can generally be made to close by the use of this agent.

In calling your attention to these points in the use of this agent I may not be giving you anything new; however, we do not hear much about it in books or journals. I trust the suggestions will not be entirely lost.
The object sought in the preparation and presentation of this paper is to stimulate inquiry and clearer reasoning along certain lines of practical therapeutic work, to dispel some of the clouds of superstition, ignorance, and intolerance that now obscure the sunlight of modern science; to find some sure basis upon which we can rest, some criterion by which we may be guided, in the practical application and use of medicinal agents, in the amelioration of suffering among our patrons, and the cure of the diseases that we may be called upon to treat. Such fads, fakes, and delusions as Christian Science, osteopathy, homeopathy, eclecticism, telepathy, clairvoyance, mental healing, spiritualism, and occultism exist because of a lack of scientific knowledge, as a basis of correct thinking, not only among the laity, but even among otherwise well-informed physicians.

We should be so well informed in the general principles and minute details of the physical sciences as to be able to hold our own in argument or discussion, and not cower, like whipped dogs, before the blatant assertions of these most ignorant, brazen mountebanks. We can never hope to win so long as our practice of therapeutics is a compound of empiricism, quackery, and polypharmacy. Some general considerations are here necessary as a groundwork or basis for the principles of a correct therapeutics. I premise the infinitude of time and space, the universality of matter and energy, their correlation and conservation, as well as the scientific principles of general evolution, as taught by all leading scientists of the present century. The persistence of matter is the basis of exact chemistry. The persistence of force or energy is the basis of exact physics. The unity of matter and force, their inseparability, persistence, and universality throughout in-
finite space, is the fundamental cosmic law of the con-
stancy of the universe. In the ultimate analysis of all
things this law is found to be a necessary consequence
of the principle of causality. The universal ether of
infinite space contains within itself the potentialities
of all substance, all energy, and out of which has been
evolved all that ever has been, is now, or ever will be.
Whatever exists throughout the boundless extent of
space, whether it be matter or energy, within the
sphere of our cognizance or beyond it, all are but
transitory forms and productions of this universal
ethereal substance which fills all space in one un-
broken continuity. This universal substance is al-
ways in motion, has sensation, consciousness, will,
life in the lowest degree only, it is true, as we un-
derstand it. There is no such thing as dead matter
or empty space. Matter and force are indissolubly
linked together, and neither can exist without the other.
There is not anything beyond nature. Nature is all
there is, from the modifications and transformations
of universal substance to produce atoms and molecules
of well-known chemical elements, and on through the
countless ages of evolution to and including even the
highest powers of the human mind. Let us at all times
and under all circumstances remember that universal
and eternal law everywhere prevails, and that every-
thing is governed by inherent existing natural law from
which there can be no escape. These universal and
eternal laws discovered, understood, and classified con-
stitute what is properly called modern science, and
enter in as prominent factors in every part of our work
at the bedside of the sick, if we prescribe remedies with
reason and good judgment. If we guess at an explana-
tion of how a remedy acts in a certain case and find this
hypothesis seems to fit a great many facts, we term
this well-proven hypothesis a theory. If this theory
covers all cases of a class that have come, or even that
possibly can come, within the range of our experience,
if it agrees with every one of them, we call that expla-
nation a truth, or a natural law. Truth and fact are
often confounded or used as synonyms, but properly understood they are quite distinct. The fall of an apple is a fact. The law of gravitation or reason why it fell when unsupported is not a fact, but is a truth. Facts are real, and reality is the characteristic feature of all facts, but truth is a quality that can reside in mind alone. Truth exists in thinking subjects only. Truth affirms that certain subjective representations of the object world can be relied upon; that they are deduced from facts and agree with facts. Based upon past experience such truths, laws, or grand generalizations can and should be used as guides for future experience. If there were no subjective beings, no feeling, no comprehending minds, there would be no truth. Facts in themselves, whether they are or are not represented in the mind of a feeling and thinking subject, are real, yet representations alone, supposing they agree with facts, are true.

The object of all the sciences, and of philosophy, is to systematize all knowledge, all the innumerable data of experience, so that we can understand and survey the facts of reality in their harmonious interconnection. Science has long since proven to a demonstration that all things are natural, mechanical, and spontaneous, originating, evolving, and continuing in accordance with eternal law; that nature is all and in all; that there is no above, beyond, or outside of nature, for there never was, and at this day there does not exist, any power in space save that which is inherent in nature itself. By that inherent power all that is has been developed, and all results have extended exactly as far as this power acted. Modern science is monistic, and rejects the dualistic hypothesis, for experience has never yet discovered a single immaterial substance nor a single force that is not dependent on matter, nor a single form of energy which is not exerted by material movement, whether it be of mass or of ether, or of both. The laws of biological development are the same throughout all organic life, and apply not only to the physical body, but also to the brain and mind. Mind
exists wherever living gray matter is found. Every living cell or speck of protoplasm has its own soul or psychic properties, and the psychic life or soul of all that lives, be it plant or animal, is only the sum total of the psychic potentialities of the cells which build up their structure and physiological functions. The soul is a natural phenomenon, a collective idea of all the psychic functions of protoplasm or its derivatives that have been evolved through an unknown myriad of centuries, from lower to higher forms, the beginnings of which are buried in the as yet unknown mysteries of previous planetary time. The words mind, spirit, soul, thought, sensibility, volition, life, designate no entities, and no things real, but only functions, properties, capacities, movements, actions of living substance, which are based upon the material form of existence, and all life, by the law of its being, is subject to change, degeneration as well as elaboration, and, therefore, must return to its primitive condition. A more extensive knowledge of modern science and monistic philosophy would turn our minds away from the cloud-land of metaphysics and superstition, and enable us to bask in the clear sunlight of positive and natural law as revealed by modern scientific methods. In living matter there are no forces; the notion of force results from that of motion. There are only motions or movements of matter. Life, then, is only a molecular, atomic, or ethereal vibration,—a particular modality of motion in matter. Life is a motion of the same nature as other physico-chemical forces, and with them correlative and convertible. Life is manifested by functions which are only the phenomenal expression of this vibration, transformed into physical, chemical, mechanical, or psychical motions. The nature of these motions is most complex. The brain is the particular organ which concentrates all these activities, and which has the power of transforming all sensations into perceptions, into consciousness.

A natural equilibrium of the motions or functions constitutes health, while the disturbance of the motions
or functions—in other words, a marked want of equilibrium—constitutes disease. Disease is at its beginning, therefore, a marked diminution of the so-called vital motion which animates the organism. Anything which disturbs or antagonizes the production of this motion may be the cause of disease. This disturbed vital motion is at first dynamic, or functional, without a material substratum; but later, if not corrected, becomes material, or organic. When vital vibrations are increased to a large extent, the excess is immediately transformed into mechanical, chemical, or physical motions, and the equilibrium is usually rapidly restored. It may be well here to make clear the difference between incitability and excitability. Incitability is a normal increase of functional impulse to a point compatible with a normal growth of substance, and establishes in a permanent manner an increase of vitality. It is produced only by alimentation, and by gentle but prolonged hygienico-therapeutic means. Excitability is the production of increased motions or actions at some points, while there is diminution or decrease at other places in the organism. Excitability is the taking away of motion, power, or function at one place in order to add motion, power, or function at another place. The final result is always detrimental, and is an impoverishment of vitality, though perhaps necessary as an emergency measure. But this excitability must not be long continued, for the borrower spends this loan in other modes of motion and never repays the lender. Therefore, everything which causes a diminution of vital motion is a cause of disease. Vital motion may be diminished by the loss of material substance, as hemorrhages and mucous or purulent discharges. It may be diminished by transformation into other motions, as exercise, moral emotions, or mental work. It may be diminished by changes in environment, such as barometric, hygrometric, or thermometric alterations. All facts go to show that disease, in its initial phase, is always a disturbance that produces a diminution of the dynamic powers, which animates
the organism and compels some unfavorable alteration in the molecular constitution, some change in the atomic or molecular grouping of living matter, thereby changing the form, function, or work of the cells somewhere. Contiguous cells feel this influence, and, later, the general vitality becomes impaired, and unless the equilibrium is soon re-established, modifications of structure as well as function prevail, and organic lesions are established, which in their turn continue to develop other morbid processes, which may continue to extend until death closes the scene. I invite your attention to this dynamic period which begins with the first disturbance of vital motion, and which continues until the appearance of perceptible lesions in the organic matter. These first disturbances of vital motion become in their turn the source of new perturbations, and these later again in their turn give rise to new, morbid phenomena, which again are multiplied. Thus are morbid effects produced, which the patient and physician may see, feel, or discover by their manifestations. These we call symptoms. These symptoms are an expression of a lesion which is purely dynamic in the beginning of morbid conditions, and it is here that therapeutics succeeds best, for it is easier to prevent lesions than to cure them after they have become established. To be able to discover, differentiate, and turn about these primary perturbations, or causes of disease, is the essential requisite of dynamic medication. Thus, excessive elimination, sensibility, or contractability, pain, fever, and spasm, are functional dynamic perturbations. They are accumulations of vital motions at some parts, at the expense of other parts, and the restoration of a normal equilibrium is the essential object of all medication. Castro very wisely says, "Vital motion is modified by every substance which comes in contact with living matter." Hence, medication is often essentially the same as alimentation. Medication may be exclusively dynamic, whereas alimentation is always material. Alimentation implies repair of expended substance. Medication
may be at one time assimilation of matter and at another time only a modification of dynamic influence.

Dynamic changes constitute the primary character of all diseases; hence medicines ought to be modifying agents of vital motion, favorable to a normal and healthy condition. The improper use of medicinal agents too often transforms existing motions into other motions, that thereby increase the loss of equilibrium, and thereby damage vitality or produce a toxic effect. The effect of a medicament proceeds from its action, and while the action may be the same in different cases the effect may vary, due to the susceptibility of the patient or the size of the dose,—in other words, the intensity of action of the medicinal agent. No well person is the same at all times, and certainly no sick person has the same amount of impressionability from day to day, while different patients vary largely in their degree of susceptibility; hence the necessity of a proper and very careful discrimination in the use of different agents, as well as the size of the dose. The size, weight or age of a person constitutes a very imperfect guide for determining a rule of dosage; for a dose that may be tolerated today may not be allowable a week hence. There may be differences in the power of absorption as well as in the different chemical conditions of the fluids of the body, or even differences in temperament, constitution, manner of life, customary food, habits and other environing circumstances. There can be no mathematical calculation of exact sensibility, life motions, or impressionability. A dose, then, is not what is given at once, or in a given time, but is the quantity that will produce a precise effect. The riddles of the universe have not been solved, hence our dosage must always be empirical, and a considerable difference may always exist between the quantity given and that which acts—differences in retention, solubility, and absorption. A dose may then be said to be the quantity of a medicament which acts, or which produces a determined action. Frequency of repetition should always depend upon the intensity of the morbid phe-
nomena. The more rapid the course of the disease, the greater the necessity for repeating the medicine, until the desired result of a decided character is manifested. Since it is impossible to calculate the active portion of any dose whatsoever, if we desire to obtain results we should give small and frequently repeated doses until the effect is obtained. Small doses, that the desired intensity be not exceeded; frequent doses, that we may have ready absorption, rapid elimination, and be able to watch the results, and cease the medicament when the desired effect is obtained, and that no harmful results ensue from a too excessive action. I am fully aware of the large number of diseases caused by toxines and microscopic organisms, as well as those produced by environment and a violation of those physiological laws, the obedience to which is most conducive to health. The principles I would enunciate apply equally as well to one as to the other; for if we know how to interfere effectively we can cut short the subsequent phases of disease.

The toxic agents not only need to be neutralized, and the microscopic organisms destroyed, but vital motion needs to be incited and tissue resistance strengthened, and this can best be done in the early or dynamic stage of diseases. Later, when the dynamic perturbations have been transformed into lesions of substance, the disease is much more tenacious and liable to become soon insurmountable. For example, take variola. As soon as we are able to recognize the nature of the disease we proceed to destroy the multiplying germs and arrest the natural evolution of the morbid process, thereby reducing the duration and severity of the disease. Abundant evidence is at hand to show this may be done by giving calcium sulphide, which, when pure and well prepared, will mitigate the severity of the disease. Remember, this must be given during the dynamic period, that is, the stage of incubation, and prior to the organic stage, or stage of eruption. Beneficial results may be obtained after the stage of incubation is passed, but the general principle is true, that the earlier the treat-
ment is begun the better results will be obtained. Calcium sulphide, eight or ten grains per day of twenty-four hours, given in divided doses, and in severe cases reinforced with soda salicylate, two grains every hour, will give surprising results. Take syphilis, which when properly treated during the stage of incubation, or prior to the so-called explosion or eruption of the secondary stage, and the whole disease may be aborted, jugulated, or cut short and no secondary eruption ever appear. The same thing may be said of pneumonia, or whooping-cough, or any other acute disease. Some physicians are so ignorant as to say the disease has not yet begun in these cases. You should know that morbid action begins the very first moment the infectious germ enters the system, and the prevention of further evolution of the disease depends wholly upon the prompt arrest of that morbid action and the complete destruction of the micro-organisms causing such morbid action. We have been taught for years that all these so-called infectious diseases, as measles, mumps, variola, scarlatina, etc., have a definite period of duration, and cannot be abridged. It is time, however, that we begin to learn better things. We are all willing to admit that antitoxin is not only curative, but also a preventive when used before or during the early or dynamic period. So it is with most cases of disease when seen in their early stages.

Let us not forget the fundamental principles of physics, chemistry, and physiology, and their applicability in all stages of disease. Let us remember that disease is a difference in potential somewhere, and to equalize and harmonize these molecular and atomic perturbations is the first grand essential of a correct medication. This is easily done in the dynamic stage of diseases, more difficult when organic changes have taken place, and quite often insurmountable when the disease is far advanced and the dynamic perturbations have been transformed into lesions of substance. When a disease has been checked, or when the limit of degeneration of tissue has been reached, and elaboration
or reparation of tissue has begun, the physician must still interfere, especially to furnish that which the organism lacks rather than to modify it. He then furnishes a liberal supply of those substances which are necessary for organic repair, such as iron, arsenic, phosphorus, lime, etc., which are complementary to alimentation; also by means of others, such as caffeine, guaranine, brucine, strychnine, etc., agents which increase the sum of vital energy that is necessary for the complete repair of the tissues and forces.

Lest this paper be burdensome by its length, I will conclude by saying that altogether too many drugs are used by the average physician in treatment of diseased conditions; that antitoxins, serums, and germicidal agents should be used in all infectious diseases, and other drugs as a rule be used only for temporary purposes; for to me the highest and best form of medical treatment is that method which to a large extent leaves drugs out of all consideration, for very largely that which is necessary to keep the health is all-sufficient to restore health. In the use and discrimination of drugs, to jugulate diseases in their early stages or to mitigate their severity in later stages, or to incite nutrition and favor elaboration and a return to health, science, reason, and common sense all affirm that pure, accurate, definite agents, namely, alkaloids, when obtainable, are far superior to the older methods of polypharmacy and crude drugs. Not that alkaloids are the only agents to be used, but that they have their place and, being far superior to crude and mixed preparations, should be more largely used. Since presenting my paper at Kearney, Neb., in 1889, on “The Jugulation of Acute Diseases,” I have been abundantly pleased with my success in the use of alkaloids, and, so far as they are in use, I employ them to the exclusion of old and crude remedies. I invite your most earnest criticisms of the principles here set forth.
Strontium enters into three different salts and occurs in nature chiefly as sulphate and carbonate. It is a yellow metal, specific gravity 2.5, malleable, but harder than lead. Its use in medicine is due to Laborde's demonstration in 1890 that its salts are not poisonous in ordinary doses, and in certain cases beneficial.

The official salts of strontium are strontium bromide, made by dissolving strontium carbonate in hydrobromic acid; strontium carbonate iodidum, made by evaporating a solution of strontium hydrate in hydriodic acid, and strontium lactate, made by dissolving freshly precipitated strontium carbonate in lactic acid.

Of the three official salts, I will refer to the bromide only, calling the attention of this body more to the importance of this drug in the treatment of epilepsy than to its utility as a general remedy in nervous disorders. Strontium bromide is a colorless, transparent hexagonal crystal, very deliquescent. When heated the crystals at first melt and then lose all their water (which is 30.4 per cent.). The anhydrous salt fuses at 630° C. or 1,166° F. It is odorless, bitter, saline in taste, of neutral reaction, soluble in water at 15° C. in proportion of 1.5 parts. It is readily soluble in alcohol and ether. The bromide of strontium has made a very marked impression upon some noted practitioners during the past year and much has been written of its use during that period.

Edward H. Squibb, Jr., M. D., of Brooklyn, has collected a symposium of published information concerning the use of this drug, from which publication I quote at length:

"Dr. Antony Roche, of Dublin, Ireland, has made quite an extended study of strontium bromide in the
treatment of epilepsy. He has been publishing his results from time to time since 1894 and now gives some further notes on the use of this remedy wherein he states: 'I have not met with any case in which the bromide of strontium, given in the doses and method I will mention, has failed to diminish the number of attacks. In many instances there has been no return for periods extending to two, three and even four years. Some of the cases may be considered “cured”; that is, that there will be no return of the attacks when the medicine is permanently left off. I cannot say definitely that this is so, for the reason that I always recommend the patient to continue the medicine even though there has been no return for a long period. I do this all the more as I have not found the continued use of the bromide of strontium to be followed by any bad consequences, and many of the patients have been taking one drachm daily without intermission for more than three years without any complaint. In this respect the strontium salt has an immense advantage over the potassium salt, which has frequently produced serious physical and mental changes when continued for long periods; moreover, patients taking bromide of potassium frequently suffer from intense depression. Several of my patients were obliged to leave it off owing to this; in fact several expressed their feelings by assuring me that they would rather suffer from the fits than from the depression produced by the medicine. I have not noticed this at all in those using the bromide of strontium. The potassium, too, is poisonous in large doses; the strontium is not.

"In my earlier cases I gave bromide of strontium combined with one or more of the other bromides, but for a long time I have given that of strontium alone. I usually commence the treatment by ordering half a drachm night and morning in some vegetable tonic infusion. Should that dose not control the attacks, I rapidly increase it till I have found the quantity which will suit the individual case. I direct
the patient to take 30 grains at once in those cases where there is any warning of the attack and to repeat this every hour if required. By this means I have no doubt the attack has been frequently prevented. I may repeat that in my experience, in order to get the full benefit of the medicine, I have found it necessary to give it in large doses and to continue it for a long period.

"When I remember the results produced by other modes of treatment, and the unfavorable prognosis given by all writers upon this affection, I cannot help but think, from its safety and success, that it is worthy of extended trial."

Dr. Edward H. Squibb, Jr., commenting on Dr. Roche's paper says: "My own experience with the strontium salt as compared with the potassium is distinctly in favor of the former; most of my patients had been treated with the potassium and certainly in diminishing the number of attacks and in so small number preventing their occurrence in the absence of depression, the strontium salt has given me remarkably successful results."

I quote the favorable opinion of these well-known practitioners upon the use of this bromide in the treatment of epilepsy with the hope that their endorsements of its beneficial results will lead to its more general use by the profession. I have found this salt beneficial in all cases where bromides are indicated and for some time past have used it almost to the exclusion of the other bromides.

During three years of hospital practice in which I treated upon an average over 40 cases of epilepsy daily and upon whom I expended about all the remedies recommended by the authorities in the treatment of that disease, the bromide of strontium proved by far the most efficient remedy. I have a record of 60 cases that I treated daily for a period of 130 days with the bromide of strontium alone, which record shows a very remarkable reduction in the number and vigor of the convulsions. During that period there
were no cases of depression, mental or physical, no loss of appetite, no acme, no untoward symptoms of any kind whatsoever arising from the daily use of the remedy. Each case, however, must have individual attention. The bowels must be regular in their action, due attention must be paid to the secretions and excretions, to the food and the habits of the patient as is demanded in his or her particular case. The dose of this salt for an adult is from 10 to 30 grains and owing to its deliquescence should be given in solution. The preferable solution is one to which has been added a bitter tonic, the one I nearly always use being the tincture of columbo.

While this paper treats almost wholly of the use of this salt in the treatment of epilepsy, I trust that what has been said therein may prove beneficial in this at least that investigations will follow in other paths. While probably not so cheap as the bromide of potassium, it is more potent in results and, moreover, absolutely safe.

DISCUSSION.

Dr. M. L. Hildreth, Lyons: The treatment of epilepsy is one in which we are very much interested. I once thought all epilepsy could be cured; that was when I first began to practice. I had very hopeful views on the subject. In a few years I became much depressed concerning the treatment of epilepsy. This paper has brought a train of thought to my mind. I have not regarded the bromides as curative of epilepsy. I want to ask the doctor his opinion on this. He has had more experience in cases of this character. I do not know as to the safety of the strontium salts as compared with other salts. I regard the general management of the individual case, as regards habits of life, hygiene, diet, elimination, baths, etc., as of more importance than simply crushing down the explosions, which are merely a symptom. If the strontium salts will do what Dr. Dearing thinks it will, without the disadvantages of the other bromides, it is certainly a wonderful advance. I am going to try it.

Dr. J. M. Aikin, Omaha: I want to endorse every word of Dr. Dearing's paper. Bromide of potassium depresses the patient and interferes with the assimilation of foods. I am very much interested in Dr. Dearing's report. There are so many preparations that we do not have time to give them each a test. The ugly effects of the bromides are very troublesome. The disagreeable effect on the skin is hard
to overcome. I seldom use the "Brown-Sequard" mixture, greatly preferring the strontium bromide, when bromides are indicated.

Dr. W. F. Milroy, Omaha: Some years ago I was talking with Dr. F. M. Powell, superintendent of the Institution for Feeble-Minded Children at Glenwood, Ia., concerning the curability of epilepsy. He related that at the last annual meeting of the superintendents of institutions such as his a gentleman stated in a paper that epilepsy was curable and that he had cured three cases. In the discussion he admitted that one of his cases was still living and the others had died of epilepsy. The disease had returned. In his studies of autointoxication Bouchard has shown that among the many elements that contribute to make up the multiple infection which we call uremia the salts of potassium are among the most important. They are forty times as toxic as sodium. If so small an amount of these as is derived from retrograde metabolism in the body is dangerous when not eliminated, it should not cause surprise that ill-effects follow the exhibition of enormous quantities such as were used in the effort to cure epilepsy by bromide of potassium. If this salt of strontium is as Dr. Dearing has told us, it well merits our careful study.

Dr. R. C. McDonald, Fremont: I have had some little experience with the bromide of strontium, and I believe that it has a great advantage over some of the other bromide salts. I wish to testify to the efficacy of strontium bromide, especially in gastric troubles, gastralgia, and some forms of dyspepsia.

Dr. Greene, Asylum: I am in hearty accord with Dr. Dearing. I think we are too prone to give bromide of potassium. I regret the tendency of the medical profession to make a prolonged investigation of a case of epilepsy without immediately proceeding to give relief. Epilepsy is a habit spasm. A convulsion is a familiar phenomenon. Epilepsy is a sudden and violent explosion of the motor psychic. It cannot be epilepsy without the loss of consciousness. This can usually be traced to some peripheral irritation. The convulsions are often due to irritation of the digestive tract.

Dr. Dearing (closing the discussion): I am glad that this paper of mine has aroused this discussion. If there is a single disease which confronts the general practitioner with horror it is epilepsy. If this paper of mine has aroused thoughts on the treatment of epilepsy that will result in good to the epileptic, then I will conclude that my paper has not been in vain. I covered the points raised by Dr. Greene by stating that each case should be treated individually. Every case of the disease has a cause of its own, and each is affected differently. I do not claim that the bromide of strontium is a specific or "cure-all" for epilepsy, but it has been a good remedy in my hands, and I commend it to the profession with the hope that it will be used in those cases where its use is indicated.
INFLAMMATION OF THE SIGMOID AND COLON.

R. D. MASON, M. D., OMAHA.

For several years I have been impressed with the idea that too little attention is paid to the various inflammatory conditions of the large intestine. One reason for this is due to the fact that lesions located here, especially if in the sigmoid, are hard to diagnose and harder still to treat. Diagnosis is difficult, because but little can be determined by physical examination, and subjective symptoms must be relied upon mainly to arrive at correct conclusions. The chief symptoms are diarrhea and abdominal pain, but pain is often not a prominent factor except in acute cases. Diarrhea, however, is always present, varying in degree according to the severity of the case and whether a simple inflammation or an ulceration is present. If simple, acute, or subacute inflammation be present, the stools will contain no blood, but will be very frequent and watery; if ulceration be present, blood and shreds of membrane will be passed. The stools often number fifteen to twenty-five a day, and in many cases the desire to empty the bowel is constantly present. In addition to the above prominent symptoms there will be well-marked constitutional changes; as loss of flesh, sallowness of the skin, and general weakness. Owing to the large amount of watery elements extracted from the blood, there is considerable disturbance of the circulatory system, including palpitation, weak, relaxed pulse, and shortness of breath. The general weakness and apparent lung trouble leads the practitioner to suspect tuberculosis, and although the tubercle bacilli cannot be found in the sputum, the bowel symptoms point to intestinal consumption, and many patients have died with this diagnosis that might have been saved had a correct knowledge of their trouble been arrived at.
It is sometimes very difficult to make a differential diagnosis between ulcerative colitis and tuberculosis of the intestine, but in the latter disease there is often well-marked lung lesions that may readily be detected, although this is not always the case. The most marked evidence of intestinal tuberculosis not found in ulcerative colitis is irregular fever, loss of flesh, sometimes constipation, anorexia, and profuse sweating, especially at night. The main symptoms, however, are so nearly identical in both diseases that it is often difficult to distinguish between them. Dr. Matthews, in speaking of these cases, says: "The patient drifts from bad to worse, and after a while is a confirmed invalid. May it not be for want of proper treatment? Many cases of diarrhea or dysentery I am certain would find an explanation if the sigmoid were searched. Indeed, I have treated many cases and carried them to full convalescence that had gone the rounds for chronic diarrhea or dysentery. In all such cases I would suggest that the flexure be explored and treated and many will clear up."

I fully concur in the above statement and feel sure that I have cured several cases that would have died had the treatment by internal remedies, as usually carried out, been continued. In addition to the methods of diagnosis already mentioned, we can arrive at an absolutely correct knowledge of the conditions present if the disease extends into the sigmoid, as it usually does, by using the sigmoidoscope and electric light.

As already stated, treatment is very difficult and hard to carry out; but the difficulties are due more to lack of detail and technique than to actual obstacles to be overcome. Remedies given by way of the stomach are nearly all absorbed and lose their efficacy before the seat of the disease is reached, and those used as injections do not in many cases reach high enough to come in contact with the diseased surface, especially when the transverse and ascending colon
are the parts affected. In an article published in the Journal of the American Association by Dr. Wm. Norbert Sullivan, entitled "Colostomy for the Cure of Amebic Dysentery," the author describes a case in which all the ordinary remedies, including high injections, gave no relief. The patient was having from eight to twenty bowel movements a day, and had become so exhausted that there seemed to be no hope of recovery. At this point a right inguinal colostomy was done and the entire colon flushed daily with a solution of pyrozone. Improvement was at once begun and the patient made a complete recovery. The inguinal opening was allowed to remain four months, when it was closed by operation. In an editorial of the same journal the editor speaks very favorably of this method of cure, and says it shows "forcibly the value of physiological rest in treatment of a diseased organ." This operation has been done for the cure of amebic dysentery and other inflammatory conditions so few times that its value has not been fully demonstrated. I believe, however, that it is an operation that in the future will be resorted to more often than in the past and that it will be the means of saving many lives. It has been my misfortune to have charge of quite a large number of these cases, some of which have been cured, some benefited, and others receiving practically no relief. I believe that all could be at least helped if they could be made to carry out the prescribed treatment, but owing to the difficulty of doing this at home it is seldom attended to. Patients should invariably be placed in a hospital and informed that it will require many weeks and possibly months to effect a cure. I will briefly describe two extreme cases that were under my care.

Case I.—Mr. A., a very large powerful man, was without any apparent cause taken ill with acute dysentery. Under treatment he partially recovered from the acute symptoms, but the discharges, while diminished in number for awhile, gradually grew more
frequent until he passed fifteen or twenty daily. Large doses of opium and camphor would check them for awhile, but the relief was only temporary. His physician diagnosed the case as intestinal consumption, but there was no family history of the disease and no other symptoms to indicate it. When he came under my care a large amount of blood, mucus, and broken down membrane was being passed. I began high injections, passing the tube twelve or more inches in the bowel and washing out with mild astringents, as fluid hydrastis, pinus canadensis, etc. Some improvement was noticed, but not much, and the patient soon after died. I feel sure that this man had no disease except that of the mucous membrane of the colon, and had a colostomy been done to give the diseased part rest, he would be alive today.

Case II.—This in its early history is nearly a duplicate of the other. Shortly after the disease was well under way I was consulted by an uncle of the patient, himself a very able physician, and advised treatment, which was carried out in a very incomplete way for awhile and then abandoned. The patient having some knowledge of drugs now began treating himself. This he kept up for nearly a year, growing steadily worse. When he came under my care he was simply in a deplorable condition, having from eight to twenty passages daily, containing a large amount of blood and shreds of membrane. I had the colon flushed frequently with plain boiled water at about the temperature of the body. For two weeks a mixture of iodoform, bismuth subnitrate and almond oil was deposited as high in the bowel as possible and allowed to remain. This was used twice daily. This was alternated with astringents and an occasional weak solution of ag-nitrate. Treatment has been kept up by the patient at his home for about four months, with constant and steady improvement until he is practically well. Being an intelligent man and realizing the fact that he was going to die unless he gave the
matter serious attention he has carried out my instructions very carefully.

There is considerable skill required to give a high injection. As usually given but little, if any, more than the rectal pouch is filled, when desire for an evacuation becomes so urgent that it cannot be retained. This, of course, does no good. The patient should be placed upon the side with the hips elevated and a long rectal tube carefully introduced as far as it will go easily. When an obstruction is reached a little water forced gently through the tube will usually relieve it from the folds of membrane in which it is caught, and it can thus be pushed on until it passes the sigmoid and the end lies in the descending colon. If now the fluid be allowed to flow very slowly to the upper part of the colon first, the rectal pouch will be filled last. This, of course, prevents all desire for an evacuation until the large bowel is nearly or quite full. By removing the rectal tube from the attachment to the syringe or irrigator, the water can now be allowed to flow out and a fresh supply introduced, thus filling and emptying the entire colon so that the medicine used has been brought in contact with all diseased tissue. A tube made for washing out the stomach with an opening in the end is better than an ordinary rectal tube, as the latter is too short. Any intelligent person can be taught to do this properly, and while it requires a good deal of work, the seriousness of the disease and the results that may be expected will fully repay the patient for his trouble; but, as stated before, they should be sent to a hospital if possible.
TRAUMATIC ANEURISM, TRUE AND FALSE.

A. F. Jonas, M. D., Omaha.

Traumatic aneurism, as commonly understood, means a large arterial coagulum formed by the escape of blood from an artery which has sustained a traumatism, by means of a gunshot, perforation or laceration; an incision by a sharp instrument producing a puncture of the vesical coats; the laceration of the vessel after cicatricial formation; contusions destroying the integrity of the arterial wall, so as to cause necrosis of its coats.

Objections have been urged to the use of the term "traumatic aneurism," owing to the absence of an aneurismatical sac. An aneurism as commonly understood means the yielding of one wall, usually all, of the vascular coats, forming a pulsating, compressible, spindle or sac-shaped enlargement; a sac formed by the dilatation of the wall of an artery filled with blood. By accepting this definition it certainly is a misnomer to declare that a hematoma is an aneurism, formed, as it is, as the result of an injury to a vessel wall which permits the escape of blood, forming an ill-defined mass, beginning at the point of injury and diffusing itself in various directions, its form depending on anatomical limitations of the structures in or near which the artery courses. The mass itself is composed of a coagulum more or less firm, depending partly on the limitations offered by the perivascular structures in which it forms, and partly on the size of the artery from which it springs. Its firmness depends on whether the coagulum is recent or old, and, if old, on the presence or absence of infection. Should the coagulum remain aseptic and not be too large, it might be displaced by a granulation process and absorption. If large, its central portion may undergo liquefaction, its periphery being bounded by a granulation zone. Should the coagulum be infected,
suppuration would ensue and an abscess would be the outcome.

Comparing the pathology of what we commonly designate traumatic aneurism with true aneurism, we can find little analogy, except that both concern the vessel wall; the one is a dilatation, containing blood, the other a defect, an opening in the vascular wall; the one a sac, the other a circumscribed or diffused blood-clot outside the vessel wall. If an aneurism means “to dilate,” any condition which does not affect the arterial diameter is not an aneurism. Taking into consideration, first, the etiology, second, the resultant changes, it will appear that the term “traumatic aneurism” is not a good one and should be abandoned. But this term, like many others, crept into our nomenclature at a time when the pathology was not understood. Long-continued usage, however, has given the term under consideration a firm place in our terminology, and it seems difficult to replace it by a more comprehensive and specific one. Naturally the question arises, how did such a misleading term gain such a fixed place—how could the condition for which it stands have been so misnamed? Thinkers and observers existed in all times, in medicine as well as in other lines of learning. When we investigate the entire subject of aneurism, it may not be so difficult to understand why the earlier observers, although under a mistaken inference, may have drifted into this error. We find that as chief predisposing factors, are vascular atheroma, syphilis and gout, which modify the integrity of the vessel tunics. A direct cause, an undiminished or possibly increased blood pressure. The older clinicians observed, often, that when a traumatism occurred in the presence of the aforesaid predisposing factors, the term traumatic aneurism suggested itself. And while the conditions of atheroma and syphilis and gout did not attract attention as one of the links in the chain of cause and effect, the fact remained, an aneurism had developed after the application of an injury. Later, when vas-
cular changes were better understood, it was noted that an aneurism did develop in a healthy blood-vessel after the infliction of a trauma, as is attested by the following cases which came under the observation of the writer:

**Case I.**—T. B., aged 35, farmer, who gave the following history: He had never been ill enough to consult a physician since he passed through the diseases of childhood. One year before he came under observation, while unloading a piece of machinery from a wagon, the full weight of the object, with its sharp edge, settled upon the middle portion of the thighs, more on the left than the right, and remained there two or three minutes before he was relieved. He had considerable pain at the points of contact which were marked by two discolored areas of contusion, one on each thigh. All discomfort passed away from the right in a few days, but the “soreness” in the left thigh remained. Three months later he felt with his finger a distant throbbing at the point of soreness. Gradually a circumscribed pulsating, painful swelling developed on the lower anterior aspect of the left thigh.

On examination of the otherwise robust muscular subject there was found a pulsating, dilating, compressible, lemon-sized growth, located at the junction of the lower with the middle third of the left thigh, on its anterior and inner surface. The closest examination as to vascular or organic disease was negative—clearly a case of aneurism after injury of the femoral artery. In this case needling, by introducing needles long enough to pass through its entire cavity, and allowed to remain a week, to produce blood coagulation, was ineffectual. Under chloroform anesthesia the femoral artery was ligated with silk, which was followed by a complete obliteration of the sac.

**Case II.**—J. D., aged 30 years, clerk by occupation, of robust health, free from all constitutional taint, was stabbed with a knife in the middle portion and anterior aspect of the thigh. There was little bleed-
The wound healed promptly, and the young man went about his work. In two or three months he became conscious of a throbbing in the thigh under the site of the cicatrix. He consulted a surgeon who diagnosed a spindle-shaped aneurism of the profunda. A ligation was recommended and carried out by means of a catgut ligature. Relief from the throbbing and pain was immediate, but began to return in one or two months, when he came under the writer's observation. On examination the profunda was found to have increased to nearly treble its normal size; it was tender and on finger contact a distinct vibrating thrill was perceptible; on auscultation a marked bruit was heard. A fusiform aneurism was unmistakable. The catgut ligature had no doubt, for a time, produced vascular obliteration, but becoming absorbed too early, canalization of the cicatrix had taken place.

That this aneurism was produced by the puncturing instrument injuring the vascular wall, but not completely penetrating, there can be no doubt. The diagnosis of traumatic aneurism could not be objected to. From injuring one or two of the arterial tunics to penetrating all of them seems only a step. That a large hematoma that has formed after a penetrating wound of an artery may occasionally assume some of the characteristics of an aneurism, and may have led earlier pathologists to designate traumatic hematoma as traumatic aneurism, is shown by the following case:

**Case III.**—J. C., aged 24 years, farmer by occupation, of athletic build. Came under observation at the Douglas County Hospital in June, 1898. He stated that when he was fifteen years of age he fell, striking the left buttock, which was followed immediately by a swelling involving the greater portion of the gluteal region and extending upward and forward, its extent being limited by the crest of the ilium. This swelling was firm, painful and of a dark blue appearance. In the course of three or four months it almost disappeared, leaving a brownish
pigmented color, and some thickening of the integument. He suffered from no inconvenience, was able to perform all kinds of labor until a few days before his admission, when, after a severe strain, he felt pain in the same region and he observed an increasing swelling involving the entire site of the former lesion. On examination, a bluish, doughy, fluctuating swelling was made out occupying the outer aspect of the left innominate bone and extending to a distance of two inches over and below the point of the great trochanter. This mass was believed to be a hematoma resulting from a rupture of the gluteal artery.

Operation.—Under chloroform anesthesia, and after the usual antiseptic preparations, a long incision, completely dividing the skin and subcutaneous structures with one stroke, laid open the cavity; after quickly scooping out a mass of blood-clots, a large gauze tampon was forced into the bottom of the wound, and with it pressure was maintained for about one minute. The tampon was removed, and while the wound margins were widely separated with retractors, a hemorrhage was discovered coming from a single point about midway between the trochanter and the posterior superior spine of the ilium, which was clamped and tied. This vessel proved to be the gluteal artery. On further examination a cavity was found corresponding to the swelling as before described. The walls of this cavity were smooth and appeared to be lined with a distinct membrane, which could in parts be dissected away. After a thorough flushing the wound margins were approximated with silkworm-gut sutures. A tubular drain was placed in the most dependent part of the wound. A large hygroscopic, antiseptic dressing completed the surgical procedure. The healing process was uneventful.

This case was unique in that a lesion dating back nine years, which seemed to partly disappear, had re-formed after a second trauma, a hematoma having no doubt formed after the first injury. The periphery of this hematoma seemed to have undergone an in-
flammatory process. A granulating zone no doubt developed; this zone becoming displaced by a mass of connective tissue formed what appeared like a limiting cyst wall. This cyst was composed entirely of fibrinous tissue and it was intimately adherent to the contiguous structures. Its interior contained no epithelium. The original hematoma had become liquefied and had become absorbed. The blood-clots and lymph-masses found at the time of the operation were of recent origin. The striking feature was the limiting wall, illustrating an encysting process, particularly of a hematoma that originated from the injury of an important blood-vessel. It is not difficult to understand how similar conditions noted by earlier investigators may have given the foundation for the term "traumatic aneurism," because a sac that communicated with an artery and contained blood was found. When, however, we consider a true aneurism whose walls are a part of the blood-vessel, we must at once abandon all claims for an aneurism in our third case, from the fact that the limiting wall never had been a part of the arterial lumen, but was a new growth thrown out for the purpose of limiting the confines of the primary hematoma.

Briefly reviewing the foregoing cases we must admit to our nomenclature,—

1. True traumatic aneurisms, which are unmistakably the result of traumatism inflicted on a blood-vessel, modifying its integrity.

2. A limiting connective tissue wall may develop around a hematoma which is the result of an injured blood-vessel and may or may not have a communication with the blood-vessel. Such a condition in no sense is an aneurism. The formation is entirely extrinsic and never was a part of the arterial wall, and therefore should not be termed an aneurism.

3. A recent hematoma, resulting from an injury to an important blood-vessel, whose limitations depend on anatomical boundaries, has even less claims than an encysted hematoma to the term aneurism.
A better term would be traumatic arterial or venous hematoma. It will be in the direction of scientific accuracy to exclude from our terminology, “traumatic aneurism,” all conditions which do not conform to the definition, viz., a sac formed by the dilatation of the walls of an artery, filled with blood.

DISCUSSION.

Dr. B. B. Davis, Omaha: I had not intended to take part in this discussion, but I would like to have the doctor tell us where he ligates.

Dr. A. S. von Mansfelde, Ashland: There is another side to the work of Dr. Jonas. He ought to be congratulated for the distinctly scientific turn he takes. We are apt to lose sight of the fact that the practical surgeon gets the benefit of the labors of the scientist done in his chamber, and of the midnight oil consumed in the laboratory.

Dr. H. P. Hamilton, Omaha: I heard most all of the paper, both from a scientific and practical aspect. From a scientific aspect it is something rather interesting to note the length of time existing between the formation of the tumor and that in which the rupture occurred. It appears to be a little difficult to understand just what changes have taken place. There is no doubt but this cyst was formed at the time when the hematoma was. The other portion of the paper I am in accord with.

Dr. A. F. Jonas (closing discussion): In making use of material for the purpose of writing a paper, manipulation of the matter depends upon the purpose of the paper. The chief reason for using the material as I did, was to make a practical application of the actual conditions as formed in the detailed cases. It is exceedingly important to know in a given case whether we have to deal with a mass of blood contained in an actual sac, like a true aneurism, or whether we have a mass of blood that has escaped through an injury to the vessel coats, or from the end of a divided vessel, whose boundaries depend on the limitations of adjacent structures. In the first condition we can proceed deliberately to find the blood-vessel involved and apply our ligature. In the latter condition the technique may be complicated. The surgeon cannot definitely decide on the technique until he has scooped out the blood-clot and ascertained the exact nature of the injury. The chief aim of my paper has been to make a definite distinction between true aneurism and injury to the vessel wall, and drop the term traumatic aneurism in those recent cases where there is an absence of a wall that is a part of the arterial coats.
SOME RECENT CONCLUSIONS IN REGARD TO APPENDICITIS.

BYRON B. DAVIS, M. D., OMAHA.

A paper on so trite a subject may be pardoned when it is explained that this is the first time the writer has offended by a written line about appendicitis. What I have to say is based entirely on my personal experience, and the conclusions have been formed as far as possible from what I have observed without regard to what has been done by others. So much has been written on this subject and from such a diversity of standpoints that the young physician must find it difficult to decide how best to handle his cases.

Some would subject a man to the tortures of the inquisition if he does not advise operation in every case, regardless of the condition, as soon as the diagnosis is made. Others, with equal show of authority, would condemn all this, and call it an outgrowth of the modern operative mania. Some even claim that appendicitis is curable by internal medication alone, and that it is in no sense a surgical disease. Truth often lies between the two extremes.

Few diseases require the exercise of a higher order of mature judgment to determine exactly when operative intervention is called for. The difficulty in the way of sooner getting the treatment of appendicitis on a good working basis seems due to the very great difference in the severity of the disease. One man may see several light cases treated medically recover from the attack and wrongly conclude that this constitutes a permanent cure and that these few cases establish a universal law. Another may happen to have seen only serious cases which have ended fatally, and when he sees a case or two recover after operation he infers that all should receive immediate operative treatment. Still another has seen
several successive cases operated on at a too advanced stage, followed by death, and then has treated a few slight cases which survived the attack; and he becomes convinced that operation kills the patients and internal medication will save them. The strictly operative surgeon is not apt to see the lightest grade of cases; all that he meets seem to call for surgery, and he is likely to ridicule his medical friends who report numerous cases that have gone safely through the attack. Thus opinions are moulded by the character of cases one happens to have seen most of. Man's proneness to generalize from too small a number of observations has been a stumbling block, and has led to much conflict of opinion.

That my opinions have been reached by any better route I cannot hope. But they have been forced upon me through many stormy experiences with all grades of appendicitis, from the most trivial attacks to the most rapidly fatal fulminating cases. As is only natural, my opinion of the best treatment of the disease has been steadily though slowly shifting. Formerly I thought my patient's best interest was served if operation was delayed until really ominous symptoms developed. I shrugged my shoulders when men were heard to advocate very early operative intervention. By the logic of events I have been forced little by little to abandon this position. Every step in this change of position has been contested, for men do not easily give up their preconceived opinions.

It took a long time to convince myself that we cannot know the amount of pathology about the appendix by the symptoms. The man with chiefly theoretical knowledge of the subject may attempt to construct an exact pathological picture before the abdomen is opened. After doing this a few times he grows tired of guess-work and is content to admit his inability to know all that is occurring within the abdomen by the objective and subjective symptoms of the patient. As his theoretical knowledge be
comes practical it loses much of its cock-sureness. Every surgeon with a large experience knows that often when, by the symptoms, an easy operation with slight pathological changes would seem most probable, he finds a condition of the greatest gravity. On the other hand, when serious symptoms have led him to anticipate great difficulties, the pathological findings have been so trivial that it would be hard to convince a novice that the grave symptoms could have been the result of the slight changes in the appendix.

But because of inability to make an exact diagnosis of the condition by the symptoms does not convince me that all cases should necessarily be treated in exactly the same manner. Every item of evidence must be weighed and given its due importance. Every symptom making up the complete picture must be given its true perspective. Of the cardinal symptoms, vomiting, pain, rigidity of the right abdomen, fever, and pulse-rate, each should receive its proper interpretation. In several of the worst cases there has been practically no change in temperature or pulse-rate, but vomiting has been persistent and pain severe. It is in these cases that the greatest difficulty is often experienced in convincing the patient and his friends, and sometimes the attending physician, that operative intervention is imperative; that it is not safe to wait for fever and a rapid pulse.

I cannot better illustrate the difficulties met during the first forty-eight hours of an attack than by citing a recent case seen less than twenty-four hours after the first symptom. The patient was a young man who had never had any appendiceal symptoms until the morning before I saw him, when he suddenly experienced severe pain in the region of the umbilicus and above it, followed by nausea and repeated vomiting. His bowels had been freely moved, but the nausea and vomiting had continued, the pain was only partially controlled by large doses of morphia, there was extreme rigidity of the right rectus mus-
cle, tenderness on pressure at the McBurney point, but the temperature was only 99° and the pulse full and strong at 84; absolutely no gaseous distention. Earlier in my experience with appendicitis this temperature and pulse would have lulled me into inaction. What more natural than to conclude that this almost normal pulse and temperature meant that there was not much inflammatory action going on about the appendix? Yet there were other symptoms which weigh much more than the pulse and temperature. In fact, if we could be content to ignore entirely the pulse and temperature during the first twenty-four or forty-eight hours of an attack of appendicitis, and pay attention more to the gastric symptoms and pain, it would be to our own and our patients' advantage. In the case cited I reasoned that the excessive vomiting meant great peritoneal irritation, due to tension of the peritoneal covering of the appendix or to an already beginning peritonitis. The supersensitive abdominal brain was crying out as vigorously as possible that danger threatened. My working basis here is that whenever a patient with beginning appendicitis vomits more than once or twice, operation should be done as soon as possible, without regard to the other symptoms. Vomiting, if persistent, is a true danger signal and should never be disregarded.

The persistent pain of which this patient complained, and which was eloquently expressed in his face, added to the feeling that haste was necessary. He was at once removed to Immanuel Hospital and immediate operation performed. Not an adhesion was found. The appendix was nearly four inches long and distended with pus to the point of rupture. So great was the tension that it stood straight up, protruding through the incision. Three-quarters of an inch from the free end was a gangrenous spot the size of a silver dime, ready to perforate. The appendix was amputated at its base, the stump buried, not a drop of pus being allowed to escape.
The wound was closed by layer sutures and the young man made an uninterrupted recovery, being allowed to go to his home in Iowa seventeen days after the operation. Had operation been delayed a few hours the pus would have been scattered to the four corners of the abdomen, with probable death following operation.

This is an illustration of a class of cases frequently encountered. I have come more and more to disregard the pulse and temperature during the first day or two of an attack and to give increased importance to pain and vomiting in estimating the severity of the attack. Of these latter pain is subjective and to some extent dependent upon the temperament of the patient; vomiting is objective, and after the stomach has once been emptied continued emesis is of the gravest omen. I do not believe that vomiting is necessarily dependent on beginning peritonitis. In the case reported there was no peritonitis, but the appendix had at least five times its normal circumference. This tremendous stretching of the delicate fibrils of the sympathetic was doubtless the cause of the persistent vomiting.

In cases seen during the first forty-eight hours after the beginning of an attack I reason in this way: (1) If the disease is progressive, an operation now is much safer than it will be to-morrow; (2) if at a standstill, or apparently receding, immediate operation is no more dangerous than a week or a month from now; and almost all are agreed that after one or more attacks an interval operation is imperative. But inasmuch as we have no means of knowing early that an attack is not going to be serious, to wait for an interval operation is to run an unnecessary risk.

The prompt man who gives his patients the benefit of timely operation sees such good results that he is an enthusiastic believer in operation. The man who is hostile to surgical intervention does not call a surgeon until he sees that it is his only resource, and because of the delay in operating his cases show
a high mortality. As a result, he is likely to become still more hostile to operative treatment. If we could only fully realize the truth that it is not the operation that kills, but the pathological condition antedating the operation, it would be a great point in advance. Just as long as operation is looked upon as a last resort, a high mortality must be expected. I have never operated on a case of appendicitis when I felt that the operation had been too early; it has often been too late.

When cases are first seen after the third day of the attack the same methods are not used in arriving at a conclusion whether to operate at once or to advise delay. By this time the grade of the severity of the attack is usually decided. At this stage, cases, for convenience, may be grouped into four classes based on the gravity of the condition:

(1.) Those who are plainly through the worst of the attack and are frankly convalescent. The pain is less severe, or has entirely subsided, though slight tenderness persists at McBurney's point; the nausea and vomiting have long since ceased and appetite is returning; there is no gaseous distention, and the rigidity of the right rectus has ceased to be noticeable; the temperature and pulse are normal, or nearly so. Such cases may safely be left for an interval operation, which should be insisted upon as soon as all signs of the disease have passed away,—the patient meanwhile being kept in bed and on a liquid diet.

(2.) Those whose symptoms are distinctly less severe than at first, but some of them persist to an extent not seen in the first group. Among the notable symptoms often found persistent are abdominal distention, considerable pain and tenderness at McBurney's point, a degree or more of fever, or a pulse that remains persistently above normal. Often with one or more of these symptoms a tumor in the right lower abdomen or dullness on percussion may be made out. Such cases are usually operated on at once. Most of them will recover from the attack un-
der careful medical supervision and could be somewhat more satisfactorily operated on after subsidence of all of the acute symptoms, but delay can safely be permitted only when the patient is under the strictest care and with everything in readiness for an immediate operation should any of the symptoms become graver. Unless this strict surveillance can be relied on no delay should be thought of.

(3.) Those whose symptoms are progressively becoming graver. The pulse and temperature are getting worse; the pain persists; vomiting, which may have been in abeyance, returns; abdominal distention is increasing; a tumor or dullness may be present. When any or all of these symptoms are met immediate operation is imperative, though the post-operative prognosis is far from good. The mortality will be less, however, than when reliance is placed on a continuance of medical treatment. If a careful history is elicited of the early hours of the attack in this group of cases, it will usually be found that the first twenty-four hours were marked by persistent vomiting and severe pain, but not much fever or increased pulse rate. The danger signal was out and was unheeded, and the most favorable moment for successful operation was allowed to pass.

(4.) Those who are moribund, or nearly so, characterized by regurgitant vomiting; great abdominal distention; a rapid feeble pulse; a high or subnormal temperature; great pain or, more often, an ominous absence of pain; and the inevitable facies of a patient in the last stages of a septic peritonitis. An operation here is ill-advised, will hasten the inevitable fatal termination, and bring surgery into disrepute, leading others to refuse timely operation. Ante-mortem operations on such cases are justly being less practiced as knowledge of their futility increases. It is unfortunate that the gravity of the condition of cases that recover is sometimes magnified in the reports published, thus extending a hope for favorable results from operations in the class of
cases I have endeavored to describe,—a hope alas! never realized.

Briefly the line of procedure advised in the various forms of appendicitis is as follows:

1. In all cases of chronic appendicitis and those who have had one or more severe attacks, or two or more light attacks, an operation is indicated.

2. In simple cases of appendiceal colic without severe pain, no vomiting, no fever and no rise of pulse-rate, immediate operation is not imperative, though the appendix should be removed at earliest convenience after the attack is over.

3. In acute attacks seen during the first forty-eight hours, accompanied by persistent vomiting, severe pain and rigidity of the right rectus abdominis, immediate operation should be done whether there be much fever or rise of pulse-rate or not.

4. In patients seen after the third day of the attack, (a), if distinctly convalescent, operation may be postponed until the acute symptoms fully subside; (b), if not distinctly convalescent, but with an amelioration of all the acute symptoms, immediate operation should be done; the operation may be delayed if the patient can be closely watched and is in suitable surroundings for an immediate operation should there be an exacerbation of the symptoms; (c) in patients becoming progressively worse, but not yet moribund or nearly so, operation done at once will save more patients than can be saved by other means; (d) moribund patients should be allowed to die without operation.

DISCUSSION.

Dr. W. O. Henry, Omaha: We have heard so much of appendicitis that a good many get tired of it, but I am glad Dr. Davis has taken up the subject and has treated it so conservatively. The dictum offered four or five years ago, that every case must be operated as soon as seen, is not that of to-day. Some of these cases get better without operation. from medical treatment alone; and some, when seen by the surgeon in the acute stage, have already reached the point where it is safer to wait than to operate. The most important thing of all in medical treatment of acute cases is to give anatomical and physiological rest to
the bowels. Keep the patient quiet until the acute attack has passed over. I recently had a rather unique experience. A boy, 11 years of age, had acute appendicitis and was brought to me for operation, and after letting out the pus and removing the appendix, he did very nicely. Just as he was getting well, his elder brother, who had suffered from an acute attack some six months before, and from which he had apparently fully recovered, decided to have an operation and get rid of this annoying membrane. I put him in the same ward as his brother and removed his appendix, which was unusually long (about five or six inches), adherent at the tip, and contained a large concretion near its attachment to the cecum, thus bringing good conditions to easily develop an acute attack. Both nicely recovered and went out the same day.

Dr. W. S. Gibbs, Omaha: I am glad to learn that it is not always the operation that kills the patient, but that it may be the appendicitis. A good many cases get well that are never operated upon, at least such has been my experience. I have seen a case where the surgeon had lost the opportunity to operate. The patient recovered. If allowed to recover, they will do so in a great many instances. Most cases will recover; I believe all cases would recover if operated upon early enough. I do not believe it is necessary to operate upon all cases. I have no case in mind but what if operated upon very early and skilfully, the patient would have recovered; but we do not see all cases early. As a rule, if the case must be operated upon, the earlier the better; but I believe that there is a time in every acute case at which the patient would die under an operation. If there is intense and extensive inflammation, it has been my observation that it is a bad time to operate. We should remember that operating upon such a case does not remove the germs from a great deal of the tissue which necessarily remains. When they are in this state, they should be treated medicinally, and may recover either partially or completely. If partially, they may be operated upon with a great deal more certainty of success than when the inflamed tissue is cut into. The physician’s duty is to take such cases and control the inflammation, that is, restrain the intensity of the disease until the acute stage is past. In a majority of cases this can be done. The surgeon should remember that he does not see all the cases of appendicitis; many are never seen by him. No doctor should say that every case of appendicitis should be operated upon.

Dr. C. C. Allison, Omaha: In addition to the usual surgical reasons for operation upon the appendix there are two features which, in my judgment, carry considerable weight as indications for operative treatment: First, the anatomical location of the appendix is not uniform. Should it be upon the external aspect of the cecum, it is in a conservative location, because it is essentially in the corner of the abdomen and protective adhesions more readily form; but should it be upon the internal aspect of the
cecum, or located at the apex of the cecum and dip over into the pelvis, the inflammatory process is more deeply seated and adhesions are less efficient as protective barriers, because they must practically surround the septic appendix. Secondly, we have no certain method of determining the nature of the bacterial fauna in a given case, and should a mixed infection or a streptococcus inflammation exist danger increases in proportion to the time the inflammation has existed. It is these uncertainties which should resolve the doubt in an uncertain case in favor of an operation. Dr. Fowler says: "Few cases require operation during the first twenty-four hours, and yet, unless favorable symptoms develop at the end of that time, most cases should be operated upon." One reason why diversity of opinion exists upon this subject, especially in an abstract discussion, is, that we fail to take into consideration all of the symptoms in a given case. In the hypothetical case which we discuss we are apt to draw our conclusions from the pulse-rate and the temperature, but fail to analyze the condition of the abdominal muscles, the facial expression, condition of the skin, state of the bowels, and, above all, we sometimes fail to note the sum total of these symptoms and their relation to each other.

Dr. H. M. Heppel, Beatrice: While my experience has not been as varied or as extensive as some others, still I have had a fair proportion of such cases during the past two years. I am not fully in accord with the doctor's statement, that it is better to let bad septic cases alone than to operate upon them. It is a most difficult matter to say exactly where the line should be drawn. I recall several cases that seemed entirely hopeless that made good recoveries after operation. One in particular, a young man, 21 years of age, was taken about January 15, 1901, with violent pains in right hypochondriac region which lasted about twenty-four hours. The following day he was removed to his home, four miles in the country. His physician diagnosed the case as appendicitis, and suggested an immediate operation. The family objected, the patient's condition became most critical. The abdomen contained pus and was so swollen that the pressure interfered with the return circulation in the right leg until it was enormously swollen and dark. When I saw the case in consultation the outlook was very gloomy, his condition was such that I seriously doubted the expediency of an operation. Still there was no alternative that held out the slightest hope of recovery, so I advised the operation, which was performed the next morning. I found the lower half of abdomen filled with pus; the lower six inches of the colon so gangrenous that I could only break up the adhesions and thoroughly irrigate and pack the infected parts with iodoform gauze. There were several fecal openings in this part of the bowel, and all his fecal passages came through the incision. He was delirious for almost three weeks, when he began to slowly improve, and in the course of eight weeks was able to be up. At this time he is entirely
well. I will not enter into the details of a similar case which came under my observation some time before this case whose history I have related. I always feel that where there is only one chance, however slight, it is our duty to give the patient the benefit of that chance.

It is my opinion that many of the cases which are sacrificed to the fetish of conservatism might have been saved had they been operated upon in time. Of course there is that other extreme whose invariable alternative is an operation, no matter what the case or the indications are, one is detrimental to the interest of those whose health it is our duty to conserve, as the other. I believe that when the operation is performed in time we should save at least 95 per cent. of all cases operated upon, whereas if we resort to radical measures only as a last resort we will do well to save 10 per cent. of our cases.

In cases of catarrhal appendicitis it requires considerable skill and judgment to decide upon the best plan to follow. About a year ago a man came to me, aged 42 years. He had been suffering from stomach trouble for three years. He had myasthenia gastrica, with all its troublesome and annoying symptoms. He failed to improve upon medical treatment. At the beginning of his trouble he had a severe pain in right hypochondriac region, which continued without interruption for a day, and remained sore for several days after. Palpation revealed to me a sensitive spot in this area, and I decided that all this subsequent trouble was due to conditions set up by the primary attack. He consented to an operation, and when the abdomen was opened I found that about half of the appendix had sloughed off, while the remaining half, though not inflamed, was adherent posteriorly. It was removed and the patient recovered from all his symptoms.

Dr. B. F. Crummer, Omaha: I feel very uneasy until I get my case in the hands of a surgeon. The great question in the early stages is the diagnosis. Where there is a little doubt about a case, we put off our consultation twenty-four hours when it ought to be not more than an hour. It is certainly a fact that a good many practitioners take an arbitrary standpoint.

Dr. A. S. von Mansfelde, Ashland: I think that the strongest possible point has not been touched upon. We all have been taught in the colleges that if there is any suspicion of pus anywhere, to "go for it." If the case is a bad one operate, and put that case in a different class when you count up your cases for statistical purposes. When the person is dying, let him die in peace. That was the position taken by the doctor in his paper, and not that he would advise abandonment of operable cases. When you are not quite sure what you have, call in an expert surgeon and let him decide what should be done and let him do it. The medical adviser is certainly not supposed to know when to operate, but he surely should know when he is no longer competent to safely take care of a case; then it is his duty promptly to call in the surgeon and let him be re-
sponsible for what he finds. Remember always that the presence of pus admits of no delay, and that its presence, or strong suspicion of its presence, imperatively calls for its removal.

Dr. Wm. Berry, South Omaha: I will say an article written by Dr. Robert Abbie, mentioned by Dr. Jonas, published in the Medical Record of New York, has made the subject very clear to me. I have had a great many cases, and have found that in early childhood I can tide the majority of them along under medical treatment. I have also taken a good many cases up to Omaha and have had them operated upon. I am glad to say the surgeons there have always been successful. The concretions and contractures that have been present in the appendix shows to us very plainly that in some we may treat with medicine and think they are cured. Sooner or later they reoccur. Four or five years later they come to the surgeon and require removal. The question of curability relates to the restoring of perfect physiologic functions. I repeat, in the words of Dr. Robert Abbie, "The sooner a diseased appendix is removed the better for our patient."

Dr. B. B. Davis, Omaha (closing the discussion): I may have seemed dogmatic in my statements, but it was not intended in that way. A person's own convictions might seem dogmatic. If the inflammatory trouble all subsides, I conclude that the inflammatory process has been arrested. If a man can determine if a case is perfectly cured, I want to hear from him. Dr. Gibbs is inconsistent. He believes in operations in some cases. He says that he does not believe in early operations, and little later he says that he does not believe in late operations. A light attack goes through without operation. About the time the case looks fatal the family wants consultation. The surgeon is called in, and if the case is not moribund the surgeon will operate. The physician accuses the operation of being the cause of the death. There is one point in regard to not operating under twenty-four hours. In the great majority of cases we do not expect to operate under twenty-four hours, but there is one symptom, and that is persistent vomiting, that should not be ignored for a moment. If vomiting is persistent operation should take place at once. In regard to this general subject we cannot lay down any rules. I may look upon this in an entirely different way in ten years from now.
FURTHER OBSERVATIONS ON INTRASPINAL INJECTION.

FREDERICK RUSTIN, M. D., OMAHA.

The history of spinal puncture and spinal cocainization has recently been much studied and is well known to us all. This is so, perhaps, for the reason that a problem to use some substitute for the general anesthetic is always an enticing one, and this method, consequently, has attracted notice to a substance which was thought to answer the purpose. Even a few months ago the value of spinal analgesia was an indefinite quantity. At that time brief reports were gathered and the matter had not gained sufficient foothold to prove whether the plan was advisable or not. So much has been written lately, however, both for and against the spinal route, that many are testing from their own empirical knowledge the value of the system. As a result, more and more cases are being added to the list of statistics, and these, in a way, tend to prove or disprove the worth of the method. Goldan, of New York, and Murphy, of Chicago, were among the first, in this country, to present in a logical way the history and report of the cases of intraspinal injection of cocain. The first to make this new method possible was Corning, of New York, who in 1894 by his experiments found that he was able to allay painful conditions of the spine and to produce analgesia by injection of cocain. His procedure, however, was submeningeal instead of subarachnoid, so that the little cocain that got into the arachnoid space was due to the circulation more than the local injection.

Following Corning's steps came Quincke, who devised his system of lumbar puncture. This had no relation to anesthesia, however, other than giving a hint to inject into the subarachnoid space rather than into the submeningeal, as did Corning. Possibly profiting by this, Bier, in 1898, performed the first
operation successfully by the intraspinal method. He was followed by Tuffier, and gradually the system extended itself so that now the method is being investigated all over the medical world.

The physiological action of cocain does not seem to be the same when injected into the spinal canal as when introduced into some other part of the body. For instance, we do not as often get the dilatation of the pupil; there is little or no period of excitement. The effect on the pulse is not as marked, and the feeling of the sometimes present nausea is delayed. For the complete detail of the physiological action of cocain when the spinal method is chosen, you are referred to the Journal of the American Medical Association, J. B. Murphy, February 9, 1901. As to the preparation of the drug, injection, etc., see Goldan, Medical News, November 10, 1900, and Philadelphia Medical Journal, November 3, 1900. The method, as a whole, does not seem to be as satisfactory as chloroform or ether, for several reasons: First, the patient being conscious is apt to be in such a nervous condition that the operator is seriously handicapped; second, sensation, while destroyed to a certain extent during the incision, is not destroyed during traction, such as is made in every laparotomy; third, possible injury to the spinal cord itself, which now seems to be of relatively frequent occurrence and is almost as dreaded as death itself.

The advantages in some cases when ether and chloroform can not be given are marked, and to this class of cases it seems that this method will finally be restricted. Before giving a detailed report of the cases it would be well to take up briefly the anatomy of the spinal cord. The cord with its membranes and ligaments forms a mass which is surrounded by the vertebral column. It extends from the upper border of the atlas to the lower border of the first lumbar vertebra. It terminates below in the conus medullaris, which descends a short distance as gray matter into the filum terminale of the pia, and this descends
into the center of the cauda equina to the upper part of the sacrum; consequently when an injection is made as a rule between the fourth and fifth lumbar vertebra, one-half to three-fourths of an inch to the side of the median line, it will be seen that the point is below the conus medullaris and directly over the cauda equina. This is the point of election. The patient is placed in a sitting position, and the needle inserted; when it passes through the spinal canal, there is an escape of cerebro-spinal fluid. I usually withdraw in a graduated glass an amount of spinal fluid equivalent to the amount to be injected, usually from 10 to 18 minims of a 2 per cent. solution. By this means it is hoped that intraspinal pressure will not be increased by the injection of the drug. From sixty to ninety seconds are usually used in the process of injection. The physiological effect and the preparation of the drug have already been referred to. The cases which I wish to report are not given in detail, but are grouped according to their classification, with a short account of each group. The classification is as follows:

**Group 1.—Appendectomy, four cases.** Three of these operations were in the interval and one acute. The average time for analgesia was twelve and three-fourths minutes. Each injection was successful, and there were practically no symptoms in any case. The patient experienced no pain; there was no dilatation of the pupil during the entire course; no nausea. Some thirst, which was satisfied with water, with no further vomiting. Pulse slow and regular after the excitation of the operation has disappeared. The acute case in this series was operated upon in the most unfavorable environment and I report it simply for the benefit of the information it may give us. I could get no one whom I could willingly trust with the chloroform or ether. I made an attempt at spinal cocainization, and obtained a most happy result. There was absolutely no pain and the operation was performed practically without an assistant. Cases of this kind
are constantly before us, and I believe it is a step towards the light when we use this method as an attempt to help us out in a possible exigency such as mentioned.

Group 2.—Vaginal puncture for pelvic abscess, two cases. Both cases were done painlessly, the only inconvenience being due to the heavy traction on the speculum. In one case analgesia was produced in nine minutes. In the other twenty minutes was needed. In each case severe nausea was experienced for eight to twelve hours, post-operatively. Whether due to the cocain or sepsis I could not determine.

Group 3.—Varicose veins of the leg. These were extensive, extending from a point four or five inches below the saphenous opening to the calf of the leg. Anesthesia was produced in fourteen minutes, and persisted for thirty-five minutes. No pain was experienced during the excision of the veins, but the anesthesia began to terminate toward the end of the operation, slightly, the patient offering an occasional complaint when the prick of the needle was experienced during the closing of the wound.

Group 4.—Amputation of the great toe. Injection was made in the same manner as above stated, but after thirty minutes no analgesia was present. A second attempt at puncture was made, and after twenty minutes no anesthesia was present. The solution was then injected subcutaneously into an assistant and its local anesthetic properties proven. The patient was then given chloroform, which he took nicely.

Group 5.—Amputation of leg. This was also a failure. Only one injection was used and the physiological dose was given. No constitutional symptoms were present, nor was anesthesia. On account of the condition of the patient it was not deemed best to try a second injection, consequently chloroform was given and the operation completed.

Group 6.—Vaginal hysterectomy. Analgesia was produced in eleven minutes. Operation was com-
pleted in twenty-five minutes. Patient complained of no pain excepting discomfort caused by her position. Slight nausea during the operation, but none after. Two hours after the operation the patient complained of intense thirst, also a burning pain in the pelvis, the pain being at first referred to the nymphæ and later leaving this region and extending more deeply into the pelvis. This persisted for several hours till relieved by morphine.

**Group 7.—Herniotomy, two cases.** In neither case was the spinal method successful. Only one injection was used in each case, and after a delay of thirty minutes chloroform was given in one instance and a local injection of cocain was used in the other. In the latter case, shortly after the cocain was injected subcutaneously, the patient developed a mild delirium, followed by syncope and acceleration of the pulse. An injection of strychnine was given to relieve the condition and there were no unfavorable after-effects.

**Group 8.—Large ovarian cyst.** Anesthesia was produced in fourteen minutes. The incision through the skin into the peritoneal cavity was made with practically no pain. When the cyst was evacuated and traction made upon the cyst wall the patient gave evidence of pain and syncope. It was impossible to proceed without administering ether. Whether this latter condition was real or due to nervousness it is difficult to say. It shows, however, the inconvenience which may arise during the use of this method, not only to the patient, but also to the operator, when he finds it necessary to administer a general anesthetic after the abdominal cavity is open.

**Group 9.—Cholecystotomy, two cases.** After a delay of thirty minutes in each case there was apparently no anesthesia produced above the level of the umbilicus, and the anesthesia below the umbilicus was practically nil. To carry on the operation chloroform was administered in each case.

**Group 10.—Fibroid of uterus.** This case was similar to the above reported case of ovarian cyst, in the
fact that a small incision was made through the abdominal cavity with but little inconvenience; but manipulation of the tumor caused a train of symptoms necessitating the exhibition of a general anesthetic.

In summing up the results of sixteen cases reported, it will be seen that eight cases, or 50 per cent., were successful, six were failures, and two were partially successful, in view of the fact that the incision was made through the abdominal wall with no pain, although the completion of the operation necessitated another anesthetic. The successful cases required an average of thirteen and one-third minutes before anesthesia was produced.

Diverging slightly from the surgical field, it may be of interest to report two cases of labor in which spinal puncture was resorted to. Analgesia was produced speedily, but there was apparently no effect upon either the frequency or the force of the labor pains. There possibly was a diminution of the force of the abdominal muscles, so that exit of the head was more easily governed than is normally the case. I report these cases simply because there has been much written on the oxytoxic effect of cocain upon the progress of labor. The two cases here show no effect, except the sensory one. The method, as a whole, has not been sufficiently tried to give us an accurate idea of the chances of fatality. Tuffier reports one fatality and Keen another, while there have been reported several cases of paralysis subsequent to the spinal puncture. In my own experience there have been no fatalities traceable to the injection, but in one case the patient complained of numbness of both feet and legs, which still persists, now five months after the operation. Many of the failures to produce anesthesia are largely due to faulty technique, to improper preparation of the solution or to a poor needle. Barring, however, these conditions it does not seem, from what has already been learned, that this method will either supplant chloroform or
ether, and that the field for its use will be decidedly limited.

DISCUSSION.

Dr. A. F. Jonas, Omaha: I am interested in spinal anesthesia. I think it has a very limited application. While my own experience has been limited, I had ample opportunity to observe Tuffier's cases in Paris last summer. We find nearly all of the post-anesthetic symptoms, vomiting, nausea, sometimes high temperature. Muscles are not relaxed; on the contrary, they are often very rigid, interfering very much with gaining proper access to the field of operation. The consciousness of the patient is undesirable. The fact that a man or woman is conscious of the progress of an operation often produces great excitement. In my own practice I limit spinal anesthesia to those cases where general anesthesia is contraindicated.

Dr. W. O. Henry, Omaha: I think the doctor's report is more encouraging than it will be two or three years from now. While there may be a limited field for cocainization of the cord, it is very much more limited than the essayist seems to think. Only a short time ago I was in Chicago and talked with Dr. Anderson, who has used it in a number of cases, with two fatal results. He is very much disheartened with it and says he will not use it again.

Dr. Rustin (closing discussion): Before writing this article I wrote to New York to several men whom I knew were using this method, thinking that their experience would be of value on account of the abundance of clinical material. I have not incorporated their views in what I wrote, but they seemed almost unanimous in the opinion that this method would not supplant a general anesthetic and would be used but little. They thought that the chances of paralysis when the spinal route was chosen were greater than the chances of death from either chloroform or ether when these anesthetics were used. Nitrous oxide and ether seem to be safer than any anesthetic so far used. It is impossible to arrive correctly at the chances of fatality by the cocain injection. Many who favor this method may possibly attribute death to the operation and not to the cocain, while many who are unfavorable to it may attribute death to the cocain, when surgical shock is really the cause.

Failure to produce anesthesia may be due to the preparation of the cocain. It may be old or inert. Then, again, the injecting needle may be so large that when it is withdrawn it will permit a certain amount of cocain to escape from the subarachnoid space out into the other tissues. This failure, of course, becomes less and less as the needle is improved and the bevel made longer. The gold needle is very favorable, as it does not rust. The more practical and cheaper one, however, and one that answers the purpose very well, is the platino-iridium needle. It was with this needle that most of my punctures were made. Too
much cannot be said about asepsis in this procedure, as there is no operation where it should be more carefully observed. The physiological effects vary in their mode of appearance, particularly in the anesthesia. This may be first noticed in the feet, or in the pelvis, or in the chest. In fact, there is no definite rule. I believe the greater proportion, however, show that the feet are first affected and that the anesthesia is preceded by a sense of numbness and tingling. One case that interested me particularly as to the appearance of the anesthesia was a case of acute appendicitis. The patient had the typical position, lying on his back with the knees and the thighs flexed. He had been unable for several days to assume any other position than this without great pain. About three minutes after the injection was made he voluntarily extended his legs and remarked upon the fact that this was the first time that he had been able to do this since his illness had occurred. Five or six minutes later the anesthesia began in the lower extremities and extended upwards. In this case I believe anesthesia presented itself first in those parts surrounding the appendix and the abscess cavity. My personal experience in these cases has been limited, but, from what I can determine by correspondence with others, and my own observation, I do not believe it will hold a place in surgery, other than a substitute when both chloroform and ether are positively contraindicated.
INTERNAL DERANGEMENT OF THE KNEE-JOINT.

CHARLES C. ALLISON, M. D., OMAHA.

Displaced semilunar cartilage with its attending complications has usually been regarded as synonymous with internal derangement of the knee-joint. This interpretation was especially emphasized by Hey, who, in 1803, first described this lesion. By those (e.g., Koenig) who look upon this condition as secondary to tuberculosis, osteoarthritis, or to antecedent trauma, the term subluxation has been employed to cover this somewhat indefinite disablement of the knee-joint. The real pathology may be more accurately told by analysis of the intra-articular conditions which are followed by the fairly uniform group of symptoms now accepted as those of internal derangement.

Symptoms.—The symptoms are sudden severe pain in the joint, with complete fixation or sharp limitation in motion in a slightly flexed position. Effusion into the joint follows. The muscles are rigid, and should the semilunar cartilage be displaced, the tenderness will usually be most marked over the anterior border of the internal disc, which is the one most often dislocated. A depression may be felt at this point also, yet this symptom is by no means constant, since the cartilage may regain its natural position or the early effusion may obscure this point. While these symptoms in the majority of cases suggest a displaced semilunar cartilage, they may be clearly simulated by (a) the impingement of marginal folds of synovial membrane between the bones, or (b) by loose pedunculated bodies within the joint, or (c) by the bruising of the peripheral edge of a semilunar cartilage and its attachments without displacement, but with the result of a prompt local effusion of blood and inflammatory exudate which acts as a foreign body between the articular ends of the bones. This latter condition was
first described by Mr. Wm. H. Bennett, who has analyzed 200 cases of internal derangement (Lancet, January 6, 1900), all of which were personally treated. The diagnostic feature of the latter lesion, as pointed out by Mr. Bennett, is that should the sudden disablement be due either to a displaced semilunar cartilage, to a loose body, or to a nipped fold of synovial membrane, ability to completely extend the leg is at once regained with a spontaneous or mechanical reduction to its normal position of this displaced tissue, regardless of which of these conditions it may be. Inability to completely extend the limb, on the other hand, will be found in a comparatively frequent but mild class of cases, and should complete extension be accomplished with some force the joint will spring back to moderate flexion. Recovery of function, and particularly of complete extension, is a gradual process and is due to absorption of the fixed exudate about the margin of the joint.

The interpretation of the pathology affords a guide of value, not only in the diagnosis, but in the treatment; also, since repeated and especially forceful efforts at reduction in the Bennett joint must add to the inflammatory exudate and impair the integrity of the cartilage, and through trophic influences, the muscles which preside over the function of the joint.

Treatment.—The treatment includes rest, manipulation, massage, mechanical support and operative procedure. Efforts toward replacement of a dislocated cartilage should be gently attempted, first by flexion of the leg, followed by rotation outward of the tibia for the internal cartilage, or by inward rotation for the external or less frequently displaced disc; this passive motion should be followed by extension of the joint. In the event of failure of reduction, and more especially where complete extension cannot be easily and permanently accomplished, rest should be secured by fixation, alternating with massage, the object in view being to hasten absorption and to maintain the tone of the muscles and ligaments. The employment
of massage must be done without rotary movements, since it is this motion which has effected the original displacement, and to further inflict this movement would by its irritation increase the effusion. Mechanical support is indicated in cases giving a history of recurrent displacement of a disc or synovial membrane with symptoms of a mild character wherein the integrity of the joint is not threatened but the repeated displacement becomes inconvenient.

The operative treatment, which must be classed among the most delicate of major operations, seems justifiable when (a) the disablement is not amenable to the simpler methods, (b) where restoration to useful functions is tedious, and (c) when the condition is attended by a notable relaxation of the tone of the ligaments and capsule of the joint proper. Exposure of the joint is best accomplished by a MacCormac incision, which is longitudinal and is about one inch internal to the patella. Probably it is not at this time necessary to emphasize the importance of asepsis and hemostasis, yet we believe failure and disaster will follow operative treatment upon the knee-joint on account of a smaller departure from exact modern surgical methods, than would result from the same imperfection in almost any other surgical operation now undertaken.

The operative cases which the writer has personally done are two in number. The condition within the joint were strikingly similar in these two cases. Both contained a small amount of blood, reddish-brown in color, and in both a detached portion of the semilunar cartilage had been reduced to a sodden, rounded, brown colored mass, freely movable within the cavity of the joint. The edges of the adherent portion of the disc were covered by unhealthy granulated tissue and the synovial membrane was stained by the blood which had evidently been in the joint for a considerable time (both were chronic recurrent cases of long standing). The blood and loose foreign matter was removed and unhealthy granulations were gently
curetted and the joint flushed with hot saline solution; drainage was employed for forty-eight hours, fixation being maintained for six weeks, except during the employment of massage. We would not recommend irrigation in every case, but would feel that it is more especially indicated when there has been a hemarthrosis for a considerable period. The replacement and suture of a semilunar cartilage after recent dislocation has been recommended; but this operation does not appeal to us with great force, in view of the satisfactory outcome which follows less heroic measures.

We would summarize that (1) the internal derangement of the knee-joint should suggest: (a) dislocated semilunar cartilage; (b) the impingement of a fold of synovial membrane between the ends of the bones; (c) presence of a floating cartilage or joint mouse; (d) contusion of the margin of the semilunar cartilage, with swelling and infiltration of blood at the site of their attachments. (2) These conditions can usually be differentiated. (3) The treatment is rest, massage, mechanical support, gymnastics, and operative. (4) The operation should not be undertaken without carefully analyzing the case, and usually only when the other measures have failed.
TWO CASES PRESENTING UNUSUAL FEATURES OF BONE DISEASE.

F. A. LONG, M. D., MADISON.

Case I.—A seven-year-old boy was brought to me with acute osteomyelitis of the tibia, all the symptoms, such as pinched features, great suffering, rapid pulse and high temperature, and intense swelling of the limb, indicating to my mind a severe and very destructive process. The incident occurred several years ago, and I give it from memory; but the point I wish to bring out will not suffer thereby. The boy had been sick only four days when I saw him, and pus could not be detected, but the tumefied and glistening appearance of the limb left no doubt as to the proper procedure indicated in the case,—free incision, which was suggested and declined by the father for the time being. Two days later I was enabled to satisfy the parents that pus was within reach, and the incision was made through the periosteum and considerable very foul pus evacuated. A sealed antiseptic wet dressing was applied to the entire limb and changed daily. There was very little relief from the suffering following the incision, free drainage and antiseptic dressings, and it soon became apparent that the destructive process was still active, and that further surgical measures were needed if the boy's limb and perhaps life were to be spared. Several days more were lost in efforts to convince the parents of the necessity of opening the bone to get freer drainage, and when consent was obtained it must have been at least three weeks from the onset of the disease. Under chloroform anesthesia the shin was exposed for six inches, and on inspection the worst fears were realized, for all the bone was necrotic, with the periosteum separated from it. It broke down very readily, and on gaining access to the interior of the bone it presented a mushy appearance. By scooping
and irrigating, the greater part of the shaft of the bone was removed. So discouraged and disgusted with the prospects were we that I told the parents that the boy were better off if his leg were amputated at once, and I concluded the operation without finishing the cleansing-out process as I should have done. Besides the head and lower extremity of the bone there was very little, if anything, left but periosteum. The cavity was packed with iodoform gauze, the leg bandaged antiseptically, and a posterior trough-like extension splint applied to the entire limb. I had the opportunity of dressing the limb only five times in the next eighteen days. The sepsis subsided, his general appearance improved, the discharge assumed a better appearance, and the periosteum began to granulate nicely; but I could see no hope for the boy's leg in a family of such shiftlessness, when he needed the best care a hospital could afford. The next thing I heard was that the people had loaded their belongings in emigrant wagons and, like the Arab, had silently stolen away in the night. Of course, I supposed the boy had long since lost his limb or become hopelessly crippled; and my surprise may be imagined when told by the boy's grandmother, an intelligent and very observant person, about a year ago, that she had visited the family in this city; that the boy's limb is restored; that there is no apparent shortening, no lameness, no open wound, and that the limb is straight; and that the boy has not been under the care of a physician on account of his limb since we operated on it, in 1894. The regenerative power of the periosteum could not be better illustrated than by this case, and to a country doctor, with opportunities to see very few cases of acute osteomyelitis in the practice of a lifetime, it seems sufficiently remarkable to report to this society.

Case II.—Last October I was called to attend a young man of 16 years, who was suffering excruciating pain in his left leg. The recent history of the case was that he began about six weeks before to feel the
pain at short intervals; that it increased in severity and became more nearly constant as time went on, and that for the past two weeks he had been unable to sleep and his wailings had been so constant and so loud that nobody else in the house could sleep. Pain was always worse at night. He described the pain as a sickening pain, beginning first in the abdomen and going down the hip and thigh to the knee, sometimes to the calf and once to the ankle; but most of the time the outside of the thigh down to the popliteal space and knee only were affected. A year before he had had a similar attack lasting two weeks only, and not so severe, and two years before he had had an attack lasting a month. He had been seen by several local physicians, and had been to Omaha to see a celebrity much vaunted by the Germans of our part of the state as a consultant, undoubtedly a man of great experience and mature judgment, and they all agreed that it must be a case of sciatica. After quieting him by a full dose of morphia hypodermically, I proceeded to a very thorough examination. The pulse was 96 and the temperature 100°, at 2 A.M., after six hours of intense suffering. There was no local heat or redness of the limb, no edema, no perceptible inflammation of the soft tissues, and patient was unable to locate the pain at any particular spot. A place was found just below the great trochanter, tender on deep pressure. Except the uncertain tender spot below the trochanter all the symptoms seemed to point to sciatica. When the boy was 3 or 4 years old his thigh had swollen with pain and fever, and I had diagnosed bone disease and had advised an operation, which was not granted. After months of suffering three sinuses had formed, and each one had discharged small pieces of bone and a great deal of pus, and had finally healed, apparently without prejudice to the boy, for he was now 12 years older and well developed and not a bit lame. Knowing this, and in spite of the paucity of symptoms pointing to osteitis, I risked my judgment that the trouble was in the bone. Consultation was
called and my opinion was not confirmed, but a diagnosis of sciatica again made. It was, however, agreed that if three days' treatment did not relieve the supposed sciatica, an exploratory incision was to be made to test my theory of osteitis. Accordingly, three days later the bone was exposed, found slightly roughened from previous trouble, and a necrotic spot found in the shaft at the lower end of the trochanter, from which welled up pus. With chisel and curette the dead bone and pus were followed one and one-half inches up the shaft of the bone behind the trochanter, where apparently healthy bone was encountered. The result of the operation was, of course, prompt relief from the agonizing pain, and in six weeks the case was discharged healed up and cured. Here was a case of osteitis, or, if you please, osteo-periostitis, with dead bone and pus, with a temperature of 100° and a pulse of 96, after hours of intense suffering, alone enough to account for the temperature and a higher pulse, with no local heat, no redness, no swelling, and very little tenderness,—in fact, so little tenderness that the patient had not found the painful spot, and I got it only by deep pressure—the patient's description pointing strongly to sciatica. More than this, two previous autumns he had had the same pain, and after periods of two and four weeks each the trouble had subsided.

DISCUSSION.

Dr. C. C. ALLISON, Omaha: The case which Dr. Long has reported belongs to a class which should excite particular interest, because such may appear in the work of the special or general practitioner. Briefly stated, it may be said that when deep-seated boring, demoralizing pain, associated with high fever, is found in a child or young adult, particularly in the neighborhood of the ends of the long bones, infective osteomyelitis may be suspected. The fever appears early, its range is high, it remits but slightly and continues, therefore, immediately after the rigor which is associated with the initial pain. It should be borne in mind that there is little or no swelling of the soft parts and but little or no discoloration; there is no edema in the early stage, but there is the high continuous fever and severe pain. Leucocytosis will be of some value in differentiation, but even this is not
essential in the face of the above clinical picture, which is so uniform that a reliable conclusion may be promptly made. There is probably no disease which needs earlier operative interference than this.

Dr. F. Rustin, Omaha: There are few cases which demand a more speedy diagnosis and quick interference than those of acute infectious osteomyelitis. The diagnosis is aided materially by the symptoms mentioned by the doctor, namely, pain and the curve of the temperature. Our diagnosis would still more be aided by the blood count. This count for leucocytes is a help in differentiating this condition from the one which it most commonly simulates, namely, rheumatism. I believe that this is most valuable, for it gives us a clue more rapidly than we can obtain one if we wait to watch the temperature chart. It is the delay in these cases that does the harm. By means of the medullary canal the infection spreads rapidly and the destruction increases in size so that, if we govern ourselves entirely by temperature and pain, we may wait until an operation is almost hopeless. I believe, in some cases, that an exploratory incision is our only means of determining accurately an early diagnosis. There certainly could be no more harm here in exploring than in the exploration of the abdomen. In fact, it would seem better judgment to explore unnecessarily a rheumatic leg, mistaking it for osteomyelitis, than it would be to treat a case of osteomyelitis mistaking it for rheumatism. In short, any case simulating osteomyelitis by its symptoms of pain, temperature, leucocytosis, and a failure to respond to the salicylates should be given the advantage of an exploration.

Dr. H. M. McClanahan, Omaha: I wish to direct my remarks to the subject of acute osteomyelitis. I have made one or two errors in diagnosis, by calling the case rheumatism. Now rheumatism in children is usually mild. The pain is not so intense, and is not limited so uniformly to one bone. Again, a pain that is not relieved by salicylates within forty-eight hours is probably not rheumatic. Constant pain in one bone, associated with high fever, should always excite the suspicion of osteomyelitis. This disease is so virulent and so rapid that an early diagnosis and prompt surgical treatment are imperative.
A CASE OF SUPPURATIVE TUBERCULAR PERITONITIS.

A. B. ANDERSON, M. D., PAWNEE CITY.

The following case is somewhat peculiar, and the diagnosis may be questioned, but as the patient, in spite of the prognosis made by the doctor and the prediction made by all who saw him, persisted in living and getting well, the pathology cannot be verified by a post mortem. A brief history of the case is as follows:

A. M., aged 14, was sick from October 24 to November 26. The symptoms were those of typhoid fever; the onset was gradual, the eruption was characteristic and there was slight diarrhea. The tenderness and pain over the abdomen were at no time very marked; the symptoms gradually declined and by November 15 temperature was normal. On December 6, about one month from last visit, the family reported that the patient had so improved as to be about the house, but was still weak and had not gained much in flesh. He had a good appetite, no pain, and slept well at night. At this visit to the office they also reported that the abdomen was a little distended and that there was a small yellow spot beside the navel. Not being fully satisfied from their description of the case I proposed to visit him, to which they readily consented. December 7, I visited the patient and found him as follows: Temperature 99°; pulse 100; appetite good, and patient in good spirits. Examination of abdomen showed fluid in peritoneal cavity; fluctuation was marked over every portion. Skin over the abdomen was dry and epidermis scaly. A ridge, raised and dull, two inches below liver, extended from the umbilicus to the right side of the abdomen. Beside the umbilicus was a small yellow spot. Into this I made an incision and evacuated one-half gallon of odorless pus; discharged none during the night. The next morning, by pressure
and change of position, I evacuated the same amount of pus—one-half gallon. In the afternoon, after a careful preparation of the patient under chloroform, I opened the abdomen by an incision in the median line four and one-half inches long. By this means quite an additional amount of pus, with lumps of tissue looking very much like omentum, was discharged. I could pass my hand over the intestines in every direction, there being no adhesions except where the ridge of tissue was found in the right side below the liver. The cavity was thoroughly washed out and tubular drainage used. The patient was put to bed in good condition and did not suffer greatly from shock. On the next day, by the use of an enema, the bowels moved freely and without pain. The following day the bowels moved, but with considerable pain; on the day following this, the 11th his condition was not so good; on the 12th he began vomiting; on the 13th vomited stercoraceous matter; on the 14th the vomiting ceased, but he had several slight convulsions; by the 17th had twenty-six convulsive seizures. At this time temperature was 102, pulse 140. On the 17th the tympanites had slightly decreased; on the 18th a slight bowel movement; 19th, a good bowel movement. He now takes light nourishment, sleeps most of the time, partially conscious when awake. A steady gain until the 22d; discharge from the wound very copious, but still not offensive. The left limb is swollen at the foot and mottled up to the body. Left hand and arm mottled and present numerous purpuric spots in various places. Glands in the groin enlarged and tender; temperature 98; pulse 104; appetite is ravenous. Irrigated cavity with formalin solution. In two days the discharge was much less. Improvement has been steady and continuous to the present time.

Doubtless this was a case of tubercular peritonitis from the first, although the symptoms all pointed to typhoid; the temperature range, the bowel symptoms, the eruption and the gradual decline. The boy's father died of pulmonary tuberculosis, and doubtless had the
disease when this boy was born. It is most remark-
able that the patient could go around the house, feel
well, and sleep and eat well,—in short, perform all the
functions in a satisfactory manner and still have this
large amount of pus in the abdomen. That the case
was tubercular there is not the least doubt. That the
infection occurred through some intestinal lesion is
very probable. Senn, in his Principles of Surgery,
quoting Lindfors, says that the acute variety may as-
sume the form of circumscribed general or suppurative
peritonitis. The intestines may be so adherent as to
cause intestinal obstruction. The same writer also
says that in the diffuse form the fluid is a clear trans-
parent serum, or serum in which some floculi are
suspended or the fluid has become slightly turbid from
the admixture of the products of retrograde tissue
metamorphosis. The amount of fluid may vary from
a teacupful to four or six gallons. In Warren's Surgi-
cal Pathology I find chronic caseous and ulcerative
tuberculosis characterized by larger tubercular
growths which tend to caseate and ulcerate; and by a
purulent and sero-purulent exudation often sacculated.
The peritoneum may be affected through the intestines.
The disease may be primarily in the peritoneum; but
this is rare. When the omentum is involved in
the process, the contractions which accompany the
formation of adhesions cause the omentum to be re-
tracted into a thick elongated lump which lies trans-
versely across the abdomen just above the umbilicus.
In some cases the exudation may become purulent in
character. This writer further says that the onset is
often very insidious; that it is often typhoid in char-
acter, which, with continued fever, may lead to the
supposition that the patient has typhoid fever.
There are certainly some remarkable features about
the case reported. (1.) A remarkably slow pulse for
a tubercular condition. During the febrile stage it
rarely reached 120 per minute, and as the condition
became chronic and the abdomen filled with seropuru-
lent fluid, the pulse was 104. (2.) The large amount
of caseous material and omental tissue discharged, several lumps being as large as the ends of two fingers. (3.) The agglutinated condition of the intestines. They seemed as if covered by a false membrane. You could see the outline of the intestines, but could not take them up, as they were completely matted together. The obstruction of the bowels was doubtless due to the cicatricial contraction of ulcerated omentum and was released spontaneously after all hope had been abandoned. At the present time the boy is the picture of health, weighs more than he ever weighed in his life.

DISCUSSION.

Dr. H. P. Hamilton, Omaha: I think the doctor is to be congratulated on the outcome of his case, as it is quite seldom the outcome is so satisfactory. As to the diagnosis, there can be no doubt.

Dr. W. O. Henry, Omaha: The doctor is to be congratulated on the fortunate termination of his case. I am inclined to the opinion, however, that he did not have either a streptococcus or a staphylococcus infection, but rather a tubercular infection with effusion and breaking down of the caseous tubercles and fat which produced the peculiar character of the fluid evacuated. It is remarkable how much caseation occurs in some of these cases and how large are some of the nodules which come away. A free incision and thorough drainage is the only rational treatment, and it is generally successful.
On noting the discussions of appendicitis in the medical press, and more especially in the medical societies, this question naturally presents itself, Why do we continue to speak of this disease as if it were always found invariable and comprised the same pathologic condition? One class of men will say, as soon as diagnosis is made of appendicitis, every patient should be subjected to operation. Another class of men asserts that operation for appendicitis should never be done, as the mortality from a series of operated cases is as great or greater than from the same number of cases not operated. In other words, the subject is generally treated as though appendicitis is appendicitis, and always the same wherever found. It would be as rational to talk of tonsillitis without qualification, but in this instance all would at once wonder what was meant—catarrhal, follicular, or suppurative, etc. Before we go further, then, it is essential to know that the word "appendicitis" should mean as little per se to the inquiring physician's and surgeon's mind as anything in medical nomenclature. When this is once understood, all could discuss and treat appendicitis with almost equal intelligence. Let it be said right here that nothing is claimed for this paper except a reiteration of a few well known facts, and an endeavor to lay these facts before you in a tangible manner.

In the first place, the causes of appendicitis are numerous, so also are the various diseased conditions met with in different cases and in the same case at different attacks; but for our purpose it will suffice to mention three distinct clinical varieties: first, catarrhal; second, suppurative; third, perforating and gangrenous. With this classification in our minds,
and the ability to distinguish between them clinically, we approach the bedside of our appendicular cases with the assurance that the patient's best interest will be guarded.

Catarrhal appendicitis, anatomically speaking, means infection and inflammation of the mucous lining of the organ. This inflammation produces increased secretion, which generally discharges into the cecum. As long as there is free drainage of the infectious product, but little disturbance occurs; hence we find slight or moderate pain, temperature normal or little above, and some tenderness at seat of the appendix, with pulse but little accelerated. Patient complains of being indisposed, constipation has usually pre-existed, and continues with some tympanites. In same cases there exists an ileocolitis with diarrhea. Many patients with this form of appendicitis recover with or without treatment. The infection may, however, extend to the submucosa, muscular and serous tunics. As a rule, this is caused by a failure of the appendix to empty itself, or it may be the result of a more extensive infection from the onset. The patient now thinks himself sick enough to assume the prone posture, and often complains of pain in the region of the umbilicus. There is tenderness over McBurney's point, on movement, pressure, and coughing. Nausea and sometimes vomiting occurs; temperature about 102°, more or less, depending much upon the condition of the bowel. The pulse is not very rapid, nor of high tension. On physical examination we find a small swelling usually one inch below McBurney's point, and the abdominal muscles locally retracted, extent of rigidity varying with the amount of peritoneal involvement. The vast majority of appendicitis cases, or about 80 per cent., do, or should, by proper treatment of this variety, recover without suppuration, and consequently with no operative interference.

Should, however, from lessened resistance of tissue, the bacillus coli communis, or other pyogenic or-
ganisms, pass through the appendiceal wall, even without perforation, localized peritonitis is set up, and may be of sufficient intensity to produce pus formation. Localized inflammation within the appendix or in its wall also oftentimes produces inflammation of the nature of an abscess. We then have the second variety—suppurative appendicitis. Here the symptoms are more prominent. The pulse always indicates suppuration of this character by being full and tense, and generally not very rapid. Not much dependence can be placed on the temperature in these cases, ounces of pus may exist without a material rise in temperature, yet the temperature may be 102°, or more, especially at the outset. Often no fluctuation can be elicited, owing to tenseness of the abscess wall and rigidity of the abdominal muscles—simply a hard mass unyielding in every direction. For diagnosis we depend upon character of pulse, pain, soreness, rigidity of muscles, more or less extensive tympanites, and rather low temperature. Constipation is always a feature, although the bowels will generally respond to purgatives and enemata.

The third clinical variety should include the local gangrenous, or perforating, and the general gangrenous, or fulminating. This severe form is either due to an arrest of blood supply, or to an exceedingly virulent infection, and tissue necrosis is a result of destructive toxines. One look at the patient's face, with his anxious expression, is generally sufficient to make a diagnosis of this class of cases. There is evidence of shock from the beginning, and disturbed thoracic breathing. The temperature is high, 102½°, rising to 104° in a few hours. Pulse rapid, 120 to 140, small and thread-like. Sometimes more fear of pain than actual pain. Rigidity of muscles, gradually extending over the entire abdomen; although cases of fulminating appendicitis may die with complete relaxation of these muscles.

As a rule, primary appendicitis of all forms has a sudden onset, with a history of either constipation,
the eating of indigestible food, or violent physical exertion.

Treatment.—In the treatment of every case of appendicitis these questions must be answered: Shall we give opium? Shall we give purgatives? Shall we give both, or shall we operate?

The differences in opinion here are almost as great to-day as they were two or three years ago, with a slight tendency on the part of the general practitioners towards surgical interference. There is also a receding, by not a few surgeons of good judgment, from former radicalism of operating in every case, at any stage of the disease, whenever the diagnosis is made, to the far better plan of waiting for the operative indications to arise.

Whatever has been our past inclination in dealing with this disease, the future treatment will rest on a safer and a more logical basis. When we are called upon to deal with a case of catarrhal appendicitis—that is, one of the first variety with moderate symptoms—should we at once rush the patient to a hospital and have his belly opened? I say, No. Not any more than every case of rheumatic arthritis should have a leg or an arm amputated. Put the patient at rest—rest of body, anatomic and physiologic rest to the inflamed parts. Revive the old and almost obsolete Clark treatment. Give opium for its effect, and no food or drink by the mouth for some days.

Dr. Byron Robinson’s views in his article in the American Journal of Surgery and Gynecology (April, 1901), if followed, will do much for the acute peritonitic or appendicular patients.

Purgatives, as a rule, should not be given except in cases where we have a history of a large amount of indigestible food having been taken and this is suspected as the cause. Even under this condition carefully administered enemata should rather be depended upon. It is surprising to see how few cases will require operation when this method is followed.

We now come to consider the treatment of the
second variety, the ordinary suppurative appendicitis; and, mark you, here it is that a well-timed operation is of the greatest importance, and here it is also that surgical tyros rush in at any time, when even experienced surgeons fear to operate. If operation is done here as soon as diagnosis of pus is made, and before sufficiently firm and extensive adhesions are formed, many patients are lost, and will continue to be, until we learn to check our operative ardor. By continued rest the patient is not jeopardized by waiting until adhesions to the parietal peritoneum form, and the abscess may be opened without invading the peritoneal cavity. Should we, however, upon opening the abdomen, find that the abscess is deeper than expected, and that mural adhesions do not exist, the best practice, no doubt, is to follow Wyeth's advice—pack loosely with gauze and wait for twenty-four or forty-eight hours, until adhesions wall off the peritoneal cavity, before attacking the abscess.

We now come to consider the last clinical variety, where no difference of opinion exists as to the proper treatment, viz., the acute local and general gangrenous appendicitis. Yet lamentable as it is, I almost fear that a large number of practitioners have no clear-cut idea what fulminating appendicitis is and how it may be distinguished. A number of cases of this variety have come under my observation where doctors have sat idly by with folded arms and let their patients die without lifting a finger to save them. The diagnosis, as a rule, is not very difficult to make, when the symptoms, as heretofore described, are kept clear in one's mind, and, as soon as diagnosis is made, operate at once without hesitation.

Interval operations have been too numerous, especially in patients after 30 years of age. One attack may, and does, predispose to another. Still, attention to the removal of the cause of the first attack, after it has subsided, will dispense with the majority of interval operations. If the patient is constipated, attend to that. Rheumatism plays a very important role, so
give salicylates—give sodium salicylate anyway, as it is a most efficient cholagogue and intestinal antiseptic, and subdues inflammations of various kinds. If struma exists, give iodides. Syphilitics require mercury. Some chronic cases, as appendix obliterans of Senn, distinguished by enlarged lymphatics, require operation, as may also cases where adhesive bands are formed. On the whole, be a physician in the true sense of the word, and as to interval operations you will be a surgeon neglected. To recapitulate:

1. In catarrhal appendicitis, which embraces the great majority, do not operate. Opium, anatomic and physiologic rest to the tractus intestinalis.

2. In suppurative appendicitis, operate, but, as a rule, wait for adhesions to shut off the peritoneal cavity. If temperature is high, pulse rapid, and vomiting persistent, it is better to err on the side of early operation.

3. In acute perforating and fulminating appendicitis, operate as soon as the diagnosis is made, and see to it that the diagnosis is made early.

DISCUSSION.

DR. W. O. HENRY, Omaha: Whilst I believe in conservatism in appendicitis, still I am sure the doctor is far too conservative. The very great majority of cases will require operation either during the attack or between attacks, and it is a mistake to treat them otherwise at the present time. On the other hand, I am fully convinced that a certain proportion of cases will get permanently well under medical treatment. Still, in the present state of our knowledge, we cannot say positively just when an appendix once diseased has so far recovered that it is not a special menace to health and life, and, therefore, we are perhaps justified in urging the removal of all appendices that have once given rise to serious trouble. But when we arrive at a scientific differentiation, some cases can be left wholly to the medical attendant without operation.

DR. WILSON, Table Rock: I wish to congratulate the doctor on his valuable paper; I believe it to be timely and his position well taken and his argument clear and concise. I like his classification and differentiation in these cases. It has been manifest here to-day by the discussions on appendicitis that the surgeons are most of them reluctant to admit that this is other than a surgical disease, always requiring operative intervention if one does his whole duty.
by his patient. I have no quarrel with my friends, the surgeons, and believe they have their place and are valuable adjuncts in the treatment of human ills, and I am free to admit that they are a good many, but are not the whole push by any means. I believe the teaching that this is always a surgical disease is pernicious and ought not to go unchallenged, and am glad Dr. Grotham opposes such teaching in his paper. In my judgment, should such teaching go unquestioned and become fixed on the public mind as the thing, it will work injury; for appendicitis is liable to occur at a distance from a surgical center, but if the dictum is operate, the general practitioner will be driven to operate or appear in the light of not having done his duty, while his patient is much safer in his hands treated medicinally than surgically. It is a well known fact that a large per cent. of these cases, treated with medicine alone, get well; it is also a fact that all cases operated on do not recover. Again I congratulate the doctor on his paper.
SOME REMARKS ON INFECTIONS.

H. P. HAMILTON, M. D., OMAHA.

In taking up this subject I have determined to take up a few typical cases of infection and describe in a superficial way the pathological changes that they ordinarily produce in the tissues of the body. I call your attention, you will notice, only to the most frequent pathological changes that these different types produce, as there are many other changes that may take place in many to which I refer.

The first form to which I call your attention is that most commonly met with, namely, staphylococcus infection, or so-called septic infection. Now, in taking up this common form we will examine the pathological changes that take place in its most common variety, namely, abscess.

In the production of a pyogenic abscess we have the following conditions: First—Lodgment of the germs in the tissue. Second—A destruction of the tissues with which the germs come in contact, called necrosis. Third—From the irritation on the capillaries in the immediate vicinity produced by the toxic material thrown off by the action of the germ on the tissue or the tissue on the germ we have a penetration of the walls of the capillaries by leucocytes from the vessels to the site of the necrotic tissue caused by the action of the germs. These cells are called phagocytes, because they attack or come in contact with the germs and take some of them into their protoplasm. Some of these so-called phagocytes are killed on the spot, others are injured and retreat into the tissue in close proximity and die. The fixed tissue cells in the immediate vicinity also become phagocytes when the germs are brought in contact with them by the leucocyte-phagocyte. Fourth—The tissue around the infected part has become infiltrated with leucocytes, but does not come in contact with the
destroying germ. There is produced a proliferation of that tissue, due to the absorption from the infiltrated leucocytes of an extra amount of nourishment, and the cells divide and subdivide by physiological changes, called karyokinesis. Fibrous tissue cells change into fibroblasts. The cells of the walls of the capillaries change into angioblasts, etc. This with the other tissue changes makes granulation tissue or embryonic tissue, and later becomes so changed as to make an atypical form of fibrous tissue, but known as cicatricial tissue. Now, while all these changes are taking place, the necrotic area in the center of course becomes larger and larger, owing to the movement of the infected leucocyte-phagocyte infecting the fixed phagocyte (tissue-cells). These cells, both leucocyte-phagocyte and fixed-cell phagocyte, after taking into their protoplasm sufficient germs, die, and the product is called pus. The tissue fiber become liquefied by the action of the toxine and germs on it, and this makes up a portion of the liquid elements of the pus. As this suppurating area increases, all the walls of the blood-vessels that are included are also attacked by the inflammatory process that gradually extends through the different layers of the vessels. When the intima is reached the irritation extends to the endothelium of same and the leucocyte-phagocyte from the circulating blood in the vessels are at once deposited thereon, forming a mural thrombus. In the smaller vessels this at once forms an obstructive thrombus. In the larger vessels the mural thrombus does not always become obstructive. In each form the thrombus is at first aseptic, or does not contain germs, and if this should become infected, the deposition from the blood keeps preceding the infection by building up a strong and wide deposit between the infection and the circulating blood. So, if the blood-vessel with its thrombus breaks completely down, forming pus, there is at either end of same a proximal and distal aseptic thrombus that completely protects the end of the vessel from infection. While
these changes are taking place in the blood-vessels there are also changes taking place in the lymph spaces and channels. There is first an increased activity of them, taking up infiltrated leucocytes and irritating toxins, which produce a proliferation of their cells that soon closes their channels so as to destroy their function. This closing of the lymph channels that precedes the infecting germs prevents the taking into the general circulation of the poison of the infective germs, which would otherwise invariably or always produce general septicemia.

As to the manner in which septicemia is generally produced; when it does occur it is through the lymph channels, and not ordinarily the blood-vessels. This is generally due to a lowered vitality of the cells of the lymphatics. They are not able to respond to the irritant in such a way as to proliferate and thereby close their lumens. Consequently, the infected leucocytes are permitted to pass through them where they are emptied into the general circulation and later break down, setting free the same germs as are found at the primary focus, into the general circulation. It is also sometimes the case that the thrombus, though at first aseptic, when it becomes infected it breaks down so rapidly that the infection passes in near the end of the thrombus and a slight trauma breaks up the aseptic portion, and the fragments of the whole, including the infected part, pass into the proximal vein and lodge somewhere in a smaller vessel. This is called an embolus. I wish to state, however, that it is extremely seldom that either of these conditions take place from a simple abscess or a simple suppuration if proper antiseptic treatment be instituted. Of course, if an abscess is permitted to exist in portions of tissue where it subjects the part to great pressure, we generally get a partial septicemia, for the reason that the infected leucocyte-phagocytes, when subjected to such pressure, wander back through the protected barriers of infiltrated tissue, through the lymph channel, and are emptied
into the blood-vessels, then break down as pus in the general circulation. Without pressure, however, though a fresh culture of pyogenic germs may be rubbed into the stump of a freshly amputated limb, it is not taken up into the general circulation, excepting by the lymphatics.

We will next examine an infection of the bowel that probably causes typhoid fever, and notice the different pathological changes that take place in the gut. First—A general catarrhal condition will be noticed of the lining of the bowel. Second—On examination we see a great proliferation of the follicles that become so infiltrated that necrosis and breaking down frequently results. Third—The glands of the bowel become enormously enlarged, frequently suppurate and discharge into the gut. Fourth—The tissues immediately around these glands that are suppurated frequently become enormously infiltrated and sometimes point on the serous surface. If they discharge thereon it causes peritonitis, from so-called perforations. Fifth—The glands of the mesentery are the second sets that the lymph passes through, and the number of germs that enter them are much smaller than enter the solitary glands. While they are not so liable to suppurate as the solitary glands, when they do they always produce peritonitis. The suppurating solitary gland usually discharges into the gut and resolution takes place without grief to the part. Sixth—Where the germs get into the circulation and produce a septicemia, it is through the lymph channels, and not through the blood-vessels, the same as described in the septicemia following pyogenic abscess; the only apparent difference being the histological structure of the gut, causing only a physiological change in the pathological process.

We will next examine the most common form of infection from the tubercular germ, and see in what respect it differs from the above pyogenic infection. First—we will notice that the ordinary site of the infection is not at the point where the germ first finds
its lodging, but in the lymph node on the proximal side of the heart. It passes partly into the circulation before the inflammation is produced. Second—We have the same necrosis of tissue where the germs lodge. Third—We do not have nearly so great an infiltration of tissue immediately surrounding the germs by leucocyte-phagocytes. Fourth—the granulation tissue produced around the infecting germs does not contain angio blasts, as does the granulation tissue in pyogenic suppuration, consequently we later get breaking down of same for want of nourishment. Fifth—The infiltration of leucocytes is sufficient to cause a proliferation of the cells of the lymph spaces sufficient to close their channels and prevent tubercular septicemia through the lymphatics. Sixth—The toxine produced by the germs are not of sufficient virulence to produce a mural thrombus or obstructed thrombus in the veins sufficiently strong to protect the circulating blood in them when involved by a tubercular inflammation; consequently, when the walls of the blood-vessels are all involved in a tubercular inflammation, we are most liable to have, and generally do have, a tubercular septicemia following thereafter.

Let us now call your attention to that form of infection we call malaria. This disease has been demonstrated within the last few years to be frequently of traumatic origin. While there is but comparatively little known of some of the pathological changes that take place, we do know that from the slightest trauma produced by a particular kind of insect malaria is sure to follow. We do know that the particular infection that is carried by that insect to the slight wound it produces is carried into the circulating blood within a few days. We think we know that the trauma in the tissues and the irritation from the germ causes such a change to take place in the vessels as to allow the phagocyte to pass through the capillary wall and take upon its protoplasm the invading germs that have been so depos-
ited at the time of the trauma. These phagocytes are taken into the lymph spaces and are taken up and carried into the lymphatics and from thence poured into the general circulation. If these germs were pyogenic ones, this would not occur, as none of them would be permitted to escape the lymph nodes; but this particular germ, when it comes in contact with the lymphoid tissues, does not produce such an irritation as to cut off or block its passage; consequently the phagocyte involved by the germ escapes all the protecting barriers Nature has provided, and the germ finds its way to the blood, where it gets its subsistence.

We will next say a few words about what we know of the pathological changes taking place in variola or smallpox. As to the primary origin of the disease we know but little. How the infection gets into the system still remains a mystery. We believe, however, that the infecting agent finds its way into the circulation through the lymphatics, and that the blood acts as a culture medium till the infecting agent is matured. Whether the germ, if it be a germ, attacks any of the histological structures, is not definitely understood. We do know, however, that the infecting agent, either alone or incorporated, in the phagocytic cells of the blood passes through the walls of the capillaries and finds lodging outside of these vessels. The first evidences of the lesion is manifested by the formation of a macule, which later appears as a papule, and still later as a pustule. After this infecting agent gets out of the capillaries into the tissue, we have all the pathological changes taking place in the histological structure as take place in a simple pyogenic abscess, namely, necrosis, infiltration of leucocytes from the capillaries, proliferation of the fixed tissue cells, development of embryonic tissue around the infecting agent and breaking down of the phagocyte-leucocyte, and fixed tissue cells as pus, while at the same time we have an extremely active condition of the lymphatic spaces, which take up
toxic material and deposit it in the proximal lymph nodes, and in some cases there is sufficient amount of the infecting agent to produce a suppuration and breaking down of their structure, also with the formation of a secondary, or properly should be called tertiary abscess. These lymph channels also, as in pyogenic infection, soon become closed off by a proliferation of their cells and lose their physiological function.

CONCLUSIONS AND SUBJECTS FOR DISCUSSION.

First—It is through the lymph channels, and not the blood-vessels proper, that we get septicemia after pyogenic infection. Second—Where we have so-called pyemia or septic emboli lodged in other portions of the body, it always comes from the blood-vessels after a certain amount of trauma. Third—A tubercular abscess is almost always distant from the site of infection and situated in the lymph nodes on the proximal side from the site of invasion. Fourth—Tubercular septicemia always comes from the involved blood-vessels and not through the lymph channels. Fifth—A typhoid infection differs in no respect from a pyogenic infection, except as it is altered by the structures involved. Sixth—The initial lesion of typhoid fever is sure to be in the bowel from the character of the lesion found in the gut. Seventh—Death from typhoid fever almost always comes either from typhoid septicemia or from perforation. Eighth—Septicemia from typhoid fever is more liable to occur than septicemia in a simple abscess, owing to the histological structure involved and a milder form of infection, causing thereby less infiltration of leucocytes. Ninth—The site of infection with malaria is in the capillaries and its ravages are in the blood-vessels; later symptoms are produced by the irritation of the germs on the capillary wall. Tenth—The pathological changes in smallpox are in the blood at first and then transferred to the tissues, where the same pathological changes take place as we find in any pyogenic suppuration.
PRACTICAL LABORATORY DIAGNOSIS FOR THE BUSY PRACTITIONER.

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The paper which with your tolerance I present today is not intended to be a complete guide to laboratory diagnosis, but rather an exposition of a few methods adapted to the use of the busy practitioner. It contains much that is old, with possibly a little that may be new and novel to you.

Laboratory work is not the difficult task you might imagine. To the contrary, most of the more useful tests are simple in character, easily applied, and requiring but little practice. The chief requisite in the work is accuracy. I will begin with the most common subject and the most useful to us all, namely, urine analysis. In this, as in other subjects to be taken up, a microscope is absolutely necessary. I believe it is needless to say that every doctor should have one, if he gives to the diagnosis of each case the attention it merits.

Urine for examination should be freshly voided. If it is impossible to make an examination within a few hours, crystals of thymol, one grain to an ounce of urine, should be added. Chloroform or formalin should not be added if the sugar tests are to be applied. To make an intelligent examination we should always obtain a full 24-hour specimen. This should be well mixed and measured and a portion saved for further investigation. A good way to obtain a 24-hour specimen is to have patient urinate, say, at 7 a. m., throw this away and then save all between this time and 7 a. m. the next day. The last voided at 7 should be kept separate from the rest and investigated by itself.

Color.—The color of the urine should be noted. It may vary from a very pale straw to a dark brown or red. Certain medications, or the degree of concentration, may affect its color. If not due to these causes,
an excess of color means either (1) bilirubin, (2) indican, or (3) blood.

1. **Bilirubin**, the chief unaltered pigment of the bile.
   —Two tests are: (a.) Take one inch of urine in test tube, allow concentrated nitric acid (yellow from standing—nitrous acid) to slowly trickle down side of tube until about half an inch has been collected at bottom. A grass-green ring (biliverdin) at junction of the two fluids is indispensable for the test. Other colors may be present, but are valueless. (b.) Take in test tube one inch each of urine and chloroform, shake; if chloroform is colored, we have **bilirubin**.

2. **Indican**.—The test for indican is, take one inch each of hydrochloric acid and urine, add a few drops of calcium chloride solution (1:20). If a deep blue color comes, it denotes indican, which means constipation.

3. **Blood**.—The easiest test for blood is, take one inch each of urine and a strong solution of potassic hydrate, boil one minute. This precipitates the earthy phosphates, bringing down the blood with it. Scarlet red denotes oxyHb (oxyhemoglobin); brown red denotes metHb (methemoglobin). If you have Hb without red blood cells (rbc) you have hemoglobinuria. If you have Hb with rbc you have hemorrhage. I wish to say that here it is absolutely necessary to have a microscope to ascertain presence of rbc. Without a microscope one is liable to very grave errors in diagnosis.

If you have hemorrhage, the question at once arises, where from? Here wash out bladder, empty and inject a solution of potassium iodide, 1 cc.; aqua dest., 120 cc. If you have lesion of bladder, in fifteen minutes the patient's sputum will color starch paste violet. If no color, add drop of nitric acid—if no color, no lesion; if color, it means lesion of bladder. Now if you wish to ascertain if the hemorrhage is from the anterior or the posterior urethra, have the patient urinate in three glasses, as in gonorrhea.

Always examine urine for (a) specific gravity; (b) reaction; (c) albumin; (d) sugar; (e) sometimes sepa-
rately the amount of urea, although I have often found it sufficient to estimate the amount of urea from the specific gravity. If all of the above are normal, we can consider the urine normal and go no further.

Specific Gravity.—This is only roughly of value, normal urine being given from 1.015 to 1.025. I have found in persons of perfect health a sp. g. of 1.003 to 1.030. A low sp. g. should suggest (a) Bright's disease; (b) diabetes insipidus; (c) a neurosis. A high sp. g. should suggest (a) sugar; (b) an excess of urates or uric acid; (c) occasionally phosphates. But do not consider this absolute. Albumin may occur in urine with a sp. g. as high as 1.036, and I have found sugar in an appreciable amount in urine with a sp. g. as low as 1.007. A urine increased in quantity, of constant low sp. g. with no albumin, should point to a contracted kidney. A careful physical examination would then show a hypertrophied heart with other signs of an increased arterial pressure. To have sp. g. strictly accurate the urine should have a temperature of 59° F. The usual room temperature is about 68° to 70° F., so here is a source of error. A correction of 1° should be made for every 5.4° above 59° F.

Total Solids.—To obtain, multiply the last two figures of sp. g. by 2.33; this gives parts per 1000. From this the total solids in 24-hour specimen may be readily calculated.

Urea.—The amount of urea is, roughly, 50 per cent. of total solids. If no abnormal constituent is present, as glucose, certain medications, as potassium acetate, etc., we can say urea equals one-half total solids. If glucose is present we can estimate its percentage and deduct, giving per cent of urea. The amount of urea can also be sufficiently accurately estimated by the Doremus ureometer.

Reaction.—The reaction normally is slightly acid. After meals it is slightly alkaline. However, if strongly acid, we should suspect an excess of uric acid or urates. If ammoniacal, then we have serious vesical trouble, with ammoniacal decomposition. An al-
kaline reaction on standing means absolutely nothing pathologically.

Albumin.—In the examination for albumin you must always filter, no matter if specimen appears to be absolutely clear. If urine is turbid, we must ascertain from what. (a.) Warm one-half a test tube of urine. If it clears it denotes urates. (b.) To one-half test tube add a few drops of 10 per cent. acetic acid. If it clears, it denotes phosphates. (c.) To one-half test tube add concentrated potassic hydrate. If it clears, we have urates. (d.) If none of above, and you cannot filter clear, it denotes bacteria. You must then add to a test tube containing one inch of urine, one-fourth inch of a saturated solution of magnesium sulphate, and one-fourth inch of a saturated solution of sodium carbonate; shake. A white precipitate occurs. Filter and test for albumin. A urine which you cannot clear is of no value in testing for albumin.

There are many tests for albumin. The one which I have found most useful is Heller’s, or the cold nitric acid test. This works well almost everywhere. However, in the presence of bile and in the presence of amorphous urates Heller’s test is of no value. Here we must use heat test, or in the case of urates, take equal parts of urine and water, warm until urates are dissolved, then you can apply.

Heller’s test is applied as follows (after Ogden): Take a perfectly clean and dry wine glass, fill one half with urine, tip glass until urine nearly reaches edge of glass, then underlie with concentrated nitric acid, pouring as slowly as possible. (You may also underlie by taking a pipette of nitric acid, place point at bottom of glass and very slowly empty pipette. This gives a sharper line of demarcation between the two fluids.) If albumin is present, a more or less distinct white band will be seen just above junction of acid and urine. Frequently a clear but narrow band of urine is to be seen between the band of albumin and the band of acid urates which forms higher up in the layer of urine. (Do not confuse this band of acid
urates with the band of albumin.) Albumin forms its band almost at junction of fluids, urates about one-eighth to one-fourth of an inch from top of acid. To see the slightest trace of albumin, hold a book or some dark object obliquely between source of light and the glass, but not so placed as to entirely cut off the light.

Heat Test.—In the heat test it is essential that the urine should have a faintly acid reaction; for, if it is alkaline, the albumin is in the form of alkali-albumin, and not coagulated by heat. Again, if too strongly acid, we have acid-albumin which is also not coagulated by heat.

(a.) If urine is acid, take one-half a test tube of filtered urine, add but one drop of a 10 per cent. solution of acetic acid, mix thoroughly; hold test tube by bottom and boil upper one-half. A cloud indicates either albumin or earthy phosphates. Add another drop or two of acetic acid. If cloud remains, it indicates albumin.

(b.) If urine is alkaline, take urine as above, add two or three drops of 10 per cent. acetic acid; boil. If albumin is present, it will not appear until enough acid has been added to slightly acidulate solution. As above, the further addition of acetic acid will determine albumin or earthy phosphates.

A bile-containing urine always contains albumin, and as bile obscures the albumin reaction when nitric acid is used, you should perform the heat test.

Do not assume a nephritis because of albumin; it may be due to (a) hemorrhage; (b) pus.

Do not make diagnosis of nephritis from the presence of albumin alone. If successive examinations are made, casts are almost invariably found if a nephritis is present.

Quantitative Examination for Albumin.—For the quantitative estimation of albumin an Esbach’s albumometer, or better still the centrifugal method, is necessary. To carefully and conscientiously follow the course of a nephritis, frequent quantitative exam-
Sugar.—In the examination for sugar we have several tests which are of value. One of the older is Fehling's, which consists of two solutions: (1) Copper sulphate, 17.32; aq. dest., 250.00. (2) Rochelle salts, 87.00; sodium hydrate, 25.00; aq. dest., 250.00. To use, take equal parts of (1) and (2). The solutions can be obtained from any reliable supply house. To ascertain presence of sugar, dilute the freshly prepared Fehling's in the proportion of one part Fehling's to four parts distilled water. This gives a very much more delicate test. Now take of Fehling's (dilute) one-half a test tube, heat top of solution, add two or three drops of urine; boil. If no reaction, allow to cool, add two or three drops more of urine; boil. Allow to cool again. If no reaction, we can conclude no sugar. This test is subject to many errors, as many substances reduce Fehling's besides glucose, such as urates (in excess), rhubarb, salicylates, camphor and chloral hydrate; coal tars, alkaloids, formalin, and chloroform.

In above tests do not use too much urine, you may get a pseudo-reaction for sugar if you do. If in doubt as to reaction, use one of the following tests:

Phenylhydrazin.—Take phenylhydrazin, 5 drops; glacial acetic acid, 10 drops; saturated solution of sodium chloride, 1 cc.; urine, 3 cc. Boil vigorously five minutes. Let cool slowly in air. This gives the typical yellow acicular crystals of phenylglucosazone.

Another valuable test is: Take in test tube urine 30 drops; pure phenylhydrazin hydrochloride, 0.1 gm.; crystallized sodium acetate 0.5 gm.; aqua dest., 2 cc. Heat over flame till it boils, then add 10 cc. 10 per cent. sodium hydrate; invert five or six times; set aside. Within five minutes a striking reddish-violet color should appear. This is seen through the whole liquid on holding it up to the light.

Quantitative Estimation of Sugar.—Fehling's fermentation test may be used. This depends on the fact
that 10 cc. of Fehling’s solution equals 0.05 gm. of sugar. To apply, take of freshly made Fehling’s solution 10 cc.; of aqua dest., 40 cc.; this is solution A. Then take of urine 10 cc.; of aqua dest., 90 cc.; this is solution B. Place solution A in porcelain evaporating dish. Place solution B in burette. Now bring solution A to the boiling point, add solution B slowly, boiling A all the while, until the color of solution A disappears and is replaced by a clear solution. The exact point can be determined by allowing solution to settle and then tipping dish until clear fluid shows against the clear white of the dish. Then amount of urine used : 0.05 gm. sugar :: total 24-hour specimen : \( x \). Example: If 27 cc. diluted urine reduced 10 cc. Fehling’s and 27 cc. diluted urine equals 2.7 cc. urine, then 2.7 : 0.05 :: total 24-hour specimen : \( x \); this gives per cent. of sugar in 24-hour specimen. Or: Say it takes 8.4 cc. diluted urine to neutralize 10 cc. Fehling’s and 8.4 cc. diluted urine equals 0.84 cc. urine, then to find \( x \), or per cent. in 100 cc. urine, we have 0.84 : 0.05 :: 100 : \( x \), or 5.1 per cent. Caution—We must remember that a glycosuria does not necessarily mean diabetes; you may have only a transitory alimentary glycosuria. To be certain, reduce carbo-hydrates to a minimum in the diet; if sugar still persists, then we can say diabetes.

**SOME OTHER TESTS IN COMMON USE.**

**Chlorides.**—This test is of value principally in pneumonia. Here chlorides disappear early, appearing only at beginning of resolution. This may antedate the crisis by several hours or a day. By testing from time to time in the course of the disease, we are often enabled to give a favorable prognosis long before the physical signs point to a change for the better. To test, take of urine one-half a test tube, add one drop potassic hydrate, shake—add one drop silver nitrate—a cloudy white ppt. denotes chlorides.

**Peptone** is present where suppuration is taking place, as in all suppurative diseases, and in some
acute infectious diseases. It is the means of confirming the otherwise obscure diagnosis of a deep-seated suppuration. It is also the means of distinguishing between (a) epidemic cerebro-spinal meningitis, where peptonuria is present, and (b) tubercular meningitis, where it is absent; also, between (a) acute tubercular peritonitis and (b) suppurative peritonitis; of course you must exclude extraneous suppurative processes which may be present elsewhere. To test: Take one inch of concentrated Fehling's solution in a test tube and overlie carefully with urine solution. Hold test tube by top and tap test tube with finger gently so that fluids are slightly mixed at their junction. A rose-red ring indicates peptone.

*An Ehrlich diazo reaction* which occurs in the last two weeks of a febrile disease points with reasonable certainty to typhoid fever. This becomes an absolute certainty if accompanied by a positive Widal test.

**Diazo Reaction.**—Solution A—Sulphanilic acid (sat. aqueous sol.), 200 cc.; hydrochloric acid (concentrated), 10 cc. Solution B—Sodium nitrite 1 cc.; aqua dest., 200 cc. Keep in separate bottle in a cool, dark place. Solution B decomposes easily and should be made fresh each time. To apply, take of solution A 40 parts, of solution B one part; add equal volume of urine; shake; allow an excess of aqua ammonia to run down side of tube. The foam will be colored pink, and the solution should be colored red if diazo reaction is positive.

*Pus.*—The microscope is the only reliable method of detecting pus. However, it may sometimes be readily found by following this simple method. Urine containing pus is usually turbid. Allow urine to settle; decant off upper portion; add to remainder a few drops of concentrated potassic hydrate. A gelatinous mass results if pus is present.

*No urinary analysis is complete without a microscopical examination of the urinary sediments.* To obtain the urinary sediments, the urine must be allowed to stand for from six to eight hours in a conical glass, or bet-
ter, should be centrifuged. If there is a sediment of amorphous urates, the urine should be diluted and warmed as for the nitric acid test before centrifuging.

_Casts_ are the most important of the urinary sediments. In examining for casts, it is much better to centrifuge, one will not overlook them as often then. Always examine the sediment with the low power at the edge of the cover-glass where the sediment is the thickest. If this rule is adhered to, you will be able to discover them with certainty if present. Casts of pathological moment are always accompanied by other signs of inflammation, as kidney epithelium, pus, or rbc. Hyaline, blood, and epithelial casts are found in acute inflammations of the kidney. Granular, fatty, and waxy in chronic forms. The kidney epithelia found are of three sizes: Smaller, equal to, and larger than the leucocyte (pus cell). They are granular and contain but one nucleus. Pus cells usually contain two or three nuclei. In examining for casts do not confuse the hyaline form with cylindroids which are only mucous threads and are not from the kidney, and are not pathological. Cylindroids are marked by thread-like lines, and are sometimes seen to be twisted upon themselves. They may, by means of a coating of bacteria, simulate granular casts. Careful focusing will dispel this illusion and other bacteria will be seen, both singly and in masses, in the surrounding urine.

Albumin and casts in a urine do not necessarily mean a nephritis. They may mean some pulmonary or cardiac affection. Rarely they may be seen after great exertion. Red blood cells are readily recognized when present in a urine, although they may be confused with certain circular crystals of calcium oxalate, which are also biconcave, but are highly refractive, colorless, and insoluble in acetic acid. Rbc's are pale yellow and are distorted by acetic acid. Pus cells are readily recognized.

Crystals occurring in urine are of no importance unless they are present in absolutely freshly voided
urine. Those which are necessary for us to recognize are but few, all others should not be taken into consideration. Uric acid is found in the form of a pale yellow to deep yellow, or orange red or brown crystals, whose typical shape is the rhombic plate; however, we always find modifications of this form. Any good book on urine analysis will give the forms of uric acid crystals as well as of any others occurring in urine. Uric acid in crystalline form in urine is only of pathological moment when found in freshly voided urine, and means (a) gout; (b) with evidence of renal disturbance, a beginning interstitial nephritis; (c) some febrile disease. It must also be remembered that uric acid and its salts form 80 per cent. of all renal and cystic calculi. Urates may be either (a) crystalline or (b) amorphous. (a.) Crystalline are either needle-shaped colorless crystals of acid sodium urate, or little brown spherules, sometimes with spicules—the so-called thorn-apple crystals of acid ammonium urate. (b.) Amorphous are those which give to many urines that "brick-dust" appearance on standing. The significance of urates is the same as that of uric acid.

Phosphates are also of no significance unless in freshly voided urine. Occur in coffin-lid shaped crystals—triple phosphates—which denote either (1) cystitis, (2) stone, (3) paralysis of the bladder. They are dissolved by acetic acid.

Calcium oxalate occurs in the form of large octohedrons; dumb-bell shaped, oval, and round crystals. If found in freshly voided urine suspect mulberry calculus.

Sputum Analysis.—Just a word here. Be sure and decolorize thoroughly. Obtain only early morning specimen in clean ointment jar. Always destroy by fire. Never handle cover-glass with fingers in making smear, use instead cornet forceps and a platinum loop. It is not necessary to make very many cover slips.

If a platinum loopful is taken from ten places in your specimen, obtaining the little yellowish-white
specks if possible, it will be enough in most cases to make but a couple of coverslips. Do not counter-stain too intensely.

In the examination of urine and feces for the tubercle bacillus, centrifuge, smear, dry in air, and pass through flame as long as cover smokes. Do not burn. Stain as for sputum.

In the examination of suspected tubercular glands, cut through center of gland, smear cover-glass over center of cut surface, dry in air. Stain as usual for tubercle bacilli.

**STOMACH ANALYSIS.**

I will give only the methods which are most essential.

**Method of Obtaining Stomach Contents.**—(a.) Have patient, if necessary, gargle with a saturated aqueous solution of potassium bromide every two hours for a day before the examination. This renders throat less sensitive to tube. (b.) Have patient come in morning with empty stomach; allow no water to be taken before coming. Introduce tube, have patient compress stomach, pinch tube, and withdraw. Then we have: (a) no fluid, stomach is normal; (b) fluid and HCl, hyperacidity; (c) fluid and no HCl, hypersecretion; (d) food remains, motor insufficiency. The stomach in six hours digests food and is empty. Now give test breakfast, consisting of (a) a hard roll, or a couple of pieces of toast; (b) a large cup of weak tea, no cream, milk, sugar, or butter. Wait an hour to an hour and one-half and obtain contents by means of stomach tube. Then test for the following (the apparatus necessary for the examination of the stomach contents should include a 10 cc. burette and burette stand):

(A.)

**Acidity.**—Stomach contents + blue litmus = red.

(B.)

Free HCl or L. Total acidity or A.—10 cc. stomach contents (filtered) + aq. dest. until solution is colorless
+ 1 gtt. 0.5 per cent. alc. sol. of dimethylamidoazobenzol, 
+ 1 gtt. 1.0 per cent. alc. sol. of phenolphthalein. A red 
color appears on addition of the dimethylamidoazobenzol 
to free HCl (this is a qualitative test for free HCl). On 
titration with sodium hydrate solution the red color dis­
appears. The number of cc. \( \frac{n}{10} \) sodium hydrate \( \times 10 = \) 
degrees of free HCl or L. Continuing titration with \( \frac{n}{10} \) 
sodium hydrate. The red color reappears when all acids 
have been neutralized. The number of cc. \( \frac{n}{10} \) sodium 
hydrate used to neutralize all acids \( \times 10 = \) total 
acidity, or A. If you desire the per cent. of HCl or total acids 
multiply number of cubic centimeters used by 0.03646. 
Example: Red color disappears with 4 cc. \( \frac{n}{10} \) sodium 
hydrate. \( 4 \times 10 = 40 \) degrees, or L 40; or \( 4 \times 0.03646 = 0.14584 \) per cent. free HCl. Red color reappears on 
further titration with 6 cc. Sodium hydrate 6 cc. \( \times 10 = 
60 \) degrees total acidity or A. Or, \( 6 \times 0.03646 = 0.21876 \) 
per cent. total acidity or A. \( \frac{n}{10} \) sodium hydrate solution 
may be obtained of any reputable wholesale drug house. 
Normal sodium hydrate solution = NaOH; 40.0; aq. 
dest. 1000.0. A \( \frac{1}{10} \) normal solution should be \( \frac{1}{10} \) as strong.

(C.)

**Lactic Acid.**—Uffelman's test—10 cc. 2 per cent. car­
bolic acid + 1 gtt. Tr. ferric chloride + 20 cc. water. 
Add to this a few drops of filtered stomach contents. 
A canary yellow color denotes lactic acid.

(D.)

**Propeptide.**—3 cc. stomach contents (filtered) + sat. 
sol. NaCl. Ppt. = propepton. If no ppt., add 1 or 2 m. 
acetic acid (10 per cent.). Ppt. = propeptide.

(E.)

**Peptide.**—Fehling's solution (cold) + stomach con­
tents 2 cc. (filtered). Agitate as in urine analysis. Red 
ring denotes peptone.

(F.)

**Pepsin.**—5 cc. filtrate (stomach contents) + 2 or three
disks of hard boiled egg, 1 cm. in dia., 1 mm. thick. If HCl is absent, add 2 m. of HCl diluted. In two to six hours at temperature of body, egg is digested if pepsin is present.

(G.)

Rennet.—5 cc. milk + 3 or 4 gtt. filtrate (stomach contents). Place in glass of warm water. If milk curdles in one or two hours we have rennet. If not add 2 or 3 gtt. 1 per cent. calcium chloride. Allow to stand. If no curd, no rennet zymogen.

(H.)

Starch Digestion.—2 or 3 cc. filtrate (stomach contents) + Lugol’s solution (iod., 0.1; KI., 0.2; aq. dest., 200.0). Dextrin = blue; erythrodextrin = red; achroodextrin = discolors; maltose = no change. Maltose and sugar give {Trommer’s} test. {Fehling’s test.}

(I.)

Volatile Acids—Boil stomach contents. Steam and litmus will show acid if present.

The examination of the contents of a normal stomach should give (Einhorn) an acid reaction; free HCl, present (40 degrees); lactic acid, absent; total acidity, 40 to 60 degrees; 0.15 to 0.21 per cent.; propeptone, present in small amount; peptone, in larger amount; pepsin and rennet, present; sugar, present; achroodextrin, present; erythrodextrin, absent or in small amount; dextrin, absent.

Motor Insufficiency.—To test, give trial meal of 200 to 250 gm. of beefsteak and 2 gm. of salol. (Salol is unchanged in stomach, but is broken up in the intestines into (a) carbolic acid and (b) salicylic acid.) Now normally, in one hour salicylic acid appears in urine; in ten to twelve hours it disappears from urine. Abnormally, in two to five hours it appears in urine; in two to five days it can still be found in urine. To demonstrate salicylic acid in urine, add to a test tube of urine a few drops Tr. ferric chloride.
A good thing to remember in treating an anemic patient with a stomach trouble is that we cannot cure his disease without first correcting his anemia.

In the preparation of this paper I have followed very closely the methods of procedure in my own laboratory, and while my paper is by no means complete, I have endeavored to give only what can be easily carried out by the average practitioner. I have purposely omitted blood analysis, as a subject too complicated for anything but actual laboratory instruction. Blood for the Widal test may be obtained on filter paper and mailed to some laboratory for completion of the examination.

For the most of what is of value in this paper I am indebted to my former instructor in clinical laboratory diagnosis at the Northwestern University Medical School of Chicago, namely, Dr. F. Robert Zeit. Among the books and papers consulted I may mention Einhorn, Hemmeter, Ewald, on the Stomach, Ogden on the Urine; and many others.
HEMOCHROMATIC BODIES IN PERNICIOUS ANEMIA.

WILLIAM K. YEAKEL, M. D., OMAHA.

The subject of hemochromatosis is one which has not been very generally discussed. Our medical literature affords us very little on this subject, and much less on that of the ultimate elements or "bodies" which go to make up the bulk of such a pathological condition. Hemochromatosis pertains to an excess of iron in the tissues, which results in a form of pigmentation. Pigmentation is applicable both to results of physiological processes and to pathological conditions, and may be considered under the heads of iron-free and iron-containing pigment, but it is the latter which I wish to consider in this article.

Iron-bearing pigment has been recognized as a distinct morbid process by the earlier writers, and certain diseases have come to be distinguished on account of this ever-present bronze-colored pigment, especially "pigmentary cirrhosis of the liver" and the "bronze diabetes." It is common, too, to find this iron-bearing pigment in the liver in many of the morbid conditions of the blood, particularly in the chronic valvular heart diseases, causing more or less congestion. In pernicious anemia there is also ever present this iron-bearing pigment. In a publication of the Lancet in 1888, Wm. Hunter laid down this rule with relation to pernicious anemia: that "the most constant anatomical change to be found is the presence of a large excess of iron in the liver."

As to the pathogenesis of the pigmentary products there has been considerable discussion and speculation, especially among French and German writers, and a few of our prominent American writers have taken up the subject. The discussion has been particularly as to whether the pigmentation is the primary etiological factor to the disease in which it is found, or whether
it be merely the result of other primal causes. Eugene L. Opie, in the Journal of Experimental Medicine in 1899, in reporting a case of hemochromatosis concludes that "hemochromatosis is a distinct morbid entity, characterized by the wide-spread deposition of the iron-containing pigment in certain cells, and with the pigment accumulation there is degeneration and death of the containing cells, and consequent interstitial inflammation." However, he reaches no definite conclusion as to the morbid processes leading to the formation of the pigment in hemochromatosis. J. George Adami, however, in an article in the Journal of American Medical Association of December 23, 1899, goes one very considerable step farther, and claims that the condition of hemochromatosis is without doubt of bacterial origin. He traces in a very unique manner, by a process which he terms "latent infection," bacteria inhabiting the digestive tract, passing through the intestinal walls into the circulation, and finally becoming embodied as dead matter within the endothelium and the cells, in the excretory glands, particularly of the kidneys and liver. He regards the colon bacillus as the most common form of bacteria inhabiting the intestine, and has demonstrated, by intravenous inoculation of certain forms of the colon bacilli into lower animals, that these organisms are readily taken up by the liver cells particularly, and in several hours after inoculation these appear as minute, slightly brownish diplococcoid forms within the protoplasm of the liver cells. These forms, by a process of degeneration, assume an appearance not unlike diplococci, hence he uses the term "diplococcoid." The similarity of these bodies to those making up the ultimate division in the hemochromatic pigment has led the author to make the aforesaid conclusions, viz., that hemochromatosis is of bacterial origin, and probably of a variety of the colon bacillus.

While doing some work in the Columbus Medical Laboratory in Chicago last summer, my attention was directed to the article by Adami, above referred to, and
becoming interested in the subject so forcibly presented by the author, at the suggestion of Dr. W. A. Evans, with whom I was working at the time, I went to work on this subject, and through his kindness secured the tissues from three cases of pernicious anemia, besides a fourth which has since come under my observation. I will not take time here to discuss the clinical diagnosis in these cases; suffice it to say that they were all unquestioned as to their being typical cases of pernicious anemia.

Case I.—The tissue in the first case was already on hand in the laboratory, and of this I examined merely the liver, that being the most important under the circumstances. I carefully prepared sections of this, and found, to my entire satisfaction, imbedded within the liver cells the ochre-colored diplococcoid forms. Some of the liver cells were almost filled with the pigment, and the rows of liver cells could be well distinguished by this fact alone; and where this pigment was so abundant the ultimate division was not clearly defined, but presented closely clumped masses of granular consistency, imbedded within the somewhat shrunken and partially degenerated cells, apparently undergoing disintegration. In other localities I found the liver cells to be entirely free from this pigmentation, and the cells presented an almost normal appearance. In still other localities the pigmentation was present in small amounts, still somewhat clumped, but not so closely arranged but that the final morphology could well be made out. This was interesting, for we found just what was described by Adami, "irregular clumps of stumpy ovoids," minute "diplococcoids," some of the isolated ones showing "a fine halo about them." It was observed also that the peripheral zone of the liver lobules was more completely loaded with this pigment, and yet pigment was found present within the liver cells immediately surrounding the intralobular blood-vessel. Furthermore, some of the endothelial cells of the vessels were engorged with these same diplococcoid bodies. True, as Adami says, not all the pigmented
bodies show themselves to be diplococcoids. Some present merely fragmentary particles. This is noticed especially of the pigment closely associated with the fat globules in the more degenerated areas of the liver lobule.

Case II.—Tissues of a second case of pernicious anemia came to us from the Insane Hospital at Kankakee, Ill. So far as the hemochromatic bodies in the tissues are concerned, we report the same findings in the liver tissue as that in Case I, only adding that these bodies are also frequently found in the blood spaces between the rows of liver cells, and within the bodies of some of the leucocytes in the interlobular connective tissue. The kidney in this case shows a great deal of granular degeneration, and an overgrowth of connective tissue, especially in the medullary portion. The hemochromatic bodies, as found in the liver, are also present, but to a very limited degree. They are found rarely, and then only in small groups, but their presence is recognizable. The pancreas showed an excessive connective tissue development, but I could find no iron-bearing pigment excepting in the endothelial cells lining the larger blood-vessels.

Case III.—The tissue in this case was obtained from a patient who died at the Cook County Poor Farm at Dunning, Ill. The microscopical findings of the sections were as follows: The kidney showed a very few hemochromatic bodies, but were found in frequent patches, more particularly in the cortical portion of the organ, both within the interstitial connective tissue cells, and the epithelium of the convoluted uriniferous tubules. The sections of the liver and of the pancreas showed nothing more than those in the preceding cases. The spleen showed a markedly pigmented condition, but a great deal of this is iron-free. The endothelial cells were thickly studded with iron-bearing pigment, and the outer coats of the blood-vessels again showed a very heavy, fine deposit. We have scattered throughout the spleen the diplococcoid forms very evident to the view, and again we have
what appear to be merely fragmentary particles of
the diplococcoids, indicating a process of dissolution.

Case IV.—The fourth case, and the one of greatest
interest to me, came under my personal observation
more than a year previous to the death of the patient,
and from the microscopical examinations and blood-
counts made at different times, I felt no hesitation in
pronouncing it a case of pernicious anemia. It was my
privilege to hold the autopsy on the case, and besides
selecting the ordinary tissue, I took also specimens of
the much congested and deeply pigmented lumbar lym-
phatic glands, and a portion of one of the ribs adjoin-
ing the costal cartilage, the marrow of which presented
a deep red appearance and was of a softer consistency
than normal. From this I carefully made numerous
smears, and stained with various stains. The micro-
scopical findings in this case in the spleen, pancreas, and
liver, with regard to the hemochromatic bodies, were
similar to those in the preceding cases. The kidney
tissue contained an abundance of these bodies, much
more so than in any of the previous cases. They were
very evident in the epithelial cells all along the line of
the uriniferous tubules, especially in the epithelium of
the convoluted portion. Bowman’s capsule also con-
tained them, and were found free between the outer
and inner capsules. The lumbar lymphatics presented
an appearance very similar to that of the spleen, con-
taining pigment of various kinds. In addition, I found
very many leucocytes filled with the diplococcoids,
some of these remarkably perfect in their form and out-
line, others very much broken up. The microscopical
examination of the smears from the marrow gave the
most satisfactory view of the hemochromatic bodies.
Here I found nests of the pigment, and as the smears
were made the bodies became somewhat separated, yet
remaining distinctly in groups. Of all the examina-
tions made with a view to the study of these bodies, I
found none so perfect in outline or uniform in size as
here. There was an absence of the more finely divided
particles, and with no other pigment to obstruct the
view and no tissue intervening, the picture was most perfect.

I have drawn no definite conclusions from my own limited investigation along this line, but have desired to report these rare but important cases, verifying the findings of these hemochromatic bodies in pernicious anemia with special reference to their presence in the red bone marrow, and hope I have stimulated interest in a subject that has interested me.

DISCUSSION.

Dr. H. Gifford, Omaha: I must confess that I know very little about these bodies, but just before the meeting several of us were discussing a case of pernicious anemia in which the patient, a perfect healthy woman, who had not been exposed to malaria, died within four weeks after the first symptoms of the disease had appeared. It was suggested that this probably was the result of an acute infection of the red blood-cells by some as yet undiscovered germ. It seems to me that the evidence given in this valuable paper of Dr. Yeakel's strongly corroborates this view.

Dr. W. K. Yeakel (closing the discussion): I would simply like to add here that in two of these cases we made cultures from the different organs of the body within twenty-four hours after the death of the patient, and to our great satisfaction we found almost pure cultures of colon bacilli. This, however, does not prove satisfactorily the immediate cause of the hemochromatic bodies as described by Adami.
Glucose is the most important of all the carbohydrates found in the urine. Investigation has developed that at least three distinct forms of glycosuria exist, viz.: (a) transient, (b) alimentary, (c) persistent, or diabetes mellitus.

Of the first form it is not my purpose to have much to say in this paper. It, however, is produced by nervous affections of many forms, as cerebral tumors, hemorrhages at base of brain, etc. That this is an actual condition no one doubts. Glucose appears for a short time in urine and disappears again upon removal of cause.

The form, however, to which I desire more especially in this short paper to call attention, is that known as alimentary glycosuria. Von Noorden made many experiments and found that by ingestion of large amounts of sugar a glycosuria could be produced in healthy persons by taking the following amounts: Milk sugar, over 120 grams; cane sugar, over 200 grams; fruit sugar, over 200 grams; grape sugar, over 250 grams. These figures represent the average amount in different persons. In some more could be taken than in others. This sugar should always be given in one dose before breakfast and the urine examined every hour for sugar. The excretion never exceeded, in these cases, the following: 2.8 per cent, of cane sugar taken; 1 per cent, of grape sugar taken; 0.8 per cent, of milk sugar taken. Similar experiments with starch have seemed to show that the amount of starch which may be taken without producing a glycosuria is practically unlimited.

Glycosuria may be produced, in a slight degree, by the ingestion of large amounts of sugar. This can only be accounted for by the possible physiologic hypothesis, viz., that the cells of the body
can only assimilate so much sugar and there is, consequently, an overflow into the circulation. Again, there may be no special lack of metabolism in the body cells or in any special organ, as pancreas or liver, but simply more carbohydrates than the cells can use; hence it is thrown into the blood as foreign matter. This condition may be either acute or chronic. Acute, as in the example of the feeding of large quantities of sugar at once; or chronic, as in men who have been for many years loading down their organisms with carbohydrates of all sorts. They eat large quantities of sugar, take little exercise and drink wines and beers.

Little has been said in literature previous to the year 1896 regarding this condition, when it was called to notice first by Dr. Saundry, of London. Later it has been taken up and discussed by Williamson, Bouchard, Von Noorden, Simon and others. They agree that from 6 to 9 per cent. of the cases of glycosuria may be directly attributed to this condition. They occur generally toward that period of life when metabolism of the cells begins to diminish, i.e., about 40 to 50 years of age; always in large, fleshy individuals who are of sedentary habits or accustomed only to indoor life; frequently true of those given to drink and always represent an overflow of the carbohydrates in the body. In speaking of glycosuria, Prof. Saundry (Practitioner, Vol. 65) says: “The simplest type is that which is called alimentary glycosuria, where the sugar excreted represents the surplus from the carbohydrate foods. In these cases glycosuria is almost normal or quasinormal, so we should not be unduly alarmed at its presence and should have no difficulty in explaining to our patients.” There is described in most text-books, under diabetes mellitus, a condition as follows: “It is a good plan at outset to determine whether the urine of a patient contains sugar or not on a diet absolutely free from carbohydrates. In a mild case it disappears and in severe cases it continues to be formed from proteids.”—Osler, page 327.
It is these mild cases that respond very readily to treatment that are the class of which we speak. They have few symptoms, often none, and the glycosuria is determined by accident, as in examination for life insurance. Occasionally they have a slight tired feeling or muscular pains and mild headaches. The urine may be normal or slightly increased in amount with a specific gravity of 1020 to 1029. Often it resembles a mild form of diabetes mellitus in clinical picture but not in course or treatment.

The sugar can be increased or decreased almost at will and the condition while it may, as long as the patient diets, present no glycosuria, as soon as he begins to live upon a regular diet again he has sugar in the urine. The clinical course is long and very mild. Prognosis is good as to life but not so good as to cure, although occasionally it is entirely cured. These generally are the cases of diabetes mellitus which are reported cured. As illustrative of this point, I wish to recite three cases; two I have personally observed and one I have taken from the literature.

Case I.—Mr. E., aged 52, a merchant, came to my office last July suffering from pains in the legs which he said were rheumatic. He complained of feeling tired and having a slight excess in thirst. He had the look of a heavy carbohydrate eater and said that he ate a great many potatoes and apples. His urine showed a specific gravity of 1020 and had 3 per cent. of sugar. He was put upon diet and in one week the urine contained only 2 per cent. of sugar, and before a month had passed only \( \frac{1}{4} \) of 1 per cent. It has often not reacted to Febling's solution. His symptoms disappeared and he is about his business as well as ever.*

Case II.—Copied from London Lancet, April 14, 1900.—A. M., aged 32, was sent to me (Dr. Saundry) Jan. 6, 1887, to be examined for life insurance. He was stout, weighed 168 pounds and measured 5 feet

* Since writing above, he has returned to regular diet and his sugar has returned in amounts of 4 per cent., with practically no untoward symptoms.
6 inches high. He considered himself in good health and presented no indication of any disease except that his urine was loaded with sugar—specific gravity, 1029. On July 18th he was re-examined. The specific gravity of his urine was 1026 and still loaded with sugar. Presence of sugar was proven by fermentation. On May 23, 1888, he weighed 168 pounds. Urine, specific gravity 1023, and contained sugar. On February 16, 1895, he weighed 175 pounds and considered himself to be in good health. His urine was still loaded with sugar. Recent examination found urine still loaded with sugar.

_Case III._—Mr. R., aged 36, weighed 210 pounds, height 5 feet 8 inches. Sugar in urine discovered by accident. At once put on diet. Sugar disappeared and he felt tired and almost unable to work; lost twenty pounds in weight. After dieting about a year returned to regular diet. Sugar returned; gained in weight and now is doing his work and complains of no discomfort whatever and has been in this condition for three years.

These are plainly cases of alimentary glycosuria in which there is either a low assimilation of sugar or an excess of same in blood.

In conclusion we may say alimentary glycosuria has the following characteristics, _viz._:

1. Few if any symptoms.
2. Clinical course mild.
3. Occurs mostly in men and those of a plethoric nature—high livers.
4. Very amenable to diet.
5. Prognosis good as to life.
6. Treatment, temperance in diet.
OFFICE TREATMENT OF GYNECOLOGICAL PATIENTS.

EWING BROWN, M. D., OMAHA.

The object of presenting this short paper is not so much that of bringing up for discussion the treatment of individual diseases of the female pelvis, but to inquire what class of cases can be advantageously treated in office work. Time was when nitrate of silver in solution and the solid stick should cure all visible inflammations and watch-spring intrauterine pessaries made the crooked cervix straight.

With the discovery of endometritis, iodine and carbolic acid cervical and intracervical treatments were advised and then intrauterine applications were added, followed by the far-reaching exosmotic action of glycerine tampons, which later, by the addition of ichthyol, made a combination capable of sending its curative action even into the peritoneal cavity. Yet more recently the much overestimated remedial agent is electricity, which sterilizes and dissipates the morbid products and inhibits pain. In justice to our patients and in honor to ourselves we should consider and question what actual permanent good is derived in inflammatory pelvic disease from the usual office treatment, and also what injury may have resulted. Too often, indeed, do we, after an unsatisfactory examination is made, perhaps with the lower bowel full, the waist constricted by a tightly fitting corset and the pain of the abdominal pressure adding a tense abdominal wall to resist our bimanual examination, simply advise the routine treatment of the hot vaginal douche and the use of some viburnum compound already prepared by the very accommodating drug manufacturing house. The patients, who are in continuous attendance at the physician's office week after week for gynecological treatment, may be divided roughly
into three classes: (1) Those in which the lower accessible genital canal is involved in inflammatory conditions; (2) those in which an abnormal position or condition of the parts has been brought about by traumatism or displacements after confinement; and (3) those in whom the genital parts in or surrounded by the peritoneum are involved. The frequency of these cases is nearly in inverse order to that given above. The class of patients embraced by the first division are from their very nature those requiring office treatment, being local, of easy access and in their beginning giving rise to no constitutional disturbances and symptoms.

Among the disorders embraced in the second division we wish to consider for a moment one class, that of displacement of the uterus, and of these cases we will speak of retrodisplacements only. Anteflexion is a condition in which no office treatment nor pessaries of any kind will be of any permanent benefit, the condition being brought on by lack of development at puberty and requiring surgical treatment only when it gives rise to dysmenorrhea or sterility. Anteversion is simply an exaggerated normal condition, existing more frequently in the mind of the physician than in the pelvis of the patient. I myself have never seen a case of anteversion. An old uncomplicated retrodisplacement does not necessarily of itself call for treatment, although it were better, in order to prevent complications, that it be replaced and a suitable pessary (Hodge or some modification) introduced.

The use and the abuse of the pessary has been for years a question of much discussion, men of ability who advise and those who decry its use being about equal. The chief objection is the great number and endless variety presented and presumed to fit any displacement. It would be far better if our pessaries only came to us in the form of rubber rings of varying size, and from which we could construct the pessary to fit our patient.

In retrodisplacements with light adhesions (tubal
and ovarian complications being excluded) or following subinvolution, very many cases may be cured by office treatment of massage with forced anteflexion and the use of the tampons, followed by the introduction of the pessary when little force is required to retain the uterus in normal position. Entirely too many of these patients are operated upon by either the method of ventral fixation or the Alexander-Adams operation, when the same skill added to an equal amount of patience could accomplish much as above suggested.

It is, however, more especially to the third class of cases, or those of inflammatory conditions in the lower peritoneal cavity, we wish to call attention. These embrace acute and chronic inflammation of the tubes and ovaries, inflammatory and hyperplastic conditions of the uterus with their often accompanying local peritoneal inflammations and adhesions. These conditions existing we have the involvement of parts entirely separated from the lower pelvic organs, not only as regards their position, but also the lymphatic drainage, the nerve supply, and, to a certain extent, the blood circulation. These conditions do not respond markedly to any local treatment, and it is questionable if the galvanic current does more than to relieve to some extent the pain and general distress, and if the glycerine and ichthyol tampon are of much advantage save by the mechanical support or splint to the diseased structure. It cannot be denied that the painting of the vault of the vagina with iodine compounds is of very little value. Rest, the free use of saline cathartics that the bowels may be unloaded and also to drain the pelvic circulation, will often aid the system more in the absorption of these diseased conditions which are not of that class requiring surgical interference.

There are three or four instruments which we believe should find no place in the office work of any physician. These are the uterine sound, the intrauterine applicator, and the stem pessary.
While much has been said condemning the sound, yet we know it to be an instrument too often used. Suffice it to say, that it is an instrument never needed for office diagnosis if the physician is qualified and of sufficient experience to gain any useful information with it. All information obtained by the use of the sound is easily acquired in other ways, and as a uterine repositor in retrodisplacements it is not worthy of consideration.

Stem pessaries should seldom be required in any case, should never be used unless the patient is absolutely quiet in bed so long as the stem' pessary is allowed to remain, and their introduction and retention always accompanied by the strictest antiseptic precautions.

The intrauterine syringe, instillation tube, or applicator all fall short of the thorough, even application intended, the entire endometrium never being evenly treated by any cotton or wool covered probe, and the dangers of colic, collapse and inflammations following the injection of any fluid, even in small quantities, into the uterus are such as to prohibit the use of any syringe or tube.

It should be the rule and without exception that, at the office, no treatment or instrument of any kind should be carried above the internal os. Many very simple troubles have been made serious conditions, and traumatism with infection has produced invalidism or sent the patient to the operating table by a lack of observance of this rule.

Medical or drug therapeutics as applied to gynecology is not now receiving the attention by the profession which it deserves. Surgical gynecology has so completely absorbed those who should give more attention to minor gynecology that in any of our more recent works on diseases of women scarcely any notice is paid to the every-day office cases, which it would seem should be relieved in other ways than by the knife. The so frequent menstrual disorders, ovarian neuralgias and associated pains, are deserv-
ing of more specific thought and treatment along the lines of general medicine. We should aim at a thorough diagnosis, seeking to exclude, if possible, female pelvic disorders, investigating all other abdominal organs, the general system and the vascular conditions for the cause of these numerous female complaints, before subjecting our patients to a prolonged course of local office treatment for minor pelvic troubles which are frequently and often wrongly presumed to be the causative factor.
CANCER OF THE UTERUS.

W. O. HENRY, M. D., OMAHA.

The title of my paper was meant to cover all the malignant diseases of the uterus, and possibly should have been so designated; but as this is the term best understood by the profession as well as the one commonly used by the laity, and since clinically they cannot always be separated, nor yet even microscopically can they invariably be differentiated, and because all the malignant diseases of the uterus can be classified under either carcinoma or sarcoma, and since the former are in proportion to the latter of 200 or 300 to one, I may be excused for using this common term.

1. As to the frequency of cancer of the uterus. "According to the report of the Registrar General, there died in England from cancer between 1847 and 1861, 87,348 persons. Of these 25,633 were males and 61,715 were females. About 25,000 of these died from uterine cancer." MacNaughton-Jones says: "It would appear from the statistics of Simpson, Kiwisch and others that in one-third to two-thirds of all cases of cancer, the uterus is the organ involved." The investigations of Welch in 31,482 cases of primary cancer show that 29.5 per cent. were in the uterus. Roger Williams says: "Cancer is four times as common as it was fifty years ago." While this estimate is undoubtedly too high, it is agreed among all observers that it is markedly on the increase and especially is this true of malignant diseases of the uterus.

2. As to the age of the patients suffering from malignant uterine disease and the comparative frequency of carcinoma and sarcoma. Of 3,385 cases investigated by Gusserow 2,936 occurred between 20 and 60 years of age, and more than one-third of the whole number between 40 and 50. Whilst the varieties of sarcoma may appear at any age they are more
frequent in the extremes of life, and while carcinoma in its varieties may appear at any time of life, they are more common between the ages above given. In 4,115 uterine growths given by Gurlt, 3,449 were cancers and only eight sarcomas. In another collection of 1,573 malignant uterine growths of the uterus only two were sarcomata. In 320 cases of malignant uterine growths at the Wurzburg clinic sixteen were found to be sarcomata.

3. As to the cause or causes of cancer, I cannot do better than quote from Cullin's recent and highly valuable work on cancer of the uterus, in which he gives what I believe to be the best and most progressive view upon this subject as it is understood today. "The views held by Houseman, Houser and others, that cancer is principally a disease of the epithelium, is gradually gaining ground, and is undoubtedly correct, but we still remain totally ignorant of the causes of this cell alteration. Summing up the various analyses as to the causation of carcinoma, we find that heredity seems to have little influence. Trauma as produced by parturition apparently bears a casual relation to cancer of the cervix, but not to that of the body. The results of the many investigations, while giving us an increased knowledge concerning the histological structure of carcinoma, have still left its etiology an unsettled question. The weight of evidence is against the parasitic theory." Reed says: "The causes of sarcoma of the uterus have not yet been determined."

4. As to the symptoms. The four cardinal symptoms of pain, hemorrhage, fetid discharge and cachexia I fear are the ones still depended upon by too many at the present time. The merest tyro in medicine can make a diagnosis by the time these symptoms are present, but then it were frequently better not to make one, but let the patient and her friends remain in blissful ignorance of her sad condition, for death will usually soon claim his own. It is, how-
ever, the privilege and the duty of the 20th century physician to be on the alert and make his diagnosis early and immediately insist upon the proper treatment, prevent suffering and save life. Upon this point Winter says: “The diagnosis of carcinoma of the uterus is the most responsible the physician is called upon to make. The price for every failure of diagnosis, or for a diagnosis made so late that the cancer has already become unsuited for operation, is a human life. Under all circumstances, and with all means at our disposal, we must strive to diagnose cancer at the very first examination. To wait in a suspicious case until destructive properties become manifest, as was so frequently done formerly, is today a most serious mistake.” Any uterine hemorrhage not easily accounted for, especially at or after the menopause, should have careful attention and investigation at once. Any uterine examination which discovers a nodule in the cervix or body, or which finds a readily bleeding surface or breaking down of tissue, demands close attention and further investigation. If from the history of the case, or the symptoms or signs, there is a suspicion of malignancy, a section of the suspicious point or a curettage with the scraping put directly into a bottle containing equal parts of alcohol and water should be sent to a competent microscopist with a brief history of the case for a prompt opinion. Do not wait for protracted hemorrhages, pain, fetid discharge, cachexia, loss of weight, and involvement of glands. Do not attribute hemorrhages at or after the menopause to “change of life”; nor a cauliflower excrescence to simple ulceration of the womb.

5. As to the prognosis. These malignant growths all tend to a fatal issue in from four months to three years of their beginning. While some die sooner and rare cases last longer, still the large majority die within these limits, if they are denied proper treatment.
6. The treatment. The treatment is of three kinds: (1.) Preventive.—Since so large a proportion of cases have their beginning in lacerated cervices, I cannot but believe that we as physicians are under a moral obligation to our patients, as well as to the public, to insist that all of these lacerated cervices, in which there is a reasonable possibility of carcinoma ever being developed, be at once repaired. Instead of advising all women over 35 years of age who have lacerated cervices to submit to an annual examination for the early detection of malignancy, as does Howard Kelly, I feel confident it would be vastly better for all such women to have the cervix repaired properly. In this day and age of the world, when the cervical canal is so frequently dilated forcibly with the steel dilators, and when the sharp curette is so commonly used, I feel that we should be somewhat cautious in the use of these valuable agencies, lest by too harsh use we inflict just the trauma needed to originate a malignant growth. I should like here to raise this warning note and emphasize it. (2.) The second kind of treatment is the radical. I am greatly surprised to see in McNaughton-Jones' recent and otherwise valuable work the statement: "If very early the disease be detected, and while it is yet limited to the cervix, a Schroeder's high amputation be performed, the results are sufficiently good to warrant the choice of this measure instead of hysterectomy." For he goes on to admit that the cases thus treated have a much larger percentage of returns, and that within two to five years, than those treated by hysterectomy. I prefer to agree with Reed, who I believe states the best and most progressive views of the profession when he says in his recent work, "With the brilliant results of to-day, achieved by the complete removal of the uterus, so-called "high amputation" is practiced but rarely, and should never be employed when the organ is removable." Even Kelly's late operation of splitting the uterus to get more room and carry
the enucleation further out to the pelvic wall is not allowable, for the danger of infecting your raw surface with cancer cells is too great, and the cutting must all be as wide of the growth and its natural channels of spreading as possible. Byrne's method of using the galvano-cautery and cutting with it as wide of the growth as is possible gives very brilliant results in his hands and may come into more general use. But radical treatment in the very earliest stages is today the ideal treatment, and then because the disease is local and not constitutional we may get permanent recovery. (3.) The third line of treatment is palliative in those cases which have passed the curative stage, or those which have gone beyond successful operation by even radical methods. Here, if the hemorrhages are profuse, a thorough curettement and packing with gauze and astringents will give temporary relief. If the discharges are profuse and very foul, not controlled by permanganate of potash, the carbide of calcium used as suggested by Etheridge will afford comfort. For the severe pain, rectal suppositories of opium are very beneficial.

DISCUSSION.

Dr. A. S. von Mansfelde, Ashland: In not arising to discuss Dr. Brown's paper I had in view the similar one of Dr. Henry, who has not disappointed me, by emphasizing the work of Dr. Brown. I think one of the most significant utterances upon the subject of cancer of the uterus made in the last five years is one by Duehrsen, to-wit: "I have been astonished to find that, of the many cases who have been at my clinic fearing that they were the subjects of cancer of the womb, but few proved to be so afflicted, and these were people who had never been treated by gynecologists. Women who had been priorly treated by such specialists for various diseases and injuries to the genital tract were remarkably free from cancer of the womb." This statement is strongly corroborated by Saenger. This is convincing proof, if any were needed, of the importance of the work of Dr. Brown and the advice proffered by Dr. Henry's paper. I would like to hear from Dr. Jonas, a surgeon by preference.

Dr. A. F. Jonas, Omaha: I am not a surgeon from choice, but by circumstances. I never saw a student on the bench who thought less of becoming a surgeon than I. The first
surgical operation came as near causing me to faint as anything in my life. I have drifted along a certain line in spite of myself and have become a surgeon. I want to discuss a single point in Dr. Henry's paper. A word of warning as to the use of calcium carbide. It is one of the most dangerous things ever placed in the uterine cavity. I believe it has hastened the death of many women. At first the claim was put forward that it gave relief to inoperable cases, and when it was first presented, we were all anxious to try it. You remember many went further and stated that it not only gave relief but it entirely cured. None of these claims have been realized. You recall that when Ethridge produced his first communication he claimed that the gas involved had a destructive effect on cellular structures aside from its antiseptic effect. Dr. Rus, of Chicago, proved that the acetylene gas was not a caustic and did not destroy tissue. He showed that when water and calcium carbide were put together, the result was slack lime. It is not difficult to see how unreliable must be the action of such a chemical. In at least two of my cases in which I tried this remedy the fatal termination was hastened.

Dr. Henry (closing the discussion): The particular points which I wish to emphasize are these: The importance of early and radical operation and the futility of high amputation or other conservative work, even when done early in these cases. It does seem to me that the physician of to-day should be able to recognize troubles of this nature without treating them for weeks and months as ulceration of the womb. I have had a number of cases sent me that had been treated for ulcer of the womb until they were absolutely hopeless. A physician ought to understand that in a case that is at all suspicious he should investigate at once and find out what the trouble is. In one case I remember a physician treated a woman and told her she had a little bit of a fibroid, and cut off a piece of it and treated her for six months, until all hope of recovery was gone, when it was patent early in the case that the disease was malignant. These cases can be saved if treated earlier. I wish you would notice what I said in my paper concerning carbide of calcium. It is merely to be used in cases that are inoperable, and where there is nothing you can get that will relieve the foul discharge. If used carefully and intelligently, you will never harm a patient in the world. The trouble with Dr. Jonas' use of it was, he did not use it simply to check the discharge and get rid of the foul odor.
MASSAGE IN DISEASES OF THE FEMALE PELVIC CAVITY.

TORGNY ANDERSON, M. D., WAHOO.

In dealing with the various diseases and derangements of the female sexual organs we, as a rule, recognize two separate and distinct ways: the conservative, where we rely chiefly upon drugs and local applications, douches, rest in special positions; and the radical, where the gynecological surgeon's scalpel, scissors, and forceps perform the necessary work. Both ways are good,—yes, necessary; but there is still another way, entirely too little practiced, which in many cases leaves very excellent results, yet not a cure-all but rather an adjunct to the others. I refer to massage of the pelvic organs. That massage holds its distinct place in therapeutics no one will hardly deny, but, to my knowledge, very few practice it; some because they know little or nothing about it, and, sad to say, some because it is too much trouble and takes too much time. Yet massage, judiciously administered, is a potent agent for good, and I believe that the very few bona fide cases that have been benefited by the now legalized fad, osteopathy, owe their improvement to the manipulations, simulating massage, when they accidentally strike the right spot in rubbing their victims.

In all the wide field for the usefulness of massage there is hardly none where better results will be acquired than where plastic exudates and impaired functions of muscles and tendons exist. And if we consider the female pelvis with its rich blood supply so easily engorged and its chief organs suspended mainly by ligaments, its cavities and its large plexi of nerves, we can readily see what great indications for massage treatment we here have. Still, as I have said above, massage is not a cure-all, and in treating disorders of the female pelvis there are several contraindica-
tions. Chief among these are recent pus formations, as acute salpingitis, also aneurisms, atheromatous processes, largely developed varices, acute phlebitis and periphlebitis, malignant growths, ovarian cysts, acute inflammatory processes, as peritonitis, and sometimes when we find indications of stone in the bladder. Of course, no massage ought to be given during the menstrual period. I do not think that a short description of the most common procedure in massage of the pelvic organs would be out of way, and so I will give the description of it as taught by its discoverer and chief executor, Major Thure-Brandt, whose name the process bears—Brandt's method:

Brandt always placed the patient in the position ordinarily described as lithotomy position. The legs are flexed, abducted, feet resting with the soles flat on the lounge or table. The operator takes his position at the left side close to the pelvis and facing the patient. The left index finger is introduced in the vagina as high up as possible. This is done to steady the uterus and its appendages. The finger sometimes rests against the cervix or against the sides of the vagina, but never against its anterior wall. With the three middle fingers of the right hand close together, the abdominal wall is pressed in over the part that is going to receive massage. Small circular or semi-circular motions are now performed, pressing down upon the diseased organ, but always observing the general rule in massage to begin near the centrum of vessels and to empty the veins through frictions as far as possible. A stroking motion is also performed over the lymphatic vessels in order to hasten their emptying. Before the beginning of the massage the patient ought to empty the bladder and rectum, sometimes washing out the rectum. Towards the end of the treatment the patient is encouraged to raise the lower part of the back from the lounge and to rest only on the back of the head and on the feet. In this position a few abduction and adduction movements with the thighs are performed. This is done so that
the patient makes the motions and the physician exerts resistance by grasping both knees of the patient. The result of this is the carrying away from the pelvic cavity of any excess of blood.

The chief indications for massage of the pelvic organs are exudates remaining after inflammatory processes and displacements of the uterus. It is easy to see how an increased circulation in the tubes, ovaries, and uterus, not to speak of the connective tissue and the blood-vessels in the ligaments, will impart tone and vigor to those organs. Yet we must always allow a certain time, at least two months, to elapse after the inflammatory process has ceased before beginning massage. One of the most gratifying results of this procedure is the disappearance of pain from the pelvis, and in my opinion many an ovarian neuralgia, which has been considered incurable, can be relieved, if not cured, by massage. Perioophoritis and oophoritis are among the most successfully treated diseases. The changed position of the uterus alone brings relief to many in these affections, lessening the constant straining on the tubes and ligaments.

In dealing with enlarged tubes and ovaries, however, a word of warning ought to be given. Be sure of what you have, and remember that a possibly existing abscess might just as easily rupture into the peritoneum as out through the uterus and vagina.

How common a disease of the uterus is chronic metritis, and here the massage has worked wonders. Not only do the subjective symptoms, the pain, the dragging down sensation, soon disappear, but so does the dysmenorrhea and the reflex symptoms from bladder and rectum. The uterus is diminished in size. Sterility is often cured, and I know of many cases where women, who during several years of married life never became pregnant, have conceived after massage in accordance with Brandt's method. Also habitual miscarrying has been stopped. The same good results have been reached in the treatment of chronic endometritis and in subinvolution. Of thirty-five patients
treated with massage for chronic metritis the result was as follows: Without complications, seven cured, eight improved, five no change; with complications, eight cured, five improved, two no change. The mean duration of treatment was eight weeks. Out of twenty-two cases of sterility caused by chronic metritis, having been sterile for over three years, two conceived during time of treatment, two immediately afterwards, and twelve later. In chronic endometritis we will often find the mucous membrane returning to a healthy state even after fungous changes have taken place. When we know how often we fail in the purely medicinal treatment of metritis and endometritis, we ought, before resorting to surgical measures, to avail ourselves of such a safe and simple procedure as massage of the uterus.

I have no doubt that every one of you frequently meets cases among your female patients where a positive diagnosis is difficult to arrive at. They tell you about their backache, their tired feeling, and everything else their brain can find to add to the picture of suffering and misery. You examine her and find nothing positive. In order to do something for her, you give tonics, sedatives, vaginal douches, maybe electricity, but after all you have done your experience will be to find your patient leaving you in order to go the rounds of the medical profession of the locality. In these cases massage treatment very often benefits the patient. I would advise that the treatment be given very carefully and with increasing force. Begin with the stroking motion, emptying veins and lymphatics. Then give a vibratory massage to the uterus, tubes, and ovaries. As a rule, the patient will complain of soreness after the first three treatments, but this will disappear and is only a sign of increasing blood-supply, which means more nourishment and less actual pain. There are hardly any cases that either are not benefited or where during the treatment the real nature of the disease is not found—thus enabling us to apply the right kind of treatment by operation or otherwise.
Everyone engaged in gynecological practice knows how often we find the uterus displaced or flexed, and also how often the patient refuses to submit to an operation in order to restore the organ to its normal position. Massage is here of great service, especially if combined with gymnastic movements and rest in special positions. I will give the massage treatment for prolapsus uteri, as an example, and the other misplacements and flexions will easily be understood in their varied management.

The patient is placed so that she stands leaning forward, her arms stretched forward and resting with the hands on the wall or on the back of a chair. A light beating movement is given over the small of the back. This is done in order to irritate the nerve centers. Then she places herself in the same position on a lounge or bench, the head raised, raised pelvis, flexed and abducted legs, and the feet together. The physician places himself at her left side. The uterus is now replaced in the ordinary way. As soon as the uterus is back in its place an assistant, who is standing on his knees on the bench, lifts the uterus still higher up. This is done by leaning over the patient and with the three middle fingers of the open hand, ulnar sides of which touch each other, pressing in between uterus and os pubis, then drawing and lifting the thus grasped uterus upwards and inwards in the abdominal cavity as far as possible without too much pain. The physician, who has introduced his index-finger in the vagina, follows as far as possible, supporting and directing, then, while the uterus is carried still further, he awaits its return and then directs and supports it, again carrying it backwards. This double treatment is repeated three to four times each treatment. The physician, still in the same position, now begins with the middle fingers of the right hand a light kneading motion over the parts wherever the abdominal wall is pressed in. If the uterus is enlarged in volume, or plastic exudates remaining after inflammatory processes are present, then the usual movements over the
uterus are gone through. The vaginal wall is also given treatment by frictions, sometimes quite hard, pressing the vagina against the back of the pubic bone. The patient now raises by her own force the lower part of the back from the bench so that she rests only on the head, upper part of the back, and on the feet. In this position a few ab- and adduction movements are made. This is done in order to strengthen the levator ani muscle in order to allow it to give its full support to the uterus. The physician now reintroduces his index-finger in the vagina, carries the uterus backwards, and, helping the patient to arise with his right hand, supports with the left index-finger the uterus which otherwise easily would fall back into its former place. The treatment is now finished, as it was begun, with a beating movement over the small of the back. The patient is allowed to rest awhile, lying on her stomach on a lounge. Besides this the patient is told to perform herself the gymnastic movements when going to bed or on awakening, by exercising the levator ani and external sphincter muscles; this is done by simulating efforts to prevent passing of gas or feces from the rectum. The treatment ought to be given three times a week for four to six months.

It is, of course, a shorter way to restore a prolapsed uterus by operation; but, as I said before, all do not submit to an operation, and in those cases the patient ought to be given the benefit of Brandt's method. Much good can be done by massage, but also much harm; and the physician ought always, here as elsewhere, to be sure he is right before going ahead. That one kind of treatment does not cure all cases we all know, but in its place the massage treatment ought to be welcomed as an adjunct to other remedial efforts to relieve suffering womankind.

DISCUSSION.

DR. A. S. VON MANSFELDE, Ashland: There should be a word of commendation for Dr. Anderson's paper. It can be expressed by saying that one who is acquainted with Robinson's description of the conditions existing in adhesions in
the pelvis can quickly understand how the use of massage will do away with these adhesions and the reflex troubles resulting from them. Personally, I would like to add a word from my experience of many years, in regard to what we call adhesions existing in the pelvis of women. My experience has been to the effect that of all the treatments that can possibly be instituted, there is none so gratifying as that of massage and electricity combined. The doctor is right about that; and if electricity were to be credited with nothing else, its work in these cases alone should secure for it a permanent place as a therapeutic measure of great importance in medical gynecology.

Dr. D. E. Sedgwick, York: Our attention is especially called to the use of massage on account of the number of practitioners who are practicing it through the country. I believe this is probably a good thing. I think this paper is an excellent one. I am very much interested in it, and I think a doctor can accomplish a great deal by its use. In regard to these cases getting to the osteopaths, we want to know how much of the disease is psychological and how much is real. I once heard of a case of a lady who went to an osteopath with all the symptoms of appendicitis. She had suffered with every possible symptom until she received this treatment. Nothing was the matter, and she was cured. I have learned of a person who was operated on, in a large city, for appendicitis and was cured, nothing really having been the matter. I believe a great many of the cases that have been cured by osteopaths are psychological, and I believe that this treatment should be in more general use. I believe it should be taught to nurses more than it is now, so that the busy practitioner could turn these cases over to the nurse and know that the performance could be carefully carried out, because a busy physician has no time to carry out massage as it should be done. I believe that the medical profession should see to it that a class of nurses should be educated so this duty could be performed intelligently by them, and thus relieve the busy practitioner. When treating these cases we want to determine just how much is actual and how much is psychological; we want to know whether we are doing something through the mind or whether we are overcoming some physical obstruction.

Dr. B. F. Crummer, Omaha: I do not believe that massage can be performed correctly by nurses, because it requires the practical knowledge of a physician, and no nurse with a few lessons can be competent to perform this. The best physicians, after all their years of experience, make mistakes. It requires skill and knowledge in order to apply massage properly. It is hard work. It is such hard work that most of us give it up after a few years. I am no weakling, and yet I tell you after giving two or three treatments I feel as if I did not want to do anything else during the day. I believe more physicians should be instructed in this work, but I do not think every doctor should take it up. It requires special knowledge. One should have visited pathological rooms frequently in order to see for himself
what these pathological features really are. Massage should be performed only by physicians who are trained specially in this line of work.

Dr. W. B. Ely, Ainsworth: I rise to second the suggestion of Dr. Sedgwick. In my judgment, massage should form one of the essential branches, not only of every medical college, but in the educational course of trained nurses as well. My own experience in massage is limited, but it is not wholly nil. In many instances I have witnessed the most satisfactory results from its employment in cases of lumbago following typhoid fever. I did not feel that I had the time to do the actual work myself, so I instructed a layman in immediate contact with the patient—his father or brother—and the results of even such massage as they were able to apply were all that I could have wished. Massage in its entirety, no doubt, is an extensive and delicate art, requiring long and diligent training for its complete mastery, but for its application in the vast majority of cases in which it is indicated, my notion is that it embraces nothing that the majority of trained nurses cannot perform intelligently under the instruction and guidance of the attending physician. But I hope to see the day when no medical college will be "recognized" in which massage does not form one of the branches indispensable to graduation.

Dr. W. O. Henry, Omaha: I want to commend the doctor's paper in many respects, because there is no question but that there is value in massage when properly applied. In cases of oophoritis of long standing, in retroflexed uterus, adherent tubes and ovaries, when there is no pus present or other infective fluid, I am sure proper massage in these chronic cases will do untold good. It is well to remember, however, that no one has yet acquired the skill by which he can always say that a given case with enlarged tubes and adherent masses in the pelvis is entirely free from all infective material upon simple examination; and hence in these cases great care should be exercised lest the massage induce a septic and possibly fatal peritonitis.

Dr. Torgny Anderson (closing discussion): I have nothing special to add, except that the subject of massage should be more thoroughly taught in medical colleges, not only in medical schools, but in training schools for nurses. Without this knowledge, of course they can never know when to stop and when to proceed. And further, I want to state that in cases of retroflexion and retroversion of the uterus the massage treatment for prolapsus is of little or no value, as it is almost impossible to grasp a retroflexed or retroverted uterus. That the massage treatment of the female sexual organs ought to be given by a physician, and one trained in massage, is self-evident. It happens so often during the course of treatment that new conditions are discovered that require a different procedure, and there is never a moment during the treatment when the physician must not use his reasoning faculties to the utmost. It not only requires special training, but a high degree of diagnostic skill, to give massage in diseases of the female pelvic cavity.
NEBRASKA STATE MEDICAL SOCIETY.

OBSTETRICAL PRACTICE.

W. H. WILSON, M. D., TABLE ROCK.

I do not know that I have any apology to offer for appearing before you with this paper, for I take it that the subject is of enough importance to warrant a paper thereon at any meeting of this society. Were I, however, to offer any reason for choosing the caption of this paper, it would be about as follows:

At the annual meeting of this society one year ago, there was something of a surfeit of papers and discussion on the subject of midwifery in almost all its phases. So much so that I thought few, if any, members would have the temerity to mention obstetrics at this meeting, much less read a paper on the subject. A fear that the art of accouchement might be lost sight of or forgotten prompted me to recall the subject at this time.

From my reading and the instructions which I received as a medical student, together with journal articles, papers, and discussions in medical societies which came to my notice as a young practitioner, all tended to impress me with the belief that the parturient condition must be, to say the least, a very hazardous one; and that he who practiced obstetrics must needs have a stout heart. I rather expected, almost every time I was summoned to attend a lying-in woman, that it would surely be the time when I would be confronted with either post-partum hemorrhage, eclampsia, placenta previa, a condition which would necessitate perforation of fetal head, a resort to symphyseotomy, Cesarean section, or some other untoward condition, and I always breathed easier when all was over and I was on my homeward journey. By way of explanation, I would say that I had sat at the feet of, and drawn my inspiration on obstetrics from, such men as Charles Warrington Earle, De Laskie Miller and William T. Lusk. Possibly I was
too apprehensive, too ready to draw conclusions, but I do think there is too great a tendency on the part of many of the profession to present childbirth in the light of a pathological condition, rather than in that of a physiological process.

I am pleased to say that after eighteen years of continuous, active practice, and the attendance upon something over five hundred cases of obstetrics, having never been called upon to lose a parturient woman in my own practice, and having in all this number met with but very few cases of complicated labor, I have long since concluded that childbirth is simply one of the physiological processes in the economy of nature. True, our advanced civilization has tended to complicate the process to some extent in a per cent. of cases, and to cause an occasional case to be decidedly and obstinately abnormal; and when a man has been drifting along for some length of time with normal cases so that he is feeling quite serene, and is suddenly, unexpectedly, and ruthlessly confronted with one of the worst forms of complicated labor, it tries his mettle and taxes his resources; for there is no time to consult books. He must decide at once and act quickly if he is to be of any value to his patient. But, happily for both the childbearing woman and the practitioners, such cases are infrequent.

In all my cases I have seen but four cases of eclampsia. The first was in consultation in the early years of my practice, back in 1888. The labor was short, the child being born an hour before the attending physician reached the house; and he, finding but little to do, made only a brief stay and was getting in his buggy to drive away when he was hurriedly called to the house, where he found the woman in convulsions. I saw her twenty-four hours later with the family physician, but the woman died three days after confinement, without having regained consciousness. Venesection had been resorted to freely by the attending physician at the outset of the convulsions.

The second case was a primipara in whom the con
vulsions began during the first stage of labor, when the os uteri was only dilated to about the size of a half dollar. The seizures were violent and followed each other in quick succession, and could only be controlled by continuous use of chloroform. Assistance was hastily called, forcible dilatation speedily accomplished by hot vaginal douches and the use of the fingers. The forceps were then applied and delivery accomplished, though not without great effort. The patient made a slow but uneventful recovery. It might be of some interest to state that I learned that a sister of this woman had, a year or two prior to this time, died in puerperal convulsions. I have had the satisfaction of attending my patient in two subsequent confinements, the first of which would undoubtedly have been attended with eclampsia had she not, during the last four months of gestation, received preventive treatment. Her third and last, so far, was quite natural.

My next case was a multipara, and had but one light convulsion in the latter part of the second stage of labor, delivery soon being accomplished, and all went well.

My last case of eclampsia occurred about one year ago, a number of miles in the country. The woman was a young, large, strong German primipara. The husband and two women other than the patient were the only persons nearer than half a mile. The convulsion was violent, prolonged, and came on, without premonition, early in the second stage of labor. The younger of the two women with me became panic-stricken, and with but one shoe on fled from the house and never stopped running till she reached her home, half a mile distant, leaving me with no help but the husband and a feeble old woman. A second convulsion soon followed the first while I was getting ready and applying the instruments, the effects of chloroform having worn off; but by rapid hard work delivery was soon completed, and the patient and all connected with the case made speedy recovery.
Placenta previa has occurred but twice in my practice, the first case being one in which there was almost central implantation and profuse hemorrhage. We succeeded in pushing the placenta to one side, applied forceps to head and delivered without difficulty, but the patient was extremely exhausted, yet made a good recovery. It hardly need be added that the child was “still-born.”

The second case was one of lateral attachment, and while there were a few pretty vigorous gushes of blood, yet the head was caused to engage, hemorrhage checked, and labor completed naturally, mother and child being left in good condition.

Unfortunately I have had to make one perforation, not in my own practice, but where I was called in consultation. The woman was a young Bohemian in first confinement. This nationality in our section of country do not, as a rule, employ a physician in such cases. This woman had labored for about thirty hours without result, at the end of which time a physician was called who worked with her another twelve hours, and failing to accomplish the desired end I was sent for to assist him. I found a small woman with a rather contracted pelvis and a large child. The patient was very much exhausted, and all our efforts to deliver failed. It was then decided to perforate, which was done, the forceps applied, head compressed and delivery accomplished. Probably symphysiotomy might have saved from the mutilating operation, but this was more than a dozen years ago, and symphysiotomy was not advocated much at that time. But even now I have some doubts as to the utility or practicability of this operation, or that of Cesarean section in cases that may come up unexpectedly at a distance in the country.

Along the line of post-partum hemorrhage I have had considerably more experience than with any of the preceding complications; and yet I have not been troubled with it nor met nearly so many cases of this as I had supposed I would. From my conversation
with other physicians along this line, I judge that for some unaccountable reason I have gotten off easy, for I think I have not had to exceed a dozen really troublesome cases of this nature, all told, and two of those were in consultation with a brother practitioner. The cases all recovered, but I will confess to having been frightened beyond measure a few times. Of course I do not mean to say that the above number is all that I have had in which there was a tendency to flooding, for I have had a number of cases where there has been this tendency, but of a minor nature and easily controlled.

About the most troublesome work of this kind I have had was in two successive confinements in the same patient, who was a foreigner and lived a distance in the country. In the first instance I was not called till after the child had been born some two hours, and the placenta failing to come away, and there being profuse hemorrhage, I was called. I found the woman in a condition of syncope, lying in a pool of blood and clots, with a relaxed uterus and retained placenta. The afterbirth was delivered without difficulty, the clots turned out and the hemorrhage soon checked by position and compression of the uterus. But for a time the flow would begin anew when compression was removed for a short time. She fainted repeatedly, but ultimately recovered sufficiently to undergo about the same experience within two years. This time I was called to confine her, but the labor being somewhat precipitate, the child was born nearly a half hour before my arrival. The placenta was yet unborn, and, as at the previous time, there was copious flowing; but the loss of blood was not nearly so great as at the preceding birth, yet she was much exsanguinated. Incidentally, I would state that some six weeks later I was called to see this woman and found her limbs enormously swollen and edematous. In fact there was profuse general anasarca; and I learned that the flow of urine had been very scanty for two or three weeks, and at this time
there was almost complete suppression. From this condition she made a slow but good recovery.

I have derived little or no benefit from ergot administered by the mouth for the control of postpartum hemorrhage, usually finding the most efficient means to be that of position, compression, and occasionally a good tampon. This is about the extent of complications worthy of mention occurring in my obstetrical practice.

The per cent. is so small that I am led to believe that the great mass of cases require but little or no interference on the part of the physician, other than to give assurance to patient and friends, who are usually more or less apprehensive, especially so if the physician is fussy or meddlesome, or gives the least impression by his demeanor that he is not complete master of the situation.

While the foregoing embodies my views in a general way relative to childbirth, and while I recognize it as a natural physiological process, yet I realize that ordinarily it is a very painful one, and believe it to be the duty of the obstetrician to reduce the suffering to as near the minimum as he reasonably can. To this end I have resorted more and more to the use of chloroform in obstetrical practice, with gratifying results to my patrons and satisfaction to myself.

I am not a friend to a very frequent use of forceps in childbirth, believing, from experience, that delivery can be accomplished in a large majority of cases by less formidable means. I confess to having occasioned resorted to the use of instruments, where nature would have done the work in time; but, owing to the nervous impatience of the subject and the somewhat tardiness of nature, and a desire on my part to get such a job off my hands, have put on the forceps and completed the work. Usually where the contractions of the uterus are rather inefficient they can be very much improved by a liberal use of quinine or strychnine, or both. In cases wherein the contractions were of a spasmodic type and seemingly ac-
complishing but little, I have found inhalation of chloroform to work admirably and hasten delivery.

Believing childbirth to be physiological, I never use the post-partum douche unless I have had to resort to mechanical delivery. For the same reason I do not use the binder, believing it will more likely do harm than good.

In a general routine practice, especially in the country, I do not regard it as possible to conduct all labor cases in a strictly aseptic manner, but this can be approximated by thorough cleanliness and the use of antiseptics. This being observed during labor, then after it is completed if the woman be well cleansed with a bichloride solution, changed and put to bed, one will rarely see any septic after-trouble.

I have refrained from quoting authors or going into the literature of this subject, but have simply endeavored to give a brief synopsis of obstetrics as I have practiced it.

THREE PROTECTIVE POINTS IN THE MANAGEMENT OF LABOR.

A. B. SOMERS, M. D., OMAHA.

1. Protection against infection.
2. Protection of the perineum.
3. Protection against the gynecologist.

Physiological processes should, as far as possible, be left to themselves, and, as a rule, a policy of non-interference is to be commended; but there are exceptions, and it is my purpose in this paper to point out where a policy of careful, well-directed interference in normal labor is productive of good results.

1. Puerperal Infection.—This is the greatest danger to which the lying-in woman is exposed, and is not the result of any failure in the physiological process itself, but to outside sources either during or immediately following labor. This infection may be either direct or indirect: direct when introduced from out-
side sources by the attendant, and indirect when introduced from the patient herself, through lack of proper caution on the part of the attendant. Two classes of cases demonstrate the truth of these statements. First, those cases in which there are no vaginal examinations made either before, during, or immediately following labor very rarely suffer from infection; and, second, cases that are confined in our modern lying-in institutions, with strict aseptic precautions, are infected still less frequently than if left wholly to nature's resources. The greatest danger of infection, then, comes from the haphazard methods of the average obstetrician rather than any defect in the physiological processes.

The second criticism that I would make regarding the average obstetrician is, the equipment that he carries; or, in other words, the average obstetric bag and its contents. It is generally admitted that the best obstetric work can be done only under the strictest aseptic precautions known to modern surgery. It is, therefore, to the surgeon rather than the physician that we must look if we would learn aseptic methods; and the time is approaching when the obstetrician will be compelled to adopt surgical methods of asepsis, or go out of business; not by any compulsory law to be placed on our statute books, but by the most effective of all laws, an enlightened public opinion.

Considering the surrounding of our cases, many times filthy in the extreme, the duration of labor often extending over a period of many hours, the class of work performed by a physician, coming in contact with all manner of infectious diseases and conditions, strict aseptic conditions are difficult of accomplishment; but not so difficult but that a fair amount of persistent care will overcome all difficulties. For the accomplishment of this result let me enumerate several important items.

First—The ordinary, old-fashioned, small-sized obstetric bag must needs be discarded for one of much
larger size, viz., the ordinary sized emergency surgical bag, or one of the modern obstetric bags. For example, the Edgar outfit, of New York, or the bag recommended by C. F. Bacon, of Chicago, either of which contain trays for disinfecting purposes, together with abundant room for carrying an operating gown, instruments for all obstetric operations, with a sufficient quantity of aseptic material, gauze cotton, ligatures, etc., together with antiseptic solutions, or tablets, to meet all ordinary obstetric emergencies; and one or more porcelain or granite ware basins to be used in cases of necessity.

After obtaining a good outfit, the next question which arises is, how to make a practical use of these in disinfecting his own person and the field of operation in the patient. For these purposes the most effective agents are hot water, soap, and a scrub brush, to be followed by such antiseptic agents as may suit the inclination of each individual. Personally, I require four vessels or dishes for water and antiseptic fluids, and there are times when I find houses which can produce but one wash dish, and that an old tin or granite ware one filthy with household use, unless I call for the wash boiler or some of the cooking utensils. These four receptacles I use as follows: One for the use of hot water, soap, and scrub brush, a second for a bichloride solution, a third for a lysol solution, and a fourth for a solution of boracic acid. The first to be used for a period of five or ten minutes, supplemented by the use of knife and file for the nails, the second to put on the finishing touches in the way of disinfection, and also to contain numerous cotton or gauze sponges for the purpose of thoroughly cleansing the external genitals and surrounding parts of the woman, who has previously been well bathed with soap and water and the rectum well cleansed with a hot water enema. These bichloride sponges are of further use if at any time the perineum becomes soiled by fecal discharges during the continuance of labor. The third to contain a 1 per cent.
lysol solution which is both antiseptic and lubricant for the hands; and the fourth to contain a boracic acid solution in which are placed some gauze sponges for cleansing the baby's eyes and mouth, also ligature for cord, scissors and artery forceps and clamp for cord, together with needles, silk, catgut, etc., if occasion may require. In addition to this equipment, the woman should be dressed in clean bed-clothes, the bed provided with clean sheets, and numerous clean towels be provided. With this preparation, the only thing lacking for first-class aseptic work is persistent care from the time of being called to the bedside until the third stage of labor is complete and the mother made clean and comfortable in a dry, clean bed.

2. Protection of the Perineum.—We often hear about “supporting the perineum during the passage of the head.” Just what that expression means, appears to me to be rather indefinite and the process of rather doubtful utility. Nature's method of delivering the head in normal positions is by the process of extension, the vertex being passed out under the symphysis pubis, the back part of the neck becomes fixed at the symphysis, and the process of extension takes place; the forehead, face, and chin being swept out over the perineum, if left to itself; and why not, if we consider labor physiologically? This process takes place under the influence of labor pains, or strong muscular contraction of the uterine and abdominal muscles, which will, in quite a large percentage of cases, cause more or less laceration of the soft parts, the degree of laceration depending on the severity of muscular contraction, the size of the child's head and shoulders, and the rigidity of the soft parts. It is at this point that well directed efforts on the part of the obstetrician will result in protecting the parts from injury in most cases. This may be accomplished by lessening the severity of the labor pains, relaxing the perineum, slowing the process of extension in order that the parts may have time to become distended, and, finally, to deliver the head between, and not during,
labor pain; and the methods of accomplishment are by
preventing all voluntary effort on the part of the pa-
tient by causing her to exhale her breath by short,
panting efforts, talking or screaming; next by the use
of chloroform or ether to complete surgical anes-
thesia if required, though a minor degree of anes-
thesia is usually sufficient. This checks the force of
the muscular contraction and also relaxes the peri-
neum, while well directed pressure by the hands on
the fore part of the head will slow the process of ex-
tension until the parts have become sufficiently dis-
tended so that the head may be delivered by stretch-
ing the perineum over the head between pains, rather
than allowing the head to be forcibly driven through
the vaginal outlet during muscular contraction. The
head being delivered, care must be exercised in the
same way until the shoulders are delivered and the
entire process of delivery is accomplished with a min-
imum amount of danger to the soft parts of the
mother. If any lacerations of the vagina or perineum
have been made, they should be immediately repaired;
first, for the reason that it is a favorable time for the
repairs to be made, and, second, as a precaution
against absorption of any infectious material that may
by any means come into contact with the parts. In-
terfering with extension may be accomplished by pres-
sure on the perineum, but it can be done much more
effectively by pressure on the head directly, leaving
the perineum entirely free. The entire process of de-
ivering the head and shoulders through the soft parts
should be kept constantly under the eye of the at-
tendant in order that he may the more accurately
gauge the efforts required to accomplish the desired
results.

3. Protection against the Gynecologist.—A large per-
centage of the ills peculiar to women are traceable to
childbirth; and while the actual mortality at the time
of and immediately following labor is not so very
great, the conditions of more or less chronic invalid-
ism of greater or less degree is appalling. In addi-
tion to our efforts to protect our patients against infection and injury to the soft parts, already referred to, I wish to call your attention to the importance of post-partum examinations, and the repair of any existing abnormal conditions, rather than to allow the woman to live a life of greater or less suffering for months or years, to be at last compelled to resort to some surgical procedure, which, in too many instances, does not restore her to a normal condition, and which, altogether too frequently, destroys the reproductive function. The most favorable time for these examinations and treatment is about six weeks after confinement, at which time the process of involution should be complete and the woman in a condition to perform all her physiological functions. Should there be any unhealed lacerations of the cervix or other soft parts, now is the time to repair them. So, also, any inflammations or other abnormal conditions may be treated, and a condition of perfect health brought about as quickly as possible and the dangers and sufferings of a greater or less degree of invalidism averted.

DISCUSSION.

Dr. A. S. von Mansfelde, Ashland: I do not agree with the doctor in saying that repairs ought to be made about six weeks after delivery. I have been taught that whenever any repairs are to be made, they should be made right away. This may, perhaps, not be best in the repair of the uterine neck, but a stitch or two here even, may prove of great service. An examination later on is certainly of great value to the patient and may lessen the subsequent work of a gynecologist materially.

Dr. B. F. Crummer, Omaha: There is just one point in Dr. Wilson's paper I should like to call your attention to. The doctor's reference to his feelings when called to his first case carried me back a few years. I remember a remark made by a man with whom I was associated, a man who had perhaps attended a thousand cases of labor, that he never felt the responsibility of surgery so much in any case as he did in obstetrical cases. But there are two reasons. You are surrounded by different circumstances in different kinds of surgical cases. Usually in an emergency case you have your assistants and are surrounded with the necessary articles, etc. Very often in country practice you are thrown on your own resources, just as Dr. Wilson says. I do not think any physician gets sufficient fees for coun-
try practice. If you could run your fees up to what they should be and have it understood that you are to be paid for what your services are really worth, it would be a right move in the right direction. You could get double the fees you are getting now and the physician would not only have larger fees, but larger respect of the community he serves. No lawyer would work as you do for $15 or $20. Farmers would not expect lawyers to do so.

As to the use of anesthetics in obstetrical cases, I believe in their use. Some physicians very seldom give anesthetics in their practice. I have gone back to the practice of many years ago, and now give ether in place of chloroform. I have been better satisfied with results, and I think it is better for the average patient.

Question.—Will you please state why?

Dr. Crummer: I think you get the slight evanescent effect more correctly, and I suppose without the same relative danger. In the hands of the unskilled physician it is safer than chloroform. As for the evanescent effect, you can get it very nicely with ether and keep it up as long as you want it. There is a peculiarity about the administration of chloroform. I have noticed it fifty times in my life. When a doctor stays all night in a confinement case and in the morning, on stepping out of the door, he will light his cigar for a little consolation, but the best kind of cigar you can have will taste like a cabbage leaf, all from the effect the chloroform has on the mucous membrane, and the cigar proves a sad disappointment.

Dr. Ewing Brown, Omaha: A word in regard to fees. I do not think it is right for a physician engaged for an obstetrical case to make definite fees for that case. When we are engaged we do not know whether we will be in the house two hours or two days. I think when a physician is called to a case of obstetrics he should make a charge the same as when called to a case of pneumonia, scarlet fever, or any other kind of a case. The custom of definite fees is wrong to ourselves and indirectly wrong to our patient. It is wrong to ourselves, because we do not receive the fees we should; and wrong to our patient, because we do not give the patient the attendance she should have. It is natural that a physician will not make as many calls and consequently will not watch his case as closely as if he were going to be paid for it. The tendency of the old custom was simply $15 if you get the baby. I do not say this in any slightful way, however.

Dr. W. B. Ely, Ainsworth: Apropos the remarks of Dr. W. H. Wilson, relative to our fees in obstetrical cases I believe that duty to himself and to his profession demands that every physician in the country should make a cast-iron rule, which should be adhered to in every case without faltering, that obstetrical cases must be paid for at the time of the child's delivery. The rule should be so enforced as to grow into as universally recognized a necessity among the laity as that of paying cash for postage stamps. Such
a rule would be tantamount to doubling our fees. It is im-
possible to urge a single valid reason against it. Obstetric
cases are not "emergency" cases in any sense. The respon-
sible head of the family has had six to nine months in
which to get ready to meet its expenses, and if he is ever
going to pay for it at all, he can pay at the time the service
is rendered, and it is no hardship to insist that he shall do
so or dispense with the service. For myself, I have classi-
fied my obstetrical work upon the basis of the kind of ser-
vice rendered at the time of the child's delivery, and have
established a flat price for each class, which ranges from
$10 to $50. My care of a case begins any time after the
fourth month immediately upon my engagement and ends
only with the complete recovery of the mother. Whatever
service the case calls for is rendered, and my flat price
covers the entire expense, whether my attendance covers six
weeks or ends in six days. Whatever theoretical objections
may be urged against such a business method, my expe-
rience has been that its practical advantages outweigh them
by a wide margin. Under it I am enabled to watch my
cases as closely as I please, so that many times I am able
to discover brewing mischief in its incipiency, without
worrying the patient or her husband with disturbing
thoughts of a perpetually increasing bill, with the possibil-
ity of my own premature discharge from the case. The rec-
ords of my obstetrical practice, which covers near to a quar-
ter of a century, are very satisfactory, and I attribute to
this rule of mine, more than to any other single factor, the
fact that I have yet to record my first maternal death.

Dr. J. A. Pollard, Nehawka: Dr. Wilson's paper was
making me feel good, but Dr. Somers' has somewhat
changed my feelings. My experience has been along the
same line as Dr. Wilson's. We should all be better equipped;
but I do not know how a country practitioner is going to
prepare himself and be ready for all these cases in that
way. I know in my experience it is not one-half the time
that I am previously engaged for a case of labor. More
frequently I am called in a hurry. When I get there I have
no time to make all these aseptic preparations. I get
along the best I can in my case of labor. I use ethe-
real antiseptic soap as a lubricant in my examinations.
When I get through I direct the attendants to wash the
woman's parts with hot water as hot as she can bear it. I
direct them to apply hot cloths to the parts, and if every-
thing is not right I direct them to send for me. For many
years I have been the only practitioner in my neighborhood.
I have had to attend cases of labor when I was attending
cases of erysipelas, diphtheria, and scarlet fever. I take
what precautions I can and I have never infected a woman
yet. It has been many years since I have had a case of
puerperal fever. This may be extremely good luck. If so,
I am glad of it. I do not see how we country practitioners
can adopt all the antiseptic precautions recommended. It
seems to me almost an impossibility. Many times these are
emergency cases. My preceptor said that he never entered into a lying-in chamber without a prayer, and I feel much the same way. It may be that this has something to do with my success. At any rate, I have been fortunate in saving my patients and sometimes getting "cash on delivery." Is it criminal not to prepare an obstetrical case as one would a surgical case?

Dr. A. F. Jonas, Omaha: I have had some experience in operating at night with the use of chloroform that is interesting. Chloroform used by artificial light produces an irritating effect on the bronchial mucous membranes. In an operation for acute appendicitis we had our preparations made for the operation and the patient was nearly under the influence of the chloroform when the anesthetist began to have a very hysterical cough, there were two other physicians and they soon began to cough too, and I thought to myself, "What is the matter with these people?" when I began to do the same thing. I thought it would be impossible for me to finish that operation. In looking up the literature on this subject I find that in using chloroform by artificial light the light causes the chloroform to decompose, and the resulting gas has an irritating effect on the mucous membranes. So since that time, when I operate at night, which I often am called to do, I keep all unnecessary lights out of the room until the actual moment of the beginning of the operation.

Just one word about laboratories. I think doctors try to do too much work on the "Cheap John" plan. You go to an osteopath, and he has all convenient preparations. You go to a barber; he shaves you and throws in two clean towels. He charges you ten cents for the shave and the towels. You go to a doctor's office and look back in the corner, and often find an old soiled towel he has used one or two weeks. It is simply a matter of habit. It depends upon how we are trained. You call in a surgeon whose business is surgery alone, and he has his whole outfit with him, even has his towels with him. If a barber can throw in two towels for a ten-cent shave, we ought to throw in a half dozen towels for a ten dollar case. When people come to some doctors' offices, what have they to work with? Their desks are decorated with sample bottles of medicine, covered with dust, books scattered promiscuously, cigar stubs in abundance, a dusty case of tools, etc. This is why many people go to irregulars. They have things attractive. A dentist, for instance, has his supplies and instruments in good shape, he has nice dainty towels, and napkins; his instruments are bright and clean. If a dentist can have these things, why not we? The obstetrical methods detailed by the doctor are not elaborate; they are simplicity itself. I approve of them.

Dr. A. S. von Mansfeld, Ashland: I want to thank Dr. Jonas for his language. It is timely. Whenever a physician has no time to take care of his patients rightly, he should turn them over to some young man who has the time. If
he is not fully prepared with instruments necessary for modern practice let him stop trying to practice medicine and engage in something where he does not need any.

Dr. Anderson, Pawnee City: In regard to the use of anesthetics in obstetrical cases, I have never used ether. I have never heard of a bad result by the use of chloroform in these cases. There is no danger in using chloroform, if used as it should be.

Dr. W. O. Henry, Omaha: In regard to operating after night by gas light, I think Dr. Jonas' remarks on that point very good. I found the same difficulty of which he spoke. By keeping as much light out of the room as possible the trouble is greatly relieved.

I was pleased in most respects with Dr. Somers' paper. It perhaps seems to the ordinary physician that to give so much attention to the preparation and undertake so many precautions of an antiseptic nature would be a very laborious undertaking. Of course, getting these things ready and getting accustomed to it may prove a little task, but, once you have the things arranged and get a little accustomed to their use, it is comparatively easy. But in regard to the patient, everything should be looked after at the end of six weeks, except the perineum, which should be repaired at once, not only to see that lacerations are all repaired, but a serious trouble often follows confinement on account of a woman getting up soon and having a displaced uterus. Many of our women, after they have been in bed nine days, get up and attend to their household duties and after this goes on for several months they find they have trouble that will never be remedied. But if within six weeks examination is made and all injuries properly attended to and displacements corrected, these cases may be avoided. So that is one reason they should be examined after six or eight weeks following confinement and everything duly corrected, leaving the woman in a normal condition when the obstetrician finally discharges the case.

Dr. Wilson (closing the discussion): I do not care to take up more time on this subject, as the session is rapidly nearing a close and other papers have not yet been reached. I stated in my paper that I did not believe it possible to manage all cases of obstetrics in an absolutely aseptic manner, yet I am in hearty sympathy with the idea brought out in the discussion, of using the utmost precaution along the line of antiseptic midwifery, for we cannot be too careful in the matter of cleanliness in our obstetrical work. As an anesthetic in obstetrical cases I have never used anything but chloroform, so cannot say how ether acts. In fact, I hardly know how to use it, not only in labor, but in a general way. I have been so well satisfied with the use of chloroform that I have had no desire to change.

Dr. A. B. Somers (closing the discussion): In regard to Dr. Wilson's paper. I certainly want to congratulate him on his success in his practice. A physician who has attended
500 cases of labor and had four cases of puerperal eclampsia, and two of placenta previa and has never lost a patient, has been exceedingly fortunate. This is a record that any man should be proud of. In regard to puerperal convulsion. This gentleman says he attends a great many cases which he does not know previously that he is going to attend. This is just what the medical practitioner does need to know. The patient should be made to understand that the physician must know from one to three months previous to their confinement. Excepting in emergency cases, I will not attend a case of confinement unless I have been engaged in advance. If I cannot know from one to two months in a case of confinement I do not want the case. Dr. Holmes says, "The proper time to begin the training of a child is one hundred years before it is born." The proper time to treat puerperal eclampsia is thirty days before it occurs. You want to treat your patient at least for thirty days before confinement. You ought to know all about the condition of that woman. Make urinary examinations. It is necessary in an examination to know (1) the amount of urine the woman has passed in 24 hours, (2) specific gravity, and (3) amount of urates. This examination must not be made in the usual haphazard way of getting the urine in the morning. If there is anything abnormal about anybody's kidneys you want to examine in the middle of the day, and at night, as morning urine is more nearly normal. In addition, we want to test for urea; if there is 2 per cent. of urea, there need be no fears of puerperal convulsions. I have run up against a few cases in my life that are enough to stagger a man; these are things that we want to look out for. You want to be engaged some months in advance, and if you give them the necessary attention you want to be paid for it.

A few words concerning hemorrhage and the use of ergot. I admit that in many cases ergot is practically worthless, and there are many women whose stomachs are not in condition to absorb it. There are certain preparations of ergot that are good. Parke, Davis & Co.'s aseptic ergot for hypodermic use is reliable. I never saw a case yet in which it did not cause the uterus to contract. And in addition to that I carry a few tablets of ergotine, which can be used either in solution by the stomach or hypodermically. Ergotole is another reliable preparation. Massage of the uterus is invaluable. But in case these are not effective, I recommend the injection of hot water into the uterus itself. You will need some preparation for this; if you have a good clean syringe and uterine douche tube and will introduce several pints of water at 115° F., you will stop almost any hemorrhage. Massage, ergot, and hot water will easily prove effective in most cases. I recommended distinctly in my paper that all injuries to the perineum should be repaired immediately. Now, as far as the cervix is concerned, I do not believe there is any practical use in repairing it at this time. If you get profuse hemorrhage, you may have to repair; but
otherwise, let the cervix go. I would always postpone the repair of the cervix until the final examination after six weeks. I say six weeks for this reason: In an ordinary case of labor after six weeks a woman has returned to her normal condition and she is able to perform all her normal functions even to becoming pregnant again.

Now in regard to the general care of obstetrical cases. You do not know in what obstetric case you are going to get a hemorrhage. While every obstetric case is not a surgical one, yet it belongs to the surgical branch of medicine and is peculiarly liable to infection; so you will have to go with all these preparations, which I will speak of later. Ether is coming into more general use in obstetrical cases at the present time. I use chloroform almost wholly in my own practice, but there is a certain danger of shock. I have seen a healthy woman go through labor without complication and nearly die of shock. There is less liability of shock in the use of ether than in chloroform, so also there is less liability to hemorrhage after ether than chloroform. It also interferes less with uterine contraction if given during the progress of labor.
SO-CALLED FOLLICULAR PHARYNGITIS.

H. L. BURRELL, M. D., OMAHA.

While this disease is generally recognized as an important throat affection and volumes have been written upon it, the literature of the subject is still in a chaotic state. The name, having been adopted before the histology of the tissue involved, or the pathology of the disease was understood, is unfortunate, in that it in no way describes the tissue affected, nor has any reference to its pathology. The synonyms are hypertrophic pharyngitis, granular pharyngitis, clergyman’s sore throat, etc., which tend to confound the disease with other diseases of the throat having entirely different clinical histories. The disease belongs essentially to the lymphatic tissue, which is interspersed in the form of distinct nodules throughout the deep layer of the post-pharyngeal mucous membrane. Histologically these nodules are not unlike the faucial and pharyngeal tonsils and, like them, disappear from the healthy throat at about the age of puberty. Anatomically they are simply nodules of lymphatic tissue and are not follicles in any sense of the term. The foundation for the disease is laid in the early years of life when that peculiar tendency toward the development of hypertrophic changes in the lymphatic structures exists; even to a marked degree in certain individuals who are said to have a lymphatic diathesis.

This affection belongs to adult life. Although the hypertrophic changes take place early, they are accompanied with no symptoms which can be referred to these nodules; but other changes are necessary which require years to bring about, namely hyperplasia. Hypertrophy then is the predisposing cause of the disease. The exciting cause is protracted inflammation, in recurring attacks or long continued, which causes a proliferation of the connective tissue element of the nodules. The diagnosis is extremely
easy in uncomplicated cases. A good reflected light will show the mucous membrane of the posterior pharyngeal wall of a light pink healthy color, while scattered over its surface and protruding from it can be seen a number of bright red masses of a rounded contour. These masses stand out distinctly from the healthy membrane and constitute the diseased nodules. In many cases they tend to aggregate along the posterior folds. They range in size from that of a No. 1 bird-shot to that of a pea. There is no abnormal secretion due to this disease, since these are not secreting glands and the surrounding membrane is not necessarily in a diseased condition. Any increased secretion from this region is due to a condition other than the one under consideration. The disease is most often seen in women, due no doubt to their greater susceptibility to nervous reflex symptoms, rather than to their greater liability to the affection. The annoying symptoms of this disease are, as a rule, reflex in character. Pain, in my experience, is rare, and perhaps absent in uncomplicated cases. If it exists at all, it is of a neuralgic character. Cough is rather a constant symptom; it may be laryngeal or bronchial, but is unaccompanied with expectoration, unless there is also a catarrhal affection of the throat or bronchial tubes; the same may be said of hoarseness. Although hoarseness is not a symptom of the disease, the voice is weak and easily fatigued. The muscles of phonation give out easily. Singers are usually unable to reach high notes or hold those lower on the scale. Speakers find their voices giving out early in a discourse with no cause apparent to them, such as hoarseness or expectoration. The treatment suggested in our later text-books is to me absurd; that is, applications of astringents and alteratives for long periods of time. Those who speak of cauterization, with the exception of Bosworth, suggest it as a last resort in a half-hearted way. Thus they endeavor to remove hyperplastic tissue which has been years forming, by the application of silver, iodine, etc. The
rational treatment is simple, easy done, and effective. The posterior wall of the pharynx should be painted once only, with a 4 per cent. solution of cocaine, after which from three to five nodules should be destroyed. In four to six days as many more, until all are removed. The galvanocautery is the pleasanter instrument to use, in the absence of which, however, a knitting needle heated to a cherry red and wound to protect the tongue can be used with equally good results. I could cite many cases of this disease that have been permanently benefited or entirely cured by this simple treatment. However, one or two will serve our purpose.

A physician brought his wife to me, who had a distressing cough, which was worse at night and which nothing seemed to relieve. She had seven or eight nodules on the pharyngeal wall, which were removed at two sittings with a complete and permanent cure.

A young lady, the daughter of an Omaha physician, called to see if she had any laryngeal disease. She was taking vocal lessons, and found that her voice fatigued quickly, although it seemed strong in the beginning. She had no hoarseness or expectoration. Her larynx being in a healthy condition so far as I could determine, I began destroying the nodules, which were quite numerous, but small. She gradually improved, without any other treatment, and now has no difficulty whatever in voice using.

The prognosis in this disease is, as a rule, good, although we find an occasional case of long standing in which the reflex symptoms do not entirely cease, even after the focus of irritation has been removed.

Since the tissue is a sclerosed lymphatic nodule and not an inflamed follicle in the true sense of the term, and not necessarily a pharyngitis at all, at the time when the annoying symptoms appear, I would suggest as a proper designation for the condition lymphatic sclerosis of the pharynx.
## List of Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Town</th>
</tr>
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<tbody>
<tr>
<td>Ackley, W.</td>
<td>Juniata</td>
</tr>
<tr>
<td>Aikin, Joseph M.</td>
<td>Omaha</td>
</tr>
<tr>
<td>Alden, J. M.</td>
<td>Pierce</td>
</tr>
<tr>
<td>Allen, A. R.</td>
<td>Lincoln</td>
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<tr>
<td>Allen, George V.</td>
<td>Murray</td>
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<tr>
<td>Allenberger, C. A.</td>
<td>Shelby</td>
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<tr>
<td>Allison, C. C.</td>
<td>Omaha</td>
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<tr>
<td>Anderson, J. C.</td>
<td>New York</td>
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<td>Anderson, August</td>
<td>Norfolk</td>
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<td>Anderson, A. B.</td>
<td>Pawnee City</td>
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<tr>
<td>Anderson, P. E. T.</td>
<td>Wahoo</td>
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<td>Anderson, D. F.</td>
<td>Edgar</td>
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<tr>
<td>Anderson, T. B.</td>
<td>Broken Bow</td>
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<tr>
<td>Anderson, C. A.</td>
<td>Stromsburg</td>
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<td>Andrews, J. A.</td>
<td>Eustis</td>
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<tr>
<td>Angle, E. J.</td>
<td>Lincoln</td>
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<tr>
<td>Archard, J. W.</td>
<td>Grafton</td>
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<tr>
<td>Arnold, H. J.</td>
<td>Columbus</td>
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<tr>
<td>Arthur, M. L.</td>
<td>Omaha</td>
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<tr>
<td>Arts, Chas. V.</td>
<td>Hastings</td>
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<tr>
<td>Ashton, Thos. H.</td>
<td>Syracuse</td>
</tr>
<tr>
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<td>Omaha</td>
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<td>Parchen, H. W.</td>
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<td>Peabody, J. H.</td>
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<td>Percival, J. P.</td>
<td>Prague</td>
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<td>Person, S.</td>
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<td>Philbrick, I. C.</td>
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<td>Pinkerton, W. J.</td>
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<td>Plumb, P. E.</td>
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<td>Lincoln</td>
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<td>Powell, E. W.</td>
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<td>Pritchett, G. L.</td>
<td>Fairbury</td>
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<td>Protzman, W.</td>
<td>Lincoln</td>
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<td>Quincy, Mary A.</td>
<td>Ashland</td>
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<td>Name</td>
<td>City</td>
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<td>Ralph, J. B.</td>
<td>Omaha</td>
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<td>Rankin, T. B.</td>
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<td>Reynolds, W. F.</td>
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<tr>
<td>Zigler, C. H.</td>
<td>Vesta</td>
</tr>
</tbody>
</table>
INDEX.

Aikin, J. M. ................................................................. 108
Alimentary Glycosuria ............................................. 293
Allison, C. C. ............................................................. 246
Anderson, A. B. ......................................................... 197, 255
Anderson, Torgny .................................................... 308
Anemia, Pernicious, Hemochromatic Bodies in ........ 287
Anurism, Traumatic; True and False ......................... 219
Annual Report of Secretary, Report of Committee on the. 19
Appendicitis, Diagnosis and Treatment of ................ 259
Appendicitis, Some Recent Conclusions in Regard to ... 226
Bicknell, G. H ............................................................... 182
Bone Disease, Two Cases of .................................... 250
Bromide of Strontium .............................................. 209
Brown, Ewing ............................................................. 297
Bryant, D. C. ............................................................... 171
Bullard, J. W. .............................................................. 178
Burrell, H. L ............................................................... 334
Cancer of the Uterus ................................................. 302
Children, Treatment of Pneumonia in ..................... 116
Cirrhosis of the Liver ................................................ 101
Colleges, Medical ...................................................... 61
Commission Evil, The .............................................. 96
Conclusions, Recent, in Regard to Appendicitis ......... 226
Credentials, Committee on, Report ......................... 23
Davis, B. B ................................................................. 226
Davis, N. S., Jr ........................................................... 123
Dearing, W. H. .......................................................... 209
Deceased Members ................................................... 27
Delegates to American Medical Association ............. 30
Dental Affections and Those of the Eye, Relation between 182
Derangement, Internal, of the Knee-Joint ................. 246
Diagnosis, Laboratory, for the Busy Practitioner ....... 273
Diagnosis and Treatment of Appendicitis ................. 259
Discoveries, Recent, Meaning of, Concerning Malarial Organisms ................................................... 138
Drug Habit, Cause and Restriction ........................... 108
Dynamic Medication ................................................. 199
Election of Officers ................................................... 24
Ely, W. B. ................................................................. 52
Everett, H. H. ............................................................ 273
Financial Report ....................................................... 9
Follicular Conjunctivitis ........................................... 178
Follicular Pharyngitis, So-called ............................... 334
Formalin, Some Local Uses of ................................. 197
Gifford, H ................................................................. 96
Glycosuria, Alimentary ............................................. 293
Grothan, Georgina .................................................... 116
Grothan, O............................................................................................ 259
Gynecological Patients, Office Treatment of........................ 297
Hamilton, H. P..................................................................................... 266
Hemochromatic Bodies in Pernicious Anemia ....................... 287
Henry, W. O........................................................................................ 302
Hildreth, M. L....................................................................................... 71
Homeopathic Society, Greeting from...................................... 17
Infections, Some Remarks on....................................................... 266
Intraspinal Injection, Further Observations on.................. 238
Jonas, A. F............................................................................................. 219
Knee-joint, Internal Derangement of the................................ 246
Labor, Management of..................................................................... 322
Laboratory Diagnosis for the Busy Practitioner.............. 273
Lavender, W. R..................................................................................... 101
Liver, Cirrhosis of the....................................................................... 101
Long, F. A.............................................................................................. 250
McClanahan, H. M..............................................................................2, 39
Malarial Organisms, Meaning of Recent Discoveries Con­
cerning .......................... .......................... .......................... 138
Management of Labor, Three Protective Points in the...... 322
Mason, R. D........................................................................................... 214
Massage in Diseases of the Female Pelvic Cavity............. 308
Medical Colleges and Professional Standards...................... 61
Members, New .................................................................................. 34
Members, Registered ....................................................................... 36
Merriam, L. A...................................................................................... 199
Minutes of Meeting ........................................................................... 7
Report of Committee on Necrology.............................................. 25
Neurasthenia ..................................................................................... 82
Observations, Further, on Intraspinal Injection .................. 238
Observations in Modern Smallpox .............................................. 71
Obstetrical Practice ......................................................................... 316
Officers and Committees ................................................................. 5
Ophthalmia Neonatorum, Plea for Greater Care in the
Treatment of Cases ........................................................................... 171
Orthodoxy, Therapeutic ................................................................. 52
Otitis Media, Treatment of Acute .................................................. 159
Owen, F. S.............................................................................................. 159
Pelvic Cavity, Massage in Diseases of the Female............. 308
Peritonitis, Suppurative Tubercular, A Case of................... 255
Pharyngitis, So-called Follicular .................................................... 334
Philbrick, J. C....................................................................................... 61
Pneumonia, Treatment of, in Children.................................. 316
President’s Address ........................................................................... 39
Report of Special Committee on.................................................... 20
Professional Standards and Medical Colleges.................. 61
Recent Epidemic of Smallpox, A Few Notes on the .......... 74
Reception Committee’s Report....................................................... 11
Robert, Jay G....................................................................................... 82
Relation between Dental Affections and Those of the Eye 182
Rustin, Frederick .............................................................................. 238
Shields, W. D....................................................................................... 191
Sigmoid and Colon, Inflammation of the............................ 214
Somers, A. B....................................................................................... 322
<table>
<thead>
<tr>
<th>TOPIC</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox, Few Notes on the Recent Epidemic of</td>
<td>74</td>
</tr>
<tr>
<td>Smallpox, Modern, Observations in</td>
<td>71</td>
</tr>
<tr>
<td>Stokes, A. C</td>
<td>293</td>
</tr>
<tr>
<td>Stomach, Round Ulcer of the</td>
<td>123</td>
</tr>
<tr>
<td>Strontium, Bromide of</td>
<td>209</td>
</tr>
<tr>
<td>Suggestions in Therapeutics</td>
<td>191</td>
</tr>
<tr>
<td>Therapeutic Orthodoxy</td>
<td>52</td>
</tr>
<tr>
<td>Therapeutics, Practical Suggestions in</td>
<td>191</td>
</tr>
<tr>
<td>Towne, S. R</td>
<td>74</td>
</tr>
<tr>
<td>Traumatic Aneurism, True and False</td>
<td>219</td>
</tr>
<tr>
<td>Treasurer's Report</td>
<td>10</td>
</tr>
<tr>
<td>Treatment of Acute Otitis Media</td>
<td>159</td>
</tr>
<tr>
<td>Treatment of Cases of Ophthalmia Neonatorum</td>
<td>171</td>
</tr>
<tr>
<td>Tubercular Peritonitis, Suppurative, A Case of</td>
<td>255</td>
</tr>
<tr>
<td>Ulcer, Round, of the Stomach</td>
<td>123</td>
</tr>
<tr>
<td>Uterus, Cancer of the</td>
<td>302</td>
</tr>
<tr>
<td>Ward, H. B</td>
<td>138</td>
</tr>
<tr>
<td>Wilkinson, A. D</td>
<td>4</td>
</tr>
<tr>
<td>Wilson, W. H</td>
<td>316</td>
</tr>
<tr>
<td>Yeakel, W. K</td>
<td>287</td>
</tr>
</tbody>
</table>