PROCEEDINGS

OF THE

NEBRASKA

STATE MEDICAL SOCIETY

TWENTY-THIRD ANNUAL SESSION.

HELD AT

LINCOLN, MAY 12TH TO 14TH, 1891.
OFFICERS—1891-92.

CHARLES INCHES, Scribner, President.

E. A. BENTON, Central City, First Vice-President.

WM. PROTZMAN, Lincoln, Second Vice-President.

M. L. HILDRETH, Lyons, Recording Secretary.

L. A. MERRIAM, Omaha, Corresponding Secretary.

W. M. KNAPP, Asylum, Treasurer.
MINUTES
OF THE
TWENTY-THIRD ANNUAL SESSION,
LINCOLN, MAY 12TH TO 14TH, 1891.

Lincoln, May 12.
The society was called to order at 8:15 p.m.,
by President Walden.

Dr. Humphreys, of the Committee on Creden­
tials being absent, Dr. E. A. Benton, of Central
City, was appointed to fill vacancy.
The following named permanent members were
in attendance, and registered during the session:
D. A. Walden, E. A. Benton, L. J. Abbott, A. S.
V. Mansfield, Alice Huff Crandall, S. M. Lane, V. H.
Coffman, W. O. Henry, Geo. Wilkinson, J. S.
Butler, J. O. Carter, M. L. Hildreth, C. Inches,
J. S. Devries, L. A. Merrim, G. 0. W. Farnham,
J. T. Miller, B. B. Davis, W. L. Dayton, J. K. L.
Duncan, D. W. Hasson, J. D. Chidester, J. R.
Haggard, D. K. Ball, S. F. Blair, F. A. Butler, M.
B. Newhouse, E. E. Aukes, H. W. Hewit, H. C.
Demaree, W. H. Wilson, H. B. Lowry, C. B.
Manning, J. D. Miles, M. A. Perkins, N. R. Hobbs,
J. H. East, A. B. Anderson, G. W. Brandon, F. D.
Haldeman, M. H. Blackburn, E. L. Smith,
S. A. Wright, W. M. Knapp, E. H. Smith, W. S.
White, J. C. F. Bush, R. C. McDonald, D. F.
Anderson, W. M. Stone, W. F. Milroy, G. W.
Meredith, F. C. Brosius, J. E. Hall, T. R. Clark,
J. J. Porter, M. H. Everrett, B. F. Crummer, A. F.
Jonas, F. J. Bricker, A. B. Somers, J. T. Wade,
J. E. Summers, Jr., J. P. Lord, E. Smith, H. Link,
R. Stanhope, R. S. Albright, E. Bates, Elizabeth
Grabe, C. Rosewater, C. F. Kirkpatrick, W. F.
Reynolds, J. T. Hay, J. C. Jones, G. H. Peebles,

On motion voted to dispense with reading of
minutes.
Report of Committee of Arrangements.
The society was invited to a banquet, to be
given by the Lincoln Medical Society at the Capit­
al Hotel, on the evening of Thursday, 14, at 9
o'clock. An invitation was also extended to par­
ticipate in a carriage drive; and by vote, 1 o'clock
p. m. Thursday was named as the hour.
Reading of Secretary's report.
REPORT OF SECRETARY
for year ending May 12, 1891:
I do not deem it necessary to consume any considerable amount of
time in making a report. The doings of the secre­
tary's office are published to you from time to
time, through the transactions, circulars, etc.
A few thoughts by way of suggestions, may not
be inappropriate.
Once more I would call your attention to the need of keeping the secretary informed of changes
of residence. It will help to insure to you the receipt of the journal, notices, etc., and save the secretary much annoyance.
The publication of the Proceedings by means of the Omaha Clinic seems to give satisfaction to the members, and I would urge its continuance.
And I would here remind the members that if they do not receive the journal regularly to notify the publisher, direct. He is willing to do his part faithfully.
As well known to those of you who attend the meetings regularly, our time is very fully occupied, and part of the programme is invariably crowded out.
It has been thought by some, owing to the short­ness of our sessions, the increasing amount of mat­ter to be considered, the numerical size of the society, etc., that it would be advisable to divide it into two sections, which could work simulta­neously. Your attention is simply called to the matter without recommendation.
In publishing the proceedings of our last meet­ing we were compelled to omit report of discus­sions. After contracting with two or three stenographers, who each in turn refused to com­ply with their agreements, we at last secured the services of one, who was in attendance. But no amount of urging on the part of the committee and secretary could induce him to furnish us with a transcript for publication. Reasons for this fail­ure are best known to himself. As you well know, it is a difficult matter for an ordinary reporter, even though he be an expert in reporting general matters, to report a discussion on medical sub­jects. We hope to give you complete reports this time.
Four members have died during the past year as far as reported.
At the last session twenty-eight names were dropped from the rolls for non-payment of dues, in accordance with provision of By-Laws and resolutions adopted at Twenty-first Session.
The number of new members joining was thirty­three, making a present membership of two
hundred and sixty-nine.
Credentials to the 1890 meeting of the American Medical Association were issued to the following named members: G. O. W. Farnham, R. C. Moore, W. M. Knapp, J. O. Carter, D. C. Bryant, H. E. Harrington and F. A. Butler.
To the Mississippi Valley Society and Colorado State Society: B. F. Whitmore.

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TWENTY-THIRD ANNUAL SESSION

To the 1891 meeting of the American Medical Association they were issued to C. F. Ballard, D. C. Bryant, J. O. Carter and N. F. Donaldson. I would recommend the appropriation of $100 to meet the expenses of the office for the coming year.

In conclusion I wish to thank the members of the society for the promptness and the uniform courtesy and kindness which has characterized their dealings with the secretary.

FINANCIAL STATEMENT FOR 1890-91.

1890.

DEBIT.

May 5. To expense and postage ............... 4 00
June 7. To printing and stationery ........... 7 25
July 25. To postage .................................. 5 00
Oct. 10. To printing .................................. 2 00
Jan. 10. To freight .................................. 3 50
Jan. 10. To mailing Proceedings .............. 25 00
Feb. 28. To postage .................................. 2 00
Mar. 7. To printing .................................. 4 00
Apr. 16. To postage .................................. 6 00
Apr. 28. To postage and printing ............. 7 00
Apr. 30. To postage and printing ............. 5 00

1891.

May 10. By cash .................................... $100 00
May 12. To cash accompanying statement ...... 21 40

Respectfully submitted,

M. L. Hildreth, Secretary.

Lyons, May 12, 1891.

To the Officers and Members of Nebraska State Medical Society:

With pleasure I present for your consideration this, my fourth annual report, and review of the transactions of such medical societies as have been received by me during the past year, number thirty-two volumes, occupying 9,082 pages of reading matter and embracing 784 essays and reports of such medical transactions as have been sent to every society named in the report, but they have not all returned the courtesy, though I have written for them and received no reply. In reading these thirty-two volumes, I have been much interested with the elegant classic diction of some, the practical good sense of others and the scientific attainments of the few. Nebraska is the only society that has ever made a report of the doings of other societies, or attempted to review their published papers. The criticisms presented are given with the kindest of feelings and in the hope of doing them good as well as being a benefit to the members of our own society. It has been impossible for me to select out all the good things found, for that would make this report too long, but I have taken some of the best, most practical and useful.

Dr. Thomas (Alabama, 1890,) says: "The time will probably come when it will be considered as necessary to test the electrical condition of the body, as to take the temperature in disease." The experience of Dr. Purdon relating to hypnotism, given in his most excellent paper on "Physical Research and Practical Medicine," is well worthy of study.

Dr. Bronson (Connecticut, 1890,) in his paper on "The Disease Theory of Intemperance," gives a good review of various opinions held upon this subject, and closes his paper by asking "That some one follow with more exhaustive and scientific work on this theme." This is just what the doctor ought to have himself done. It is easy to compile too numerous opinions without original and progressive next time, doctor.

In the transactions of New Hampshire, 1890, I note their devotion to moral instruction by the opening prayers printed in full. Two papers, however, were presented, worthy of mention, viz.: "Railway Sanitation," by Dr. Conn, of Concord, and the paper on "Plomaines," by Dr. Frost, of Hanover.

The article (Ohio, 1890,) on "The Care and Treatment of the Insane," by Dr. John W. McCurdy, is a very fine and scholastic paper and fully abreast the progress of the times. The paper on "Do We Take Cold?" by Dr. Hinkley, of Oxford, is full of good thought and truth. He says, "We do not take cold, we take foul."

Dr. Sansom, (Iowa, 1890,) of Tipton, reported a fatal case of peritonitis without either fever or pain. In the discussion following several other like cases were reported. In this paper by Dr. Jenkins on "The Nature and Treatment of Diphtheria," and in the discussion following, no one referred to the later and better treatment by the use of fresh peroxyde of hydrogen as a spray and gargle, nor as to the great value of sulphide of calcium internally as a germicide. It seems strange that no one in this learned and august body has yet recognized its value in doses of one-fourth grain every hour, or until the effects of the medicine has been obtained.

Dr. Watson, of Dubuque, gives some excellent "Suggestions for the good of the Society," which we might well heed. "The interest of the meetings should be increased. The standard of the Transactions should be raised. The papers should show more original research and be more scholastic. More papers should be presented in so large a society. Less time should be given to entertainments and more to discussion." Poor papers should not be published and rambling discussions should not be allowed." Dr. Peck, of Davenport, says in speaking of "Tuberculous Pathology," "For many years I have been of the opinion that the profession at large wait for advanced symptoms of destructive results to occur, in pathological diagnosis, before giving the patient the benefit of timely assistance." This is indeed true of most diseases. The dynamical condition that precedes and is the cause of the pathological lesion should be treated and thus many acute diseases might be successfully jugulated, the pathological lesion prevented and the life of the patient saved. Dr. Kime, of Fort Dodge, presented a very scholary paper on "The Present Status of Hernia Operation," but his reference to the design of the Divine Architect in creating an imperfect canal with a weakened point is untrue. There is no such thing as design in nature. A little more scientific knowledge will explain the difficulty to the doctor.

The transactions of Wisconsin 1890 are not up to their usual standard. They need the advice given by Dr. Watson, of Iowa. The paper by Dr.
is here speaking of so called chronic corporeal endometritis and he says: "For years I have made no application above the internal os." This is contrary to the usual teachings of gynaecologists, but I firmly believe it is correct except in cases of gonorrhoeal infection which may extend to the tubes.

In these cases, however, the inflammation is usually acute as it is also in puerperal inflammations. Dr. Emmett's idea is that these inflammations within the internal os, do not become chronic because the conditions and functions of the internal membrane will render them self limiting.

Dr. Wallian, of New York, in a very able paper on "The Physiological, Pathological and Psychological Bearings of Sex," says: "The day will come when sexology will have its share in every educational institution, especially in every medical college; and when no man, whether priest or physician, will hesitate to teach those laws which lie at the foundations of society, and on which hinge the progress, perpetuity and perfection of the race. When this degree of prominence is given to it, and only then, will knowledge of the phenomena of nature which its importance demands."
dent, Dr. Orton, in his presidential address, says: "We have in our medical library 12,000 volumes." This is a most excellent show, and should be a suggestion to Nebraska State Medical Society as to what we propose to do towards caring for our own accumulating volumes of society transactions, and what steps we ought to take towards enlarging our library and eventually having a permanent home for the same. The doctor makes a valuable suggestion, which in my opinion would be well for this society to adopt, viz: "That a committee be appointed each year on 'Popular Sanitary Science,' whose duty shall be to prepare or supervise familiar articles for the secular press on subjects involving the care and protection of life and health of the individual and of the community in accordance with the accepted principals of sanitary science." Dr. Cronyn in his admirable paper on "Prognostics in Medicine," recommends sarracenia in the different stages of variola as very beneficial in the secondary fever and to prevent pitting. After a careful perusal of this beautiful volume, the work of the best medical society in America, I find it so new, novel and interesting that it is impossible to note the excellent things in detail, hence I recommend that each member of this society purchase a copy for study. It is a volume rich in good thought and progressive ideas, and not one of you can afford to do without it.

In an able address (Penn., 1889) the President, Dr. Alice Bennett, of Norristown, in her address on "Mental Disorders,", makes a most admirable appeal to legislation against quackery, and shows by the history of legislation in Pennsylvania that it has been a failure. His argument is a good one and meets those well fitted by nature and a generous train growth. We should only encourage as students chiefly to the individual efforts of the members of our profession that we must look for the continued growth. Doctors must pull out the beam from their own eye by being more scholastic, more scientific, more studious and progressive, more capable and honest, and each member should be a member of a medical society and by his superior ability and knowledge prove his superiority and worth.

Dr. Wagoner, of Johnstown, reviews the Cone-maug Valley disaster and the relief tendered by the physicians of the State. Dr. Alice Bennett, of Norristown, in her address on "Mental Disorders,", quotes a valuable paragraph from J. B. Tuve, "The psychological theory of insanity has prevented advance in the study of those forms of disease of which mental alienation is the most prominent, but by no means the sole, or even the most important system. Blinded by this glamour of psychology, we have lost nearly a century of observation, and frittered away the lives of hundreds of good men."

No doubt now remains that insanity is a physical disease, and to be understood must be studied from a pathologic-anatomical standpoint, and that the symptoms presented are the highest manifestations of a brain and nervous system constructed on a lower plane.

Dr. Frothingham, of Detroit, in his presidential address, referring to homoeopathy, says: "I have in my possession a catalogue of morbid products, nosodes, and other remedies in high potencies, by Samuel Swan, M. D., 1886, which any of you may obtain by writing for it to 13 West Thirty-eighth street, New York City. It contains the famous insignia, 'Similia Similium Curantur,' and the mystic words 'Simplex Simile Minimum.' It is furthermore stated in italics: 'Morbific matter will cure the disease that produced it, if given in high potency, even to the person from whom it was obtained.' It is at one of the most remarkable and most revolting, the most incredible and infamous production that has ever been launched upon a suffering community. It contains a list of about 1,000 pills, which include a group which would, perhaps, cause a cynical smile from the unbeliever; such as pills containing alcohol, aqua pura, buffalo litchia, electricitas, ether, ice, tears of a young girl in great grief and suffering, magnet, moonlight, and finally those made from a silk handkerchief eaten by a cow and taken from the stomach in a hard ball during the three years she never had a calf. All this might be done very well and be regarded as a great joke, were it not for the far greater list of such revolting matter as renal albumen, lice insect, renal calculus, kidney of Bright's, carbuncle-pus, condylomata, diabetic sugar, diphtherine, otterinura, sphylinura, body as a head lice, pus from caries, rectal abscess, cancer of anus, menstrual blood from a woman with warts, vomit from a yellow fever patient, and so on.

"Think of administering such vile excrements and pathological products under the name of medicine, medical literature, and the healing art, and if the thought is not revolting, if the possibilities to which these homoeopathic notions, if followed to their legitimate conclusions, can bring us, is not appalling, then there is nothing frightful in nature.

"During the one hundred years that have passed since Hahnemann wrote his first dissertation upon homoeopathy, not one single scientific fact, not one medical or surgical truth has been added to our professional knowledge by the homoeopathic practitioners." Dr. Frothingham deals some heavy blows against the old methods of classical and literary training in our colleges and shows clearly the necessity of more scientific training to fit students for the profession of medicine. It is a masterly article and worthy of study.

The paper, (Texas, 1890,) by Dr. McLaughlin, of Austin, on "An Explanation of the Phenomena of Immunity and Contagion Based Upon the Action of Physical and Biological Laws," is a splendid production. I find it a pleasure to read such scholarly papers, and feel that there are some men in the profession who have been thoroughly trained in the physical sciences. It is difficult to select out parts of this paper for it is all good and is too long to reproduce as a whole. He says: "Climatic influences are important factors in determining the geographical distribution of bacteria. For the same reason that every country has its own peculiar flora and fauna, it has also its indigenous bacteria." "The explanation of the phenomena of contagion is based upon the application of the laws of wave motion to the motions of complex organic molecules." "Assuming that the movements of complex organic molecules are also governed by these laws, it follows that when molecular waves of one combination meet molecular waves
of another combination, the waves of the first coinciding with those of the second, the amplitudes will be increased in the waves of that subject which is least firmly fixed in its structure; this increased amplitude means an increased distance between such waves, and when the distance is sufficiently great to remove the molecules beyond the limit of their attractions, the combination becomes disrupted and the molecules liberated. "In harmony with these facts we can understand how the molecular movements of a bacterium cell disrupt the molecular combination of albuminoïdes, and why the ptomaines, which result from the rearrangement of the liberated molecules, have the power of arresting or destroying through their interference the destructive portions of the cell."

In an excellent paper by Dr. Ramsdell, of Lampassas, on "Our Troubles as a Profession—Their causes and Cures," he strikes the key when he says, "that practitioners of medicine are insufficiently educated. The physician should be the best educated man in the community in which he lives. When this becomes universally the case, then the death knell of quackery will have rung." Dr. E. W. Row, (Virginia 1889,) of Nashville, reports the cure of a case of Goitre by the daily hypodermeric injection of five per cent. solution of iodoformed ether continued for eight months.

The paper on "The Triune Man," by Dr. Drake, of Chattanooga, is a strange combination. He makes mind, matter and force to be each an entity, the three united into one, constituting the Triune Man. He says: "Force as a general entity circulated through space before the creation of the heavens and the earth." "Mind as a general entity existed before the heavens and the earth; it has neither beginning of years nor ending of days." "It is our opinion that the mind does not grow on earth or in the paradise of God, but that of a Patagonian giant, the difference is only in the quality of the brain through which the brain acts." The doctor does not seem to know Newton is not different from that of an infant, or that of a Patagonian giant, the difference is only in the quality of the brain through which the brain acts. The doctor does not seem to know that force is but a property of matter, nor that well demonstrated fact that mind is but the function of grey matter of the brain or nervous system, wherever it is found. More science and less visionary speculation, more practical truths and less literary style would conduce to better papers.

In contrast to the above mentioned paper it is a pleasure to note the practical and well written paper on "Suppurative Inflammation of the Middle Ear," by Dr. Sinclair, of Memphis, and also the scholarly article on Hypermetropia, by Dr. Dunayev, of Bristol.

Dr. Watson (New Jersey, 1890,) in his presidential address "A Historical Sketch of Surgery—Ancient, Medieval and Modern," occupies forty-nine printed pages and reviews the history of ancient and medieval surgery in a masterly manner, but his reference to modern surgery is brief and incomplete.

Dr. Welch, in his vice-president's address on "Fathers and Sons," reviews in fifteen pages of printed matter the past methods of practice, now mostly obsolete. It is a well written compilation of historical events of that subject which is least firmly fixed in its structure; this increased amplitude means an increased distance between such waves, and when the distance is sufficiently great to remove the molecules beyond the limit of their attractions, the combination becomes disrupted and the molecules liberated. "In harmony with these facts we can understand how the molecular movements of a bacterium cell disrupt the molecular combination of albuminoïdes, and why the ptomaines, which result from the rearrangement of the liberated molecules, have the power of arresting or destroying through their interference the destructive portions of the cell."

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to occur, is due to some influence of a morbific agent on the nerve centers.

Dr. Gray, of Roanoke, in treating of the harm arising from sexual relations in uterine diseases, says: "What is to be done? Advise the husband to congress with his wife in a different manner. The marital position for sexual congress is a modification of Sim's position. The wife is upon her side; thighs and legs flexed moderately, the upper limb more than the lower. Buttocks of the wife toward husband, and head at a considerable angle. In this position the bladder and womb are both out of harm's way, and the penile organ gently pushes back the perineum and enters in the line of sacral curve."

Dr. F. W. Goodall, of Bennington, (Vermont, 1890,) recommends forced respiration in opium poisoning as practiced by Dr. Fell, of Buffalo, New York. He used a pair of bellows and with a tube forced air into the larynx and lungs.

I regret I have been unable to obtain the transactions of some societies. I can not believe they have been offended by any of my previous criticisms. If they have, they ought to do better work; and such as their collaborators will not be ashamed to read. Trusting that this report is an improvement over those of other years and worthy of your approval, it is respectfully submitted, to which is appended the "Tabulated Report" on page 9.

Dr. L. A. Merriam, Cor. Sec'y, Omaha, Neb. N. B.—All published Transactions of other Medical Societies should be sent to above address.

After brief remarks by Drs. Inches and Mansfelde, the report of the Corresponding Secretary was adopted and referred to Committee on Publication.

TREASURER'S REPORT.

LINCOLN, May 12, 1891.

To the Nebraska State Medical Society:

Your Treasurer submits herewith the reports of his office for the year ending May 1, 1891.

W. M. Knapp, debtor to Nebraska State Medical Society. Amount in treasury as per last report..............................$211 20

Received from M. L. Hildreth unexpended balance of appropriation of 1889, for expenses of Secretary's office.............................. 40 00

From M. L. Hildreth, Secretary, fees and dues of (33) thirty-three new members..................... 165 00

From annual dues........................................................219 00

CONTRA.

$635 20 $635 20

Balance in treasury..................................................$154 73

All of which with vouchers attached is respectfully submitted.

W. M. KNAPP,
Treasurer.

In absence of Auditing Committee, Drs. Mansfelde, Henry and Duncan were appointed to fill vacancy, and report was referred.

The following resolutions were introduced and by unanimous vote adopted:

WHEREAS, It has become a custom, most heartily to be recommended by every good citizen, to recommend to the appointing powers persons, who by their special training are best fitted for certain positions; and

WHEREAS, The executive of this State has recognized this most excellent reform by appointing the nominees of the bar associations of the State to the office of district judges. Therefore be it

Resolved, By the Nebraska State Medical Society in annual session assembled, that a committee of three be appointed to wait upon the State Board of Health, and present that the physicians of the State, most respectfully ask a due consideration of the board for the nominees as Secretaries of the Nebraska State Medical Society.

Resolved, Further, that an election of two physicians—members of this society—for the purposes set forth in these resolutions is hereby ordered. A. S. v MANSFELDE.

The following resolution was introduced and adopted:

Resolved, That a committee of three be appointed on Popular Sanitary Science, whose duty shall be to prepare or supervise familiar articles for the secular press on subjects involving the care and protection of the life and health of the individual and of the community, and in accordance with the accepted principles of sanitary science.

Proposed by Dr. L. A. Merriam, Omaha.

Moved by Dr. H. B. Lowry that a committee of three be appointed to report on matter of medical publications for the State Library. Carried, and Drs. Lowry, Henry and Inches appointed. Adjourned.

WEDNESDAY MORNING.

Called to order at 10:30 by Vice President C. Inches.

Reading report on "Practice of Medicine," by Dr. Lowry. Discussion by Drs. v Mansfelde and Lowry. Report referred for publication.

Reading paper by Dr. George Wilkinson. Subject: "The Dynamo in Medicine." Remarks by Drs. Merriam and v Mansfelde. Referred for publication.

Paper by Dr. Protzman, "The Use of Heart and Nerve Sedatives in the Treatment of Fevers." Referred for publication.

Reading paper on "The Cure of Tuberculosis, from the Aspect of Recent Treatment," by Dr. v Mansfelde. Recess 'til 2 p. m.

Called to order by Dr. Inches.

Discussion of Dr. v Mansfelde's paper on "Tuberculosis," by Dr. Protzman. Referred for publication.

In lieu of report on "Progress on Ophthalmology and Otology," reading of paper by Dr. H. Gifford on "Changes in the Treatment of Senile Cataract." Referred for publication.


Reading of paper on "Chronic Cervical-Endometritis," by Dr. W. F. Milroy. Referred for publication.
### TABULATED REPORT OF SOCIETY PROCEEDINGS

<table>
<thead>
<tr>
<th>SOCIETIES</th>
<th>BINDING</th>
<th>PAGES</th>
<th>MEMBERS</th>
<th>ATTENDANCES</th>
<th>PAPERS AND REPORTS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama-1890</td>
<td>Cloth</td>
<td>450</td>
<td>971</td>
<td>222</td>
<td>22</td>
<td>Excellent papers worthy of careful perusal. No discussions reported.</td>
</tr>
<tr>
<td>Arkansas-1890</td>
<td>Cloth</td>
<td>450</td>
<td>971</td>
<td>222</td>
<td>22</td>
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</tr>
<tr>
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<td>222</td>
<td>22</td>
<td>Not received.</td>
</tr>
<tr>
<td>Connecticut-1890</td>
<td>Paper</td>
<td>321</td>
<td>291</td>
<td>28</td>
<td>28</td>
<td>Some good papers. Brief discussions. The discussions should be printed after the papers instead of among the minutes.</td>
</tr>
<tr>
<td>North Dakota-1890</td>
<td>Cloth</td>
<td>450</td>
<td>971</td>
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<tr>
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<td>291</td>
<td>28</td>
<td>28</td>
<td>Not received.</td>
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<tr>
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<td>Not received.</td>
</tr>
<tr>
<td>Georgia-1890</td>
<td>Cloth</td>
<td>222</td>
<td>292</td>
<td>36</td>
<td>36</td>
<td>Excellent papers on practical topics. Nothing new, however. Brief discussions. The President's address on &quot;Food&quot; is scholarly and commendable.</td>
</tr>
<tr>
<td>Illinois-1890</td>
<td>Cloth</td>
<td>361</td>
<td>374</td>
<td>298</td>
<td>298</td>
<td>Scholarly papers and discussions worthy of attentive perusal. A fine working society.</td>
</tr>
<tr>
<td>Iowa-1890</td>
<td>Cloth</td>
<td>307</td>
<td>411</td>
<td>192</td>
<td>192</td>
<td>Some papers of superior excellence. Scholarly discussions reported.</td>
</tr>
<tr>
<td>Kansas-1890</td>
<td>Paper</td>
<td>149</td>
<td>143</td>
<td>15</td>
<td>15</td>
<td>Fair papers. Brief discussions.</td>
</tr>
<tr>
<td>Kentucky-1890</td>
<td>Paper</td>
<td>18</td>
<td>18</td>
<td>33</td>
<td>33</td>
<td>Minutes of meeting only. Papers read not published nor any discussions.</td>
</tr>
<tr>
<td>Louisiana-1890</td>
<td>Cloth</td>
<td>13</td>
<td>254</td>
<td>11</td>
<td>11</td>
<td>Not received.</td>
</tr>
<tr>
<td>Maine-1890</td>
<td>Paper</td>
<td>166</td>
<td>279</td>
<td>33</td>
<td>33</td>
<td>Excellent papers worthy of careful perusal.</td>
</tr>
<tr>
<td>Maryland-1890</td>
<td>Paper</td>
<td>308</td>
<td>293</td>
<td>35</td>
<td>35</td>
<td>Scholarly, scholarly papers worthy an attentive perusal. A superb working society. Some excellent discussions. A volume worthy a place in every progressive physician's library. Not received.</td>
</tr>
<tr>
<td>Massachusetts-1890</td>
<td>Paper</td>
<td>265</td>
<td>1691</td>
<td>16</td>
<td>16</td>
<td>Not received.</td>
</tr>
<tr>
<td>Michigan-1890</td>
<td>Paper</td>
<td>479</td>
<td>491</td>
<td>216</td>
<td>216</td>
<td>Fair reports of cases only. No discussions reported.</td>
</tr>
<tr>
<td>Minnesota-1890</td>
<td>Cloth</td>
<td>133</td>
<td>293</td>
<td>23</td>
<td>23</td>
<td>Two hundred and thirty-one members reside in Baltimore. Average papers. Brief discussions. Ought to do more original work and interest the physicians of the State.</td>
</tr>
<tr>
<td>Mississippi-1890</td>
<td>Paper</td>
<td>194</td>
<td>272</td>
<td>80</td>
<td>80</td>
<td>Excellent papers. Few discussions.</td>
</tr>
<tr>
<td>Missouri-1890</td>
<td>Cloth</td>
<td>194</td>
<td>272</td>
<td>80</td>
<td>80</td>
<td>Excellent papers. Few discussions.</td>
</tr>
<tr>
<td>Nebraska-1890</td>
<td>Cloth</td>
<td>104</td>
<td>272</td>
<td>80</td>
<td>80</td>
<td>Excellent papers. Few discussions.</td>
</tr>
<tr>
<td>North Carolina-1890</td>
<td>Paper</td>
<td>217</td>
<td>414</td>
<td>190</td>
<td>190</td>
<td>Excellent, scholarly papers worthy a place in the library of every progressive physician.</td>
</tr>
<tr>
<td>South Carolina-1890</td>
<td>Paper</td>
<td>217</td>
<td>414</td>
<td>190</td>
<td>190</td>
<td>A very fine collection of papers of more than average ability. With extended and scholarly discussions, worthy a place in all good libraries.</td>
</tr>
<tr>
<td>New Hampshire-1890</td>
<td>Paper</td>
<td>192</td>
<td>255</td>
<td>18</td>
<td>18</td>
<td>Excellent discussions reported. A society 99 years old with 350 members ought to have more papers.</td>
</tr>
<tr>
<td>New Jersey-1890</td>
<td>Paper</td>
<td>402</td>
<td>676</td>
<td>10</td>
<td>10</td>
<td>A few excellent papers. Some scholarly discussions were reported.</td>
</tr>
<tr>
<td>N. Y. State Association-1890</td>
<td>Cloth</td>
<td>445</td>
<td>711</td>
<td>154</td>
<td>154</td>
<td>A magnificent volume of thoughtful science. To select out the good things would be to copy more than half of the volume. All progressive physicians should possess it. Excellent papers. Better discussions.</td>
</tr>
<tr>
<td>N. Y. State Association-1890</td>
<td>Cloth</td>
<td>634</td>
<td>750</td>
<td>55</td>
<td>55</td>
<td>A magnificent volume, worthy a place in the library of every progressive physician. Excellent papers. Better discussions.</td>
</tr>
<tr>
<td>New York State-1890</td>
<td>Cloth</td>
<td>640</td>
<td>500</td>
<td>166</td>
<td>166</td>
<td>A very fine working society. Scholarly, scientific papers and discussions. This volume ought to be read by all progressive physicians. Not received.</td>
</tr>
<tr>
<td>N. Y. Academy Medicine-1890</td>
<td>Cloth</td>
<td>384</td>
<td>596</td>
<td>18</td>
<td>18</td>
<td>Excellent papers worthy of careful perusal. No discussions reported.</td>
</tr>
<tr>
<td>Ohio-1890</td>
<td>Cloth</td>
<td>384</td>
<td>596</td>
<td>18</td>
<td>18</td>
<td>A very fine collection of papers of more than average ability with extended and scholarly discussions, worthy a place in all good libraries.</td>
</tr>
<tr>
<td>Oregon-1890</td>
<td>Paper</td>
<td>231</td>
<td>127</td>
<td>19</td>
<td>19</td>
<td>Very good papers. Most excellent, numerous and extended discussions reported.</td>
</tr>
<tr>
<td>Pennsylvania-1890</td>
<td>Cloth</td>
<td>209</td>
<td>1071</td>
<td>279</td>
<td>279</td>
<td>Excellent papers. No discussions reported. The meeting of 1890 was adjourned one year on account of the great flood at Johnstown. Not received.</td>
</tr>
<tr>
<td>Rhode Island-1890</td>
<td>Cloth</td>
<td>226</td>
<td>350</td>
<td>101</td>
<td>101</td>
<td>Excellent papers. Most excellent, numerous and extended discussions reported.</td>
</tr>
<tr>
<td>Tennessee-1890</td>
<td>Paper</td>
<td>340</td>
<td>750</td>
<td>137</td>
<td>137</td>
<td>Some excellent papers. No discussions reported. The meeting of 1890 was adjourned one year on account of the great flood at Johnstown. Not received.</td>
</tr>
<tr>
<td>Texas-1890</td>
<td>Cloth</td>
<td>340</td>
<td>750</td>
<td>137</td>
<td>137</td>
<td>Some excellent papers. No discussions reported. The meeting of 1890 was adjourned one year on account of the great flood at Johnstown. Not received.</td>
</tr>
<tr>
<td>Vermont-1890</td>
<td>Paper</td>
<td>99</td>
<td>189</td>
<td>72</td>
<td>72</td>
<td>A very good society. Very good papers with most excellent discussions reported.</td>
</tr>
<tr>
<td>Virginia-1890</td>
<td>Paper</td>
<td>349</td>
<td>739</td>
<td>156</td>
<td>156</td>
<td>Excellent papers. Few discussions.</td>
</tr>
<tr>
<td>West Virginia-1890</td>
<td>Paper</td>
<td>340</td>
<td>750</td>
<td>137</td>
<td>137</td>
<td>Excellent discussions reported. Some excellent reports of cases in practice, and well written essays. No discussions reported.</td>
</tr>
<tr>
<td>Wisconsin-1890</td>
<td>Cloth</td>
<td>331</td>
<td>321</td>
<td>147</td>
<td>147</td>
<td>A few good papers with most excellent discussions reported. No index; no table of contents; number of members present not given. Excellent papers, however, with brief discussions. A prosperous society.</td>
</tr>
<tr>
<td>American Otological Soc-1890</td>
<td>Paper</td>
<td>148</td>
<td>76</td>
<td>27</td>
<td>27</td>
<td>Some good papers. No discussions reported. The quality of the papers are not as good as hereofore. Some excellent papers. Few discussions.</td>
</tr>
<tr>
<td>American Orthopedical Soc-1890</td>
<td>Paper</td>
<td>312</td>
<td>28</td>
<td>29</td>
<td>29</td>
<td>Excellent discussions reported. Nos discussions reported.</td>
</tr>
</tbody>
</table>

**REMARKS:**

- Thirty-eight meetings during the year. Many excellent reports of cases and good discussions. A good working society.
- Not received. Excellent papers worthy of careful perusal. No discussions reported.
- Not received. Excellent papers worthy of careful perusal. No discussions reported.
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- Not received. Excellent papers worthy of careful perusal. No discussions reported.
- Not received. Excellent papers worthy of careful perusal. No discussions reported.
TWENTY-THIRD ANNUAL SESSION


Invitation extended to the Society by Dr. Knapp to visit the Insane Asylum.

Recess until 8 o'clock.

EVENING SESSION.

Called to order by President Walden.

By vote Dr. E. J. Chapman, of Iowa, who was present, was made a "member by invitation," also that the profession of Lincoln be invited to sit with us.

Resolution introduced by Dr. Farnham.

WHEREAS, It is a fact that in the State of Nebraska there are about 1,400 male and female practitioners of medicine, and of this number about 800 ladies and gentlemen are graduates of recognized medical schools, and at the opening of this annual meeting we could only show an increase of one net, closing the last year, and all told, only 269 in good standing,

Be it Resolved, that the president to be elected at this meeting for the ensuing year shall appoint within thirty days after the election, a committee of seven—the chairman from at large, and one member from, as near as practicable, each Congressional district, outlined in the bill introduced at the last session of the Legislature to re-appointment under the census of 1890. And the duty of the committee shall be to procure and furnish to every regular graduate, in and out of the Society, in the State, a copy of the Code of Ethics of the American Medical Association, inside of sixty days after the appointment, and within ninety days before the next annual meeting of this Society, to furnish to every regular graduate in the State, that is not already a member in good standing, a blank application for membership, and to use all reasonable and ethical efforts to increase the membership by the addition of new members, and

Be it Resolved, that this Society appropriate the sum of $50 to be paid to the chairman, upon his order to pay expense of printing and postage.

Resolution lost.

REPORT OF AUDITING COMMITTEE.

To the Nebraska State Medical Society:

Gentlemen:—Your committee on auditing the report of the Treasurer for the year 1890—91, beg leave to report that they have examined the report of the Treasurer and find that he has collected during the year $424.00, and has paid out upon vouchers $480.47, which leaves—counting the balance in treasury May, 1890, of $311.20—the sum of $154.73.

Adding to this the amount collected at this meeting of about $250.00, your committee think that this sum, together with money paid in during the year, will be sufficient to defray the expenses of the Society for the coming year.

Your committee commends the business-like methods employed by the present Treasurer. We further find his report correct as read.

Respectfully,

A. S. v. Mansfelde,
W. O. Henry,
J. K. L. Duncan.

Report adopted.

REPORT OF COMMITTEE ON SECRETARY'S REPORT.

To the Nebraska State Medical Society:

We, your committee, to whom was referred the report of the secretary, beg leave to report that we find the financial statement correct, and recommend that it be adopted.

We also recommend $100 be allowed the secretary's office for the ensuing year.

That $375 be appropriated for the publication and binding the transactions in the Omaha Clinic, and mailing to each member and other societies, the proceedings of this meeting.

D. W. Hasson,
B. B. Davis,
Committee.

Report of committee adopted.

REPORT OF COMMITTEE ON CREDENTIALS.

The committee reported favorably on the following names, and they were elected to membership during the session: J. M. Brown, Fontanella; W. R. Lavender, Omaha; P. Shoff, Axtell; C. E. Coffin, North Loup; Susan La Flesche, Omaha Agency; R. D. Harris, Paxton; H. C. Manary, Carliton; Ada M. Woolward, Milford; A. D. Nesbit, Tekamah; F. M. Mungus, Blue Hill; F. A. Graham, Lincoln; Ira G. Stone, Wahoo; P. F. Dodson, Wilbur; C. H. Jones, McComb; Viola M. French, Plattsmouth; R. E. Giffin, Lincoln; H. S. Bell, Kearney; J. L. Greene, Lincoln; R. R. Ross, Nebraska City; M. H. Garten, Lincoln; W. A. Gafford, Lincoln; William Davis, Omaha; W. D. Shields, Holdrege; W. J. Stephenson, Winnebago Agency; J. E. Garver, Pender; J. B. Hungate, Weeping Water; M. Stewart, Vesta; J. M. Alden, Pierce; L. W. Bowman, Hay Springs; George Bwh, Talmage; E. L. Holyoke, Lincoln.

Delegates' credentials were presented from the Lincoln Medical Society by Drs. R. L. More, H. M. Casebeer, F. D. Crim and H. J. Winnette. Also from the Omaha Medical Society by Drs. H. Cook and H. P. Hamilton.

Credentials approved.

Elected to membership.

Upon the application of Dr. Geo. Haslam, a majority of the committee reported unfavorably and a minority favorably. By vote of the society, the application was referred back to the committee to be reported on at the next annual meeting. Subsequently, and during the session the application was withdrawn by Dr. Haslam.

Moved and carried that the two members to be recommended to the State Board of Health, as Secretaries, under the provisions of the new law, be elected by vote, in the same manner as officers of the society.
Election of officers:

President .......... Dr. Chas. Inches, Scribner
1st Vice President ..... E. A. Benton, Central City
2d Vice President .......... W. Protzman, Lincoln
Secretary .............. M. L. Hildreth, Lyons
Dr. George B. Ayers, of Omaha, and F. D. Haldeman, of Ord, were elected as choice of the society, to be recommended as Secretaries for the State Board of Health.

By vote, the Committee on Medical Legislation for the past year, was instructed to present matter of Secretaries to Board.

Omaha selected as next place of meeting.

Recess until 9 a. m. Thursday.

THURSDAY MORNING.

Called to order by Vice President Lowry. Dr. Mansfelde called to the chair.

The ethical points involved in the following questions, having been brought before the Committee on Credentials in connection with an application.

Questions—"Is it in conformity with the code of ethics for a physician to practice a specialty, and do any practice outside of the specialty; can he have more than one specialty. May he state his specialty on his card and do outside practice;"?

The opinion of the committee was given negatively to the first and last questions.

By vote, the society concurred in the opinion of committee.

Reading of paper on "Insolation" by Dr. A. B. Somers.

Paper by Dr. C. Rosewater, on "The use of Electrolysis in Gynaecology." Discussed by Drs. Milroy, Mansfelde, Summers, Jr., and Rosewater.

Report of Committee on Necrology:

Death has invaded our ranks and this Society is called at this time to plant the acacia to the memory of four of its members by placing their obituaries upon our records. We herewith present the obituaries of Dr. J. J. Long, of Wakefield, Drs. Peter Hostetter and George B. Ayers, of Omaha, and Dr. M. W. Wilcox, of Harvard.

Respectfully submitted.

E. A. Benton,
W. O. Henry,
Committee.

DR. GEORGE B. AYERS.

Dr. George B. Ayers, of Omaha, died at his home August 19, 1890, after an illness of only three days. He was taken suddenly with cerebral hemorrhage on the 16th and remained in an unconscious condition, dying on the 19th.

At the age of 17 he attended medical lectures in Ann Arbor. He then went to Long Island College Hospital where he graduated in Medicine in 1876. He returned to Ann Arbor and took his degree, when he was made demonstrator of anatomy. In 1880 he came to Omaha as assistant to Dr. S. D. Mercer and helped to found the Omaha Medical College with which he was connected in different capacities until 1888.

He joined the Nebraska State Medical Society in 1885, of which he was a member at the time of his decease. Though a young man he had established a good practice and was considered a successful practitioner. He took special interest in anatomy and did considerable surgery.

He was pleasant, affable and agreeable in his disposition, and his death cast a gloomy cloud over many who were warmly attached to him as a man and as a physician.

In his death the Nebraska State Medical Society loses a loyal member, his patients a skillful and loved physician, his friends a choice companion and his wife a tender husband.

DR. JOHN J. LONG,

Died at his home, in Wakefield, Nebraska, July 26, 1890. His death was the result of a gunshot wound. While hunting with a party of friends, his gun was accidentally discharged, inflicting a wound from which he died in a few moments.

Dr. Long was born at Orrville, Ohio, July 8, 1855. He received his medical education at the Western Reserve Medical College, Cleveland, Ohio 1855. He moved to Wakefield, Nebraska, soon after, where he has since been engaged in practice.

In 1885 he was married to Julia A. Thompson, of Columbus, who, with two bright children, mourn the loss of a kind husband and father.

Dr. Long was one of those men, whom to know, was to trust. Not quick to build up a practice on assumption, but one in whom any trust was safe. Honest, faithful, earnest, often neglecting his own comfort and health in his devotion to duty. As a co-laborer, he was a man. His ideal of professional honesty was high, and he lived up to it.

He became a member of the State Medical Society in 1886, and was deeply interested in its welfare, although his voice was seldom heard in its deliberations, on account of a deafness which he often regretted. In conversation upon subjects pertaining to his chosen life work, and at the bedside, he was a zealous, earnest, conscientious, manly physician. Those of us who knew him best in life, appreciated him most, and miss him most deeply.

March 12, 1891.

M. L. H.

DR. PETER HOSTETTER.

Dr. Peter Hostetter, of Omaha, died at his house on the 22d of October, 1889, in the fiftieth year of his age, from cancer of the stomach. He was born in Pennsylvania in 1839, and took up the study of medicine in life, having only been a practitioner of medicine for fifteen years at the time of his death, the last six of which had been in Omaha.

He took his degree at the St. Louis Medical College in 1883.

He joined the Nebraska State Medical Society at its session in Omaha, May 13, 1884, to which
TWENTY-THIRD ANNUAL SESSION

he came as a delegate from the Douglas County Medical Society.

He was engaged in the general practice of medicine and was one of Omaha's successful physicians, having secured a large and increasing patronage. He leaves a wife and four children to mourn his loss.

MARCUS W. WILCOX, M.D.,

Was born at Honeaye Falls, Monroe County, New York, June 14, 1832, died at Harvard, Clay County, Nebraska, January 7, 1891, aged 58 years, 6 months, 23 days. He was but three years of age when his father was removed by death. At the age of six years he accompanied his widowed mother, two sisters and two brothers to Ashtabula County, Ohio, his youth was passed in the town of Jefferson, and when not in school he was employed as clerk. He began the study of medicine when twenty-one years old, attending a course of lectures at the Eclectic Medical College, Cincinnati, the autumn of 1851, as protege of the late United States Senator Benjamin F. Wade, of Ohio. He began the practice of medicine in 1852, afterwards graduating from the Ohio Medical College, Cincinnati. In 1864 he attended a course of lectures and received the degree from the Chicago Medical College, having been engaged in practice previous to this at Corry, Ohio, and Mattoon, Illinois. He was afterwards appointed postmaster at Mattoon, by President Johnson. Leaving Illinois he resided for a time in Southwest Missouri near Joplin. He came to Nebraska in 1871, locating at Lincoln and engaging in practice one year, in partnership with Dr. French, then removing to Sutton, Nebraska, where he resided until 1881, when he located in Harvard, the same county. At the time of his death he had practiced in Clay County nineteen years. He became a member of the Nebraska State Medical Society in the year 1874.

Dr. Wilcox was three times married, a son by his first wife residing at Ashland, Nebraska; a son by his second wife residing at Chicago, his widow and adopted daughter residing at Harvard survive him.

He was a devoted member of the Republican party and in the years gone by was active in its councils. He was a member of the Nebraska Constitutional Convention in 1875, and represented Clay and Fillmore Counties in the State Senate one term. He was the first mayor of Harvard after its incorporation as a city.

He was a member of the A. P. and A. M. and the funeral ceremony was conducted by that Order.

He led an active, useful life, and in every circle, whether of a social, professional or political character he was conscientious in doing his whole duty in an upright and honorable manner.

In absence of Treasurer Knapp, A. F. Jonas was appointed to fill vacancy.

Paper by Dr. J. A. Lord on "Chloral as an Anaesthetic in Labor." Discussed by Drs. Henry, Smith, Butler, Inchus, Mansfelde and Lord.

Paper by Dr. B. F. Crummer—"Some Suggestions on the Medical Law of Nebraska."

Voted by unanimous (rising) vote, that the thanks of the society be, and are hereby tendered to Judges Irvine and Kelly, of Omaha, and to Drs. Brown, Alden and Wilkinson, for efficient aid in securing the enactment of the law, creating a state board of health, passed at the late session.

Adjourned to 3 p.m.

Called to order at 3:15 p.m. by the secretary, Dr. J. E. Summers, jr., elected chairmain pro tem.

Reading of paper by Dr. Crummer on "A Case of Tubal Pregnancy, with Rupture into the Broad Ligament," with specimen. Discussed by Drs. Protzman and Jonas.

Paper by Dr. Henry on "Joint Diseases."

Paper by Dr. B. B. Davis—"The Surgical Treatment of Epilepsy." Discussion by Drs. Summers, jr., Hildreth and Davis.

Paper by Dr. Jonas—"Singultus as a Complication in Surgical Affections." Discussion by Drs. Lord, Stewart, Inches and Jonas.


Moved and carried that all papers on program not read, and which are forwarded to secretary, shall be published.

Installation of officers.

Adjourned to Banquet Hall, Capital Hotel at 9 p.m.

The society assembled at the banquet board, and after partaking of the hospitalsities, interspersed with toasts and music, and passing resolutions of thanks to the Lincoln Medical Society and the citizens of Lincoln, who had joined in making the meeting successful and the sojourn of the visitors very pleasant.

Adjourned sine die.

M. L. HILDERETH, Secretary.
REPORT OF PROGRESS.

By H. B. Lowry, M. A. M. D., Lincoln, Neb.

In preparing my report for this meeting of the society I was at no loss for material, but rather was embarrassed by the richness and abundance of the literature from which to select. I have accomplished my task largely by getting others to do the work for me. Like Caesar, I trusted to my lieutenants for success.

I have asked Dr. Marsfeld to write a paper on the all-absorbing subject of tuberculosis, knowing that by reason of previous study and his acquaintance with the German literature he is especially fitted for the task. Dr. S. M. Lane, who has given the subject much attention, I have asked to write on rheumatism and gout, and Dr. Putzmann will give the society the latest scientific expression on fevers. My learned friend Dr. Donald Macrae in his last years report covers so admirably the latest investigations on diphtheria, la grippe and eruptive fevers that I have found no occasion to refer to these topics. Therefore I have given my time to the merest glance of what seems to be the advanced teaching on disease of the heart, the alimentary canal and the kidneys. Dr. Ringer once remarked to me upon the appearance of his book—"a new edition, revised and enlarged by the author"—that he had not paid the least attention to it for ten years, that he had no time for paste and scissors, that the hours he could take from his professional duties were wholly occupied in original research. While every one cannot make original investigations all may make observations. This, I believe is the general feeling, hence literary hack work is falling into disrepute. I think I may state as a general proposition that the report of progress by the chairman of the various sections, owing to the wide field to be covered, makes it next to impossible for any original work to be done, and the short time allowed does not even permit a satisfactory review of the literature. On the whole I very seriously doubt their usefulness and believe the chairman should have the option of writing a paper on any particular topic.

The recent literature concerning the heart has been of much importance and deals with the physiology, the pathology, and the therapeutics. Dr. E. Romberg, of Leipzig, from exhaustive studies of the subject, is of opinion that the myocardium itself and not the ganglia is the automatic motor of the circulation. The ganglia, he believes to be sensory in function. As a matter of course, if this view be the correct one, our theories of the action of cardiac medicines will of necessity need re-adjustment. Indeed, Professor H. C. Wood, of Philadelphia, has expressed the belief that digitalis ought to be classed as a cardiac tonic or even as a cardiac food, rather than a cardiac stimulant. I am not aware that Dr. Wood has given adherence to the above theory however harmonious his views may seem.

Dr. Patton's observation in the Medical Record, December 28, 1890, which I dare say is new to most of us. He thinks that during the compensatory period following endocarditis, resulting in valvular lesions of the aorta, whether stenotic or regurgitory, the hypertrophy sometimes becomes excessive, bringing about a hyper-systolic state which causes paroxysmal dyspnoea and cardiai asthma. A condition of things which the bromide of potash relieves by lessening function. In increased vascular tension by reason of this hyper-systolic action aconite, according to the author, acts in the most satisfactory way. Both these remedies by their known mode of action would seem to add strength to this novel view in pathology. A rational explanation of the cardiac asthma in this excessive systolic force must either be found in mechanical resistance or toxemia. The former according to the editor of the Therapeutic Gazette, Nov. 8, 1890, is brought about by a contraction of the arteries of the lung which is due to vascular tension, and the latter by kidney complication. But it is much more in accord with modern views to explain the phenomena of cardiac dyspnoea by reason of mechanical interference due to stasis in the lungs resulting from a feeble heart unable to keep up the circulation. With most of us I presume our own observations have led us to believe that excessive hypertrophy is by no means of common occurrence.

Whatever physiology or pathology may have accomplished in this direction of late, much has been accomplished in bringing about more rational methods in the treatment of disease of the heart. While I shall studiously refrain from discussing new remedies—which falls within the province of the section of materia medica and therapeutics—I shall review briefly new applications of old remedies.

Now, as formerly, our most important therapeutic agent is digitalis, but while its usefulness is becoming more apparent, its application is more restricted. It should never be given in acute cardiac diseases unless demanded by cardiac failure.

In endocarditis resulting in valvular lesions, where compensation has not been established, but the inflammatory process is no longer going on, or where compensation has been satisfactory.
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proceeding, but the heart is overtaken by some temporary embarrassment, digitalis is our most reliable agent. Its action as stated by Professor Wood is as follows: During cardiac systole the heart puts forth energy, and consequently destroys its own tissue. During diastole the heart both rests from muscular activity and at the same time builds up its own tissue. A lengthened diastole would favor constructive metamorphosis and as digitalis does this, it is in this way that it acts as a tonic and a food. This will also explain in a scientific manner why the good effects remain long after the drug has been withheld.

In stenosis of auriculo-ventricular valves, that the prolongation of the diastole would be of the greatest advantage is obvious, as this would allow the auricles to completely empty themselves. In cardiac dropsy digitalis is the sovereign remedy, while in ex-opthalmic goiter it is thought by most of our best clinicians to be nil, even when well borne, but as a rule it is not tolerated. Notwithstanding this, Prof. Nothnagle, of Vienna, referring to Grave's disease and its treatment, remarks that it requires some firmness not to give this drug. There is by no means uniformity of opinion as to the best way of administering digitalis. The French physicians are of the opinion that a single large dose in twenty-four hours will give the best results. Wood has observed that inordinate doses in old cases sometimes do wonders, while on the other hand, Dr. Henry M. Field says that five drops of the tincture three times a day is usually sufficient.

Within the past year much has been written concerning the usefulness of strophanthus, convallaria, the alkaline salts and morphia in the treatment of heart diseases, but I have no space for the merest summary of these. Exercise, however, in the management of heart cases is of so much importance that even when well borne, it cannot be ignored. There has, as you know, been a great diversity of opinion among authors who have written of late years, as to the kind and amount of exercise to be taken by patients suffering from heart lesions, consequently many of us have not become settled in our opinions and practice on this point. In my remarks I shall only refer to the literature of the last year or two, much of the teaching of which is new, though some of it may not be. Patients suffering from acute endo-carditis should be kept quiet in bed or on a couch long after all signs of active disease have disappeared, for exercise of any kind which increases the heart's action will give increased shock to the valves, which have already been weakened by disease. Nor is this the only danger. In my own practice I have known a patient to bring on embolism by rising too soon after an attack of endo-carditis. During the establishment of compensation exercise must be definitely ordered. The attending physician must say what may and what may not be done. This often requires great judgment. Massage, when attended by due care, is said by some to be useful in this stage. In chronic cases of cardiac disease the tendency seems to be toward more exercise; few, however, go to the extreme of hill-climbing, as recommended by Prof. Oertel. His system of massage of the heart, however, may claim a passing notice.

The operator places his hands on each side of the patient's thorax at the height of the fifth or sixth rib. Firm pressure is made at the beginning of expiration, while the hands are moved obliquely toward the ensiform cartilage, the movement occupying the entire expiratory period. In accordance with the laws of physiology, cardiac diastole is favored by the expiratory act. This act is increased by the massage manipulation, diastole prolonged, the heart meantime receiving both rest and nutrition. This, in my opinion, does more good than any actual passive movement or pressure on the heart itself. In the matter of rest and exercise, clinical experience teaches that while one case will demand active out-door life, another moderate exercise, still another demands absolute rest in bed. As the physician will be called upon to be somewhat specific, I think it would be judicious to prohibit all severe physical exertion, especially if coupled with it great excitement, such as match games, etc. In order that the physician be able to always advise wisely, it requires careful study and a thorough knowledge of the pathology of the particular case under consideration as well as much skill in diagnosis. In illustration of the amount of physical exertion one who suffers from heart disease may undergo, I give in outline the following case: But yesterday I was called to see a young married woman, aet. 22. She complained of rheumatism in left ankle. Upon inquiry I learned that she had acute inflammatory rheumatism six years ago. For a number of years she had helped to earn her own living by washing, and could run up a long flight of stairs or dance for hours without any unusual fatigue—in short, she never suspected heart disease, yet physical examination revealed an aortic stenosis with marked hypertrophy of the left ventricle.

A few general observations before leaving this subject may prove useful. Increased stimulation to a healthy cardiac muscle results in hypertrophy; on the other hand if the heart muscles are
unhealthy or but imperfectly nourished, there will be no response to stimulus, but the organ will yield to the intra-ventricular blood pressure and dilatation will result. Dilated cavities with weakened heart walls is always a contra-indication for physical exercise, and Dr. Loomis is of opinion that this and similar kinds of heart failure constitutes the only condition which does not admit of physical exertion. The age and habits of a man are often useful indicators as to the kind and amount of exertion he may with safety put forth. Stenosis or insufficiency in the dissipated and in the aged are very different things from the same affections in one of correct habits of middle age or younger. In a heart crippled by valvular disease in a person otherwise healthy, and where compensation has been fully established, if there be any temporary embarrassment, rest should be prescribed. The rule for a patient with aortic stenosis or regurgitation, according to the case cited in illustration, is an active out-door life, unless the vessels should be atheromatous, in which case the patient should lead a quiet life.

In the Journal of Physiology, vol. XI., 1890. Mr. Lee sums up the results of his careful study on digestion under three general heads. 1st, constant movement of the digestive materials. 2nd, removal of products of digestion as soon as formed. 3rd the constant additions of fresh portions of digestion juices. These are the influences at work in the natural process which have not been imitated or only in a partial manner in methods of artificial digestion. Other investigators since Mr. Lee's report have been enabled by means of the stomach-tube to examine the actual processes going on in the living stomach.

Some very important observations have been made upon the influence of various articles of diet and medicinal agents upon the secretions of the human stomach. Of the former I have no time to speak.

Alcohol when taken in considerable quantities, and coffee in such quantity as is usually taken by coffee drinkers, by lessening the secretion of hydrochloric acid delays peptonisation, but because of this delay in digestion, says Sir William Roberts, they must not be regarded as distinctly harmful to the system for it may at times be a real good—this delay, by avoiding the danger, of throwing the whole meal—in a peptonized form into the circulation at once.

The London Lancet, in a late number, refers to the opinion of physiologists that life cannot be maintained on a diet of lean meat and water without any farinaceous food, but in refutation of this view there has recently been exhibited in London, a family of savages who, like all their tribe, had existed on such a diet and had thrived. We are all familiar with the Hudson Bay natives who live on a diet of meat alone, or some of them on fish alone, yet retain full physical and mental vigor.

Of milk, that sheet anchor of sustenance in so many diseases, and in the preparation of which it has been the universal opinion of physiologists and hygienists that it should be boiled before administration, yet Dr. Vassilieff, after many experiments, all of which are of great interest, gave in a paper last June, the result of these experiments, which was that the nutritive value of milk is greatly lessened by boiling. Of course I have not time to refer to the changes which take place in its various constituents by his process, but it occurs to me that patients who are very low, for example, those suffering with adynamic fevers, when often only milk and very little of that, is taken, this highest nutritive quality may be a point of a good deal of importance.

In vomiting, arising from various causes, but especially that of gastritis, pregnancy and phthisis, the remedy par excellence, the action of which, when all others have failed, is indeed most gratifying, is tincture of iodine, ten drops to be taken in water, in divided doses after meals. In all the graver lesions of the stomach, such as dilatation, gastric ulcer, cancer &c, there is much minutia in the treatment, as regards diet, drugs, their methods of administration, and the position the patient should assume under certain conditions to which the conscientious practitioner must give due diligence, and on this one point I feel an unusual reluctance to obey that finger of time which says pass on, but the demand is imperious, and I must obey.

Considerable discussion has been going on of late in regard to internal antisepsis; the opinion of the German physicians being that it is very doubtful whether antisepsis given by the mouth ever reach the intestine, they are probably absorbed in the stomach, however, calomel given with this view, where the trouble was not serious, has been thought to be beneficial. In several severe cases of dysentery in a London hospital, after utter failure with the use of opium, lead, ipecacuanha and bismuth, there was tried an enema of alum—half an ounce to the pint of water, twice daily, and in each instance complete recovery resulted. In one instance the disease had been of many years standing, but the result was equally gratifying.

However much conservatism we may ascribe to the English, it seems from a recent utterance in
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is of especial importance to the clinician for while
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these cases.
sclerosis and secondly its complication with heart
disease. The treatment to be directed against the
kidney exists, but to review the literature on this
phase of the subject would occupy more space
than is allowed me altogether. I must therefore
be content with this mere allusion and devote my
time to the consideration of diseases of the kidney
properly so called.
The Therapeutic Gazette for June 16, 1890,
contains an excellent article on the treatment of
albuminuria in chronic Bright's disease. The
point that the author particularly lays stress on,
and for this I thank him, is the importance of dis­
criminating between chronic parenchymatous
nephritis or large white kidney involving the
epithelium of the urinary, tubes and interstitial
nephritis or the small granular kidney with its
increased connective tissue. This differentiation
is of especial importance to the clinician for while
parenchymatous nephritis demands diuretic treat­
ment the use of drugs must be especially guarded
as they may be productive of much harm. A milk
diet is now being insisted upon, as well as hot
water and vapor baths in the management of
these cases.
In the treatment of chronic interstitial nephritis
there are two distinct lines to be followed out.
First as to causation, as syphilis or arterio­
sclerosis and secondly its complication with heart
disease. The treatment to be directed against the
disturbing factor. But notwithstanding much
learned discussion both by American and foreign
doctors on the treatment of chronic Bright's dis­
case the results are not encouraging. The onset is
so insidious that no hint is given us for prophy-
laxis and when once the disease is fully established
it resists treatment with stubborn tenacity owing
chiefly perhaps to the fact that the kidney is so
deep seated and so remote from nerve centers that
it is almost impossible to find a medicine which
will act directly upon it. Ichthyol which acts so
well on chronic inflammation of the skin is of no
avail when directed against a diseased kidney. I
do not mean, however, to be understood to imply
that chronic Bright's disease is not amenable to
treatment, but the results I wish distinctly to say,
are not all that one could wish.

Diet is of the utmost importance in the manage­
ment of these patients, for by this means much rest
may be given to the kidneys, this may be brought
about in one of two ways, first by restricting the
amount of diet, as over eating means over work for
the eliminating organs and secondly by restric­
ting the amount of albuminoids and increasing the
amount of fats and carbo-hydrates taken into the
system. By this means of treatment the action of the
kidneys is much lessened and their physiological
function much better performed. In the treatment
of renal insufficiency, the prevention of toxines
into the system is not all that should be done, but
also to favor elimination as far possible of those
that accumulate in the economy. To this latter
end we are obliged to resort to purgatives, sudor­
ifics and diuretics, of the last digitalis still holds
the first place but, some think, that in parenchy­
matous nephritis purgatives ought to be relied
upon and of these calomel and the bitartrate of
potash are highly recommended. Milk as an
article of diet and hot baths have already been
alluded to.

Much has been written during the past twelve­
months concerning new remedies but, I have left the
consideration of these to the section on materia
medica and therapeutics and have confined my
remarks to the latest use of old remedies, so this
report makes no claim to completeness either in
the varieties of albuminuria or their treatment. I
cannot close it however without at least an allus­
ion to the investigations of Dr. Paton who finds
that in all cases of albuminuria both the chief
proteids, serum and globulin-albumen are present
in the urine, and further it would seem that a high
pressure favors the transudation of serum albumen
and that a low pressure increases the proportion
of the globulin transuded.

DISCUSSION

Dr. Mansfeld.—It is only reiteration for me
to say that the paper just read is a valuable one,
just such a one as one would expect from its
author, and it is not only full of points of interest
to the physician proper, but it is also pleasing to
the ear, because of the faultless diction indulged
in. Regarding the danger of embolism, as a con­
sequence of too early rising from the bed in cases
of endocarditis, I must say that this one caution, so ably advanced, pays me for my attendance here at this session. It seems remarkable that the pathologist should devote much time and labor to the subject of the formation of thrombi in the blood vessels, in consequence of inflammation of the intima, and that so little should be said regarding the endocardium under like condition with the same sequels, only more dangerous in regard to the dissemination of the particles of the broken down thrombi in the form of emboli.

One other point allow me to emphasize, the one referring to the autonomy of the unstriped muscle cell of the heart as being independent from the motor influences of the nerves and their centres. As long ago as 1865 it was my pleasure to read Sobernheim's thoughts upon this subject as published in Lessing's work on Therapeutics. I was then so strongly impressed with the idea that the animal body is simply an aggregation of individual cells, each one having a special sphere only modified by its relations to others—that to-day I am still an adherent to that belief. Of course it affords me great pleasure to find this idea brought before the profession with renewed force. I believe, and sincerely so, that medicine and medicine giving can become truly scientific undertakings only, as physicians learn to appreciate the autonomy of cells.

THE CURE OF TUBERCULOSIS FROM THE ASPECT OF RECENT TREATMENT.

By A. S. v. Mansfelde, M. D., Ashland.

The chairman of the section on practice of medicine has allotted to me the task of presenting to you a resume of the present status of Koch's treatment for consumption. I disclaim beforehand any and all knowledge of the remedy, gained by personal contact with it. I take it that my work is to be one of criticism rather than of a recital of personal experience.

You are all familiar with the excitement created by the announcement at the Berlin Medical Society November 13th, by Dr. Robert Koch, that he had discovered a remedy for consumption. Subsequently the doctor published what is called a formula of his remedy, he says: "The remedy which is used in the new treatment consists of a glycerine extract derived from pure cultivation of tubercle bacilli. * * * Regarding the constitution of the more effective substances only surmises can, for the present, be expressed. It appears to me to be derivative from the albuminous bodies having a close affinity to them. It does not belong to the group of so-called toxalbumens, because it bears high temperatures and, in the dialyzer, goes easily and quickly through the membrane. The proportion of the substance in the extract to all appearances is very small. It is estimated at fractions of one per cent. which, if correct, we should have to do with matter whose effect upon organisms attacked with tuberculosis goes far beyond what is known to us of the strongest drugs." Of the action of this new remedy Dr. Koch says: "In two cases of facial lupus the lupus spots were thus brought to complete cicatrization by three or four injections; the other lupus cases improved in proportion to the operation of treatment. * * * Glandular, bone and joint tuberculosis were similarly treated, large doses at long intervals being made use of. The result was the same as in the lupus cases—namely, a speedy cure in recent and light cases, slow improvement in severe cases. * * * Patients under treatment for the first stages of phthisis were free from every symptom of disease and might be pronounced cured; patients with cavities not yet too highly developed improved considerably and were almost cured, and only in those whose lungs contained many large cavities could no improvement be proved. * * * The treatment will probably be quite simple in cases in which the beginning of phthisis and simple surgical cases are concerned; but in all other forms of tuberculosis medical art must have full sway by careful individualization and making use of all other auxiliary methods to assist the action of the remedy."

This extract is brought to your attention for the purpose of setting at rest the exact claims made by the author of the treatment as to its efficacy. If language means anything, he certainly says that early stages of phthisis, with forms of surgical lesions, including lupus, are cured by it; that more advanced lesions are greatly benefitted, and finally that the gravest forms of tuberculosis are very little, if at all, affected by the remedy.

Is this claim of Robert Koch sustained by the experience of the last six months—the time elapsed since the introduction of Kochin to the notice of the profession?

In a recent communication Dr. J. S. Foote says regarding the Lymphatic system of man: "The extent of the lymph spaces, their nutritive character and their close relation to the tissue cells—the constructive character of the connective tissues and their relation to the spaces and leucocytes which are found in them, the constant presence of leucocytes in the separative process and the function which they seem to perform, the correspondence between the lymphoid, constructive, disease and reparative periods of life—all tend toward the belief that the lymphatic system is chiefly a system through which the construction of the body is accomplished and its integrity maintained." Dr. H. F. Formad wrote in 1882: "The predisposition to tuberculosis in some men and animals, the so called scrofulous habit lies in the anatomy of the connective tissue.
of the individual, the peculiarity being a narrowness of the lymph spaces and their partial obliteration by cellular elements."

It must not be forgotten that this condition called scrofulous by Formad can be induced in animals and men, who hitherto have not possessed it, and that those who have acquired it may transmit it to their progeny. It is certainly a clinical fact that many people, who are scrofulous, that is, have this narrowing of the lymph spaces and accumulation of cells in them (lymphoid cells), never die of tuberculosis. To the latter category belong cases who have acquired the disease by inoculation of the tubercle bacillus, and the disease being essentially a localized disorder in its incipiency, having taken its origin by accident in an otherwise healthy body, it cannot be surprising that far more cases belonging to this category are cured by whatever means employed, of which, after all, the knife is the most successful one.

But when the tubercle bacillus finds its habitat in a person scrofulous by inheritance, or by acquisition, we find the prognosis of a subsequent cure brought down to small proportions; and these are the cases, who more often die from phthisis pulmonum. In the first category of cases the bacillus must battle with healthy tissue from the beginning proving very often unequal to the task; whilst in the latter instance the tissues of the body seem to be prepared for the reception of the bacillus, falling an easy prey to its ravages. The advent of the bacillus is the signal for the graphically described "battle of cells with bacteria." The leucocytes endeavor to eat the intruder (and this must not be considered a fiction, for it has been observed taking place) and if successfully accomplished, as no doubt often happens, the description would end with the death of the intruder—but, unfortunately, the bacillus will not only triumph, but in conquering it grows and multiplies. Other leucocytes now endeavor to devour both the the bacilli and their victim and in like manner fall an easy prey to the parasites. Thus quickly a conglomerate of cells (a ball, a tubercle) is formed, the type of the recent tubercle, minus the giant cells. And the absence of the giant cells in these formations is not an accident but an invariable rule. It is otherwise when the bacillus is attacked (or attacks) by the endothelial cells of the lymph spaces, or the amoeboid cells of the fibrous tissues. Here a somewhat different maneuver ensues. The bacillus finds its way into the cell, or is taken up by the cell, we do not know which; and now, by the emanation from its economy of a poison of the nature of ptomaines (D. L. Brieger) or by the supply of a ferment (capable of being furnished by all albuminoid substances of cells) the part of the cell on which or in which the bacillus is lodged necrosis by a typical coagulation of its substance (Prof. C. Weigert). That this is true necrosis, namely the partial coagulation is evident from the fact that the nucleus not only remains alive, but its adherent protoplasm accumulates and furnishes the means for the segmentation of the nucleus; but whilst this occurs in the one cell, another, and more often many cells, not only pass through the same changes, but adhere, as would be expected, to the necrosed part of the first cell so affected, thus forming a plexus of very peculiar form, i.e. centrally a mass of necrosed tissue surrounded with the living protoplasm of cells, which contains one or more nuclei, of course, peripherally placed like rosettes or wreaths—the typical giant cell of Langhaus.

And just as in the tuberculous ulcer the bacilli occupy the ground between the dead and living tissue, so here we find in the giant cell, the bacilli between the necrosed central portion and the peripherally placed nuclei, which, as is known, always disappear when the cell has become the victim of the coagulation necrosis. In fact, even the bacilli are lost to view in this dead part of the growth, having, as some writers assume, suffered destruction, only with this difference, that they have left their progeny, the spores, behind, to serve in their turn the purpose of a renewed invasion of the adjacent tissue. Exterior to this conglomerate of cells, whether composed of leucocytes only, or of giant cells and leucocytes, the consequences of an invasion of the tissue always appear in the form of an invasion of multiplying tissue cells and wandered-in white blood corpuscles, to give rise to the attempt at organization most always noted upon the periphery of slowly forming tubercles and masses of tubercles. And this attempt at organization succeeds in the ratio of the blood supply to the parts and their own normal constitution, and fails as the parts approach the composition described by Formad, and known as the scrofulous. If it succeeds, then the wall of cicatricial tissue built around the tubercle prevents the invasion of the surrounding tissues by its contents, the spores of the bacilli, particularly after they have been set free by the softening of the tubercle. And this holds good not only for the single tubercle, but also for any number of them, and, indeed, whether they exist upon a fine surface, or upon the wall of a cavity, which is of their creation. It is evidently becoming more apparent every day that the emanations from the growing and multiplying bacilli,
poisonous excrements, or manufactured poisons, cause the death of the cells of the body; the necrotic masses of these plus the means employed by the organism to set at naught their action, constitute what is known as a tuberculous part, differing only as the anatomical components of the structure differ, and dangerous to life in the ratio of the importance of the part to the welfare of the organism. Permit me to state that it is absolutely necessary that a halt be made in the pursuit of this inquiry and a basis be reached, which is entirely scientific and solid and upon which a structure can be reared, at once beneficial and creditable to a learned profession like ours.

We have there a person, whose whole make-up is different from others of his species, designated scrofulous; and superimposed upon this body structural lesions, above minutely described—or at least sufficiently so for our present inquiry, which are known as tubercles and tubercle tissue.

In the cure of consumption it is certainly out of the question to assume that the remedy of Koch plays any part in modifying the scrofulous body. To speak with Professor Semmola: "In my judgment it would be simply a sign of great innocence to lull ones self with earnest hopes in this respect, for the form and manner in which the biological action of the Koch lymph is developed does not admit the assumption that it possesses that slow and specific bio-chemical action on metabolism, which is requisite in order to produce a radical modification in those slow and characteristic abnormal processes of metamorphosis which precede the formation of the tubercle." In other words, Koch's lymph will not change a scrofulous body into a normal one—nor does Dr. Koch claim anything of the kind. It seems incredible that Dr. Semmola should assume from Dr. Koch's statement that he (Dr. Koch) believed that his lymph "is a certain cure of the initial stage or consumption," and then devote several pages of his inimitable criticism to the task of disproving the possibility of such action of the lymph—giving "the initial stage of consumption," the definition of a scrofulous body. What Dr. Koch evidently did mean by this expression is: Circumscribed and necessarily localized foci of tubercle tissue, containing tubercle bacilli and all the anatomical characteristics, the property of such pathological new formations.

But we meet with a great difficulty in the way of a cure of this phase of the disease, the want of knowledge of the physician, however learned in diagnosis, to discover "the initial stage," and it can scarcely be maintained that the benefit of the doubt ought to be given to the patient and that, in consequence, he be treated with the lymph. He certainly would receive "the doubt," whilst "the benefit" might prove highly problematical. It is true that the general febrile reaction, which follows the injection of the lymph, is not a diagnostic factor of value, because it has been observed in other diseases, such as actinomycosis, sarcoma (v. Bergmann), osteomyelitis, and even diffuse lipoma (Kuester). Koch's statement that "the healthy being reacts either not at all or scarcely at all, as we have seen, when 0.01 cubic centimetre is used. The same holds good with regard to patients suffering from diseases other than tuberculosis" is, therefore, not correct.

Koch says further: "The remedy does not kill the tubercle bacilli, but the tuberculous tissue, and this gives us clearly and definitely the limit that bounds the action of the remedy. It can influence living tuberculous tissue only, and has no effect on dead tissue; as, for instance, necrotic bones, etc., nor has it any effect on tissues made necrotic by the remedy itself. In such masses of dead tissue living tubercle bacilli may possibly still be present, and are either thrown off of with the necrosed tissue or may possibly enter the neighboring and still living tissue under certain circumstances of the therapeutic activity. If the remedy is to be rendered as fruitful as possible this peculiarity in its mode of action must be carefully observed. At first the living tuberculous tissue must be caused to undergo necrosis, and then everything must be done to remove the dead tissue as soon as possible, as for instance by surgical interference."

Koch's lymph, therefore, does not remove the tuberculous cachexia—the scrofulous anomaly of the lymphatic system. It does not kill the tubercle bacilli. It does not in the slightest manner affect the tubercles, nor the necrosed particles found in them; but it does destroy the cells possessing the tuberculous tissue; and it does it in the same manner as is done by the bacilli themselves, only more rapidly. Just as the poison, emanating from the bacilli, causes a coagulation necrosis of cells in immediate contact with it, just so does the poison, artificially manufactured by Koch, cause the death of the cells, already weakened by their battle with the bacilli, the fight is decided in favor of the bacilli, and the weakened tissue dies—this takes place without the intervention of tubercle formation, the process approaches that of Gangrene, and the reparative efforts following this wholesale necrosis of tissue are identical with those taking place in circumscribed gangrene. The healthy tissue bordering onto the caput mortuum is irritated by the latter and a process of congestion, cell emigration, cell multiplication and tis-
sue new formation ensues, resulting in the formation of connective tissue known as cicatricial. The amount of reaction caused by the remedy, of course, will decide its efficacy. If too little was used the reaction will be incomplete and the benefit problematical; if too much was used, and especially if the vitality of the patient is very low, a protective inflammatory new growth will not form and the necrosed tissue remain in direct contact with the living tissue, which, vitiated as it is, will form only too good a camping ground for the bacilli, ready to emigrate into it from the necrotic masses everywhere in contact with it. The occurrence of a wholesale necrosis in the lungs is corroborated by the post-mortem examinations of Prof. Virchow, who has found caseous degeneration in the lungs of persons who had been treated with the lymph far more extensive than he is in the habit of observing. A condition, which is a natural consequence, if we remember the exact action of the lymph, of cause and effect, a condition which, to the utmost extent, justifies the warning of Prof. Virchow against a too promiscuous use of the lymph and of Dr. Koch's own limitation of its use to cases of incipient phthisis or lesser surgical lesions.

Had the appeal of suffering humanity not overawed the better judgment of the experimenters with this two edged tool and had cases been refused, which in no manner responded to the requirements of Dr. Koch, the illustrious scientist would have more than sustained his reputation for exact observation and his remedy and himself would not have been subjected to the many anathema of disappointed, unwise enthusiasts in the profession, and of consumptives in the last stages of their disease, who found their risen hopes scattered like straw before the wind. These exceedingly deplorable facts must not be lost sight of in the consideration of almost all reports coming to us in regard to the action of this new remedy.

It was my intention to quote extensively from the experience of those who have used the lymph and let you be the judges of its present status. A discussion of this remedy recently had at the 20th session of the German Surgical Society (April 1st to the 4th, at Berlin), and participated in by such authorities in Surgery as V. Bergmann, Thiersch, Koenig, Schede, Lauenstein and Kuester; and also a discussion upon the same subject at the 10th Congress for Internal Medicine held at Wiesbaden, April 6th to the 9th, among others by Curschmann, V. Jaksch, Ziegler, Heubner, Moritz Schmidt, Dettweller, V. Ziemsen, Fuerbringer, Naunyn, Schultz (Bonn), and many others, has caused me to change my purpose. You will readily conceive that these societies, containing the representative members of the profession of Germany, both in Surgery and in Medicine, ought to be the fittest tribunal before which this new remedy should pass muster, and a fair presentation of their judgement should prove eminently satisfactory. Your subsequent investigation will show whether I have been just to the Societies—to the remedy and to you—when I submit the conclusions of Dr. Lauenstein, of Hamburg, as representative of the Surgical Society.

Dr. Lauenstein says:

I. In regard to the Diagnostic value of the remedy:

1. Cases of surgical tuberculosis react promptly locally and also systematically upon Koch's remedy; but with the exception that some chronic cases respond less promptly by way of the systematic reaction.

2. Generally speaking it seems that surgical cases react more promptly and demonstrably than cases of phthisis pulmonum.

3. A reaction is had also in some cases in which neither clinical nor anatomico-pathological proof can be brought of the existence of tuberculosis.

II. Regarding the curative properties of the remedy:

4. The time passed since the introduction of the lymph is too short to admit of a final verdict regarding its action in surgical tuberculosis.

5. Koch's remedy shows a pronounced curative action in some cases of surgical tuberculosis, especially in cases of encapsulated tuberculosis and in that of the skin and mucous membranes.

6. The remedy seems to exert its curative powers also in cases in which the general reaction fails to take place.

7. In cases of encapsulated tuberculosis a reabsorbing action seems to accompany the action of the remedy, making primary surgical interference unnecessary.

8. Cases of surface tubercular lesions do not seem to be cured by the remedy alone, even if the most superficial ulcers and sinuses seem to show a tendency to a cure.

9. In cases of surface tuberculosis (sinuses and other communications existing exteriorly) the remedy causes a disintegration of the tubercular tissue, microscopically demonstrable. This change demonstrates itself by the formation of new foci of softening sinuses, etc., which demand surgical interference. It does seem, however, that in such cases a primary surgical interference is of decided benefit, because unfavorable conditions of a me-
chanical nature make it impossible for Koch's lymph to exert its curative nature.

10. Whether a primary or secondary surgical interference be demanded is indicated by the nature of the case.

11. Lung cavities, which are to be included in the category of surface, or open lesions, demand primary surgical interference for the removal of the discharges which follow the uses of Koch's lymph in such cases.

12. After the use of the remedy for some time in cases of surface lesions one fails any longer to find the characteristic fungoid masses of a grayish glassy appearance; they have been changed into a brittle, dead material, clearly demarcated from the healthy, fresh granulations, from which they can be readily removed with the sharp spoon. In the neighborhood of open lesions closed cavities are often found, which contain the separated tubercular membranes, suspended in a clear, viscous, and sometimes viscid fluid.

13. Surgical means seem to assist the action of the remedy even in superficially situated lesions.

14. The question whether patients who have reacted upon the remedy are to be classed as cured, in case they no longer react upon smaller and larger doses indefinitely continued, is answered by Lauenstein with no.

15. The question of a maximal dosage has not been definitely answered, Lauenstein has not exceeded a dose of 100 mg.

16-17. Referent has seen only one case, in which after several months of treatment (a boy), metastatic lesions appeared. He has seen no case of death attributed to the remedy.

As representative of the verdict of the medical action of the lymph I submit the conclusions of Dr. Dettweiler, corroborated by Dr. Meissen.

1. That tuberculin has an affinity for phthisis pulmonum known of no other remedy and that its own relationship to the disease is also not fully understood.

2. It is impossible to estimate its action whether for good or bad in its present form and administration.

Its use especially in medium and grave cases, but also in cases of incipient disease is a shot ad radem.

3. Its diagnostic action is uncertain, because reaction failed to appear in cases unquestionably tuberculous, whilst in cases demonstrably not tuberculous reaction followed its use.

4. The dangers of administration are not great when carefully used and the doses are very gradually increased; yet very remarkable and sometimes dangerous symptoms appeared in seemingly light cases, but more often in grave cases.

5. In regard to its curative action, assisted by all adjuvants at our command we record very little benefit in light cases—in medium and grave cases we have not observed any benefit from the use of tuberculin. It seemed to us that we could observe even a retarding influence upon a number of cases.

In case the method of using the smallest doses, more recently advocated by Koch's confidential assistants does not cause a change of our opinion, we will persist in advising the non continuance of the use of the remedy in cases of medium, stationary and grave stadia of the disease.

6. It is unquestioned that improvement was noted, especially during the periods when the reactive fever was in abatement, this improvement was even very satisfying. How far these improvements are to be credited to the remedy is as yet undeterminable, since they have also appeared under the treatment hitherto used. The same is, of course, true of aggravations hitherto observed.

When in the delirium, which followed the publication and careful statements of the discovery of tuberculin, the experience of a practice of many years, all our clinical knowledge, the question of the disposition and causation, and the study of the individuality of the patients was suddenly effaced, it behooves us now to "re-write the empty slate." Let us indite upon it first the fact that Robert Koch has succeeded, as no one did before him, to arouse the medical profession from its apathy toward the treatment of tuberculosis. Then inscribe upon the slate the words of Dr. Koenig: "Let us continue the use of the new remedy, but with less haste and keep on operating at the same time." To which we may be permitted to add: Let the work of using the remedy continue in the pathological laboratory, and the operating upon the patients, until both can stand upon a more rational and scientific basis. This position is strengthened by the facts:

1. That the remedy defies all hitherto known methods of therapeutic action. Both pathology and physiology and pathology offer no guidance to a rational explanation.

2. That the remedy is really an unknown quantity, the use of which is unscientific.

3. That the secrecy of its manufacture and the
is for convenience spoken of as the strength of the current, and is called in measurement amperage. These two factors, quality and quantity if you like, or call them each a quantity, determine the character and use of all currents of electricity. One multiplied by the other gives the value in watts, which represents foot pounds and horse power. To appreciate this play between volts and amperes many of the seeming mysteries of electricity pass away.

Whether we generate electricity, or a current of electricity, by chemicals, by friction, or by induction, or by the so-called storage cell, according as are the factors, volts and amperes, so the character and use of the current.

In applied electricity currents are spoken of as two kinds: 1st, continuous or galvanic currents; 2d, the interrupted or broken or faradic currents. The first are primarily generated, either by heat, chemicals, friction and, for convenience, I will say magneto electric machines, and the dynamo electric machine or dynamo, and are called primary currents. The second are made by using these primary currents to induce another current and are called induced or secondary currents. The storage cell is said to give a secondary current. It is said to be charged from a continuous primary current, and for this reason called secondary, although it gives a continuous current. There is also a dynamo that gives a secondary interrupted current, and used for incandescent lighting and welding. These terms, primary and secondary currents, are very confusing, and might be dropped. There is also a primary and secondary current in the induced interrupted current. To do away with this confusion it is enough for us to know that there are two kinds of currents—the continuous and the interrupted—or, if you like, the galvanic and the faradic.

Electricity manifests itself in different ways, according as it is voltage or amperage that is working. Frictional or static electricity is not amperage or strength of current. When you charge a man with frictional electricity, from say a Holtz or Wimsthorst machine, you are dealing with voltage, not amperes. Only voltage has the power to play in and around non-conductors, as in the atmosphere. Did a lightning bolt, developed as it is by friction, carry with it the amperes by means of its thousands of volts, that are generated by some of our powerful dynamos, and should such strike the earth, no great explosion of dynamite could equal its destruction.

Electricity developed by chemicals or batteries is electricity of strength, amperage, not volts.
chemical cell gives more than two volts, but by increasing the size of the plates in one cell and the number of plates, you can greatly increase the amperage. Could you thus increase the voltage, a cell of no mean proportion would drive a street car. You have only to multiply the volts by the amperes to see this (746 watts to a horse power). The same thing applies exactly to the storage cell, for no matter what size, they give each two volts, but the larger ones give enormous amperage.

It might be well to mention here that electricity is not stored in a storage cell in the sense we speak of storing or charging a person or leyden-jar with voltage. The storage cell is an open circuit battery, and is a thing of strength or amperes, and you can't store amperage. It is really a chemical battery which takes up an electric current passing through it by a chemical change and delivers it in an opposite direction when called upon to do so. The problem of the storage cell is either to make it give more voltage or to make it of lighter material. Could this be solved, so is aerial navigation solved.

You can readily see now why we use in medicine one kind of continuous galvanic current battery or a series of cells, for some work, and an entirely different kind of continuous or galvanic current battery for other work. It is simply a matter of how much resistance you have to overcome by voltage and how much strength of current you want by amperage. If you want to send a current through the air to make a spark jump forty inches through such a non-conductor as the atmosphere, you need thousands of volts. A lightning bolt requires millions of them. If you want to send a current through the body, or from any two points, you require voltage, for the body is a poor conductor. Now the amperage of the current can't overcome anything. It is like a large body of water lying in the mountain summit; great with power should it get loose. Tip it up or put a pressure behind it, and the more the pressure the more amperes it can send, and this is voltage or the force that makes the current go, and it will go at a speed which is the velocity of electricity, which is the velocity of light.

Say you had a battery of fifty cells, each two small plates; internal resistance high, such as we use for the continuous or galvanic current. Say it is in good working order, and each cell is giving 1½ volts, or 75 volts in all. Now these cells are only giving a few milliamperes each, we will say one ampere all told. Now send this current through the body and read your galvanometer or milliampermeter. The milliamperes are reduced to 20. Eighty of them could not get through with this amount of voltage. Now read your voltmeter; it is still 75. This must never be forgotten, if the current got through at all, all the voltage must get through or none. Not so with amperage; the resistance was too much for all of it, or, in other words, the voltage was not enough to carry it all through. No rheostat, german silver, carbon, water, nothing of this nature, will reduce voltage; all goes or none. If you want to reduce it, lessen the number of cells, or in the case of currents of a dynamo, shunt or divide it.

This is the continuous galvanic current for galvanism, electrolysis, hair epilation and metalurgy. Now I will ask, do you think this amount of amperage (for the pain is exceeding great in electrolysis-galvanism with over 150 milliamperes) will make a galvano cautery or electro magnet for removing foreign bodies from the eye? I have put a small electro cautery in the circuit of a dynamo running at 110 volts and 7 amperes and it would not even heat it or make it warm. You can do the same in the circuit of an arc light, if you are fortunate to live to tell the tale afterwards, running at from 3,000 to 5,000 volts and a few amperes, and you will get no heat. The reason of this is easily seen. The voltage and the amperage run through the cautery tip, which is of slight resistance, but in order to heat it red hot more amperes must pour in to stir up the molecules of the platinum tip or wire. Generally we use from 12 to 30 amperes for cautery work and only 2 or 4 volts will carry them through this little resistance. Voltage, pure and simple, has no effect on the molecules of anything. One volt on an easy conductor like a copper wire will travel round the earth and no one knows how much further, and it will travel, practically, with the velocity of light; 5,000 volts in an arc light circuit and a few amperes, will jump in the air to heat the carbons through many lamps in the series. Not so with amperes, even copper wire will reduce them and make it, in a pecuniary sense, very appreciable to an electric light company unless the voltage is very high.

Were it possible for 5,000 volts to carry no part of an ampere, I doubt if the current would be dangerous to life. Voltage of such high intensity carrying small amperage is deadly as in the arc light circuit; 5,000 volts carrying 600 amperes would burn a man to a crisp. It is the amperes that kill, but the voltage must be pushable to them through. It would be interesting to know just what is the proportion under given circumstances for the human body, and the Kemmler mis-
hap would not have disgraced those in charge of that execution.

We come now to consider our means of controlling for medical uses those major currents of electricity which are dependent upon the steam engine to drive with rapid revolution the armature of a dynamo between two electro magnets and induce a current of electricity which collected by the brushes from the commutator is sent along the wires in circuit with the machine. These currents may be either continuous and galvanic, or interrupted and faradic, according to the make of dynamo. These circuits range from 50 to 5,000 volts and to 20,000 volts in the interrupted and from 5 to 1,000 amperes. As a general rule, when used for lighting purposes the voltage is high, and when used for power, the amperage.

It would not do to fondle an arc circuit of voltage 3,000, amperes 7. Those 7 amperes multiplied by 3,000 volts make up nearly 30 horse power, which would certainly be quite a shock. This is a splendid circuit for charging storage cells. It may take a little longer to give them their quantity of amperes, but the number running through them being so slight it does not injure them and they will remain in good order for years.

Neither would it do to have the street car circuit in your office. To short circuit this would sink the wire hot though muscle and bone. This circuit carries many amperes and possibly 1,000 horse power and would, I fear, be dangerous no matter how cleverly you arranged your circuit from it.

Note the difference in the death dealing blow of these two deadly currents. The one by shock and no burning, the other by both shock and burning.

As the interrupted dynamic currents can only be used for lighting and for electric welding and electric motors we have little or no use for them because we cannot change this current back into a continuous current. These currents are used as a matter of economy in incandescent electric lighting, by interposing the so-called converter; their voltage is always high.

The incandescent light circuits running at about 100 volts are the easiest to manage. Those of 500 volts and the distributing power circuits for mechanical purposes of this voltage will nip you very sharply in short circuit, especially at the moment when you make or break it; while you can easily stand the 110 or 200 volts in the hands and not feel it except when you break or make the circuit.

The distribution of electricity is very peculiar when you come to make practical use of it, and I know of nothing parallel in physics or mechanics.

The voltage you have always with you, not so with the amperage. Suppose you have a hundred volt circuit running from a dynamo and on this circuit you are opposing no work or resistance, in other words, no lights are burning, no motors are running. Now say this circuit is able to do 25 horse power of work, or in other words, to overcome a great many ohms in resistance to it, and if called upon will exert its full quota of amperes. A 16 candle power incandescent lamp requires about ½ an amper of current to white-heat it, a 32 candle power, about 1 amper. Now you cannot place this lamp in that circuit because all the amperes of the current will go through and break it. If you place one lamp you will have to make up a series of enough of these lamps to cover all the amperage in the current to make one and all of them burn in the main circuit. How then are we going to light one lamp off of this current?

This is what is called lighting in multiple arc, to wit: take the current, on a second wire, and now curiously you may draw off any amount of current, from a small part of an ampere to the full capacity of the dynamo, according to the amount of resistance you may put in this short circuit. Now your ½ or 5 ampere light will burn only its quota and the voltage is still the same.

The circuits that go to our houses and offices are managed in just this way from the mains. Why the voltage should go, but not the amperage, unless the latter is called for is a property of electricity. In charging storage cells on this circuit, do not try to hasten matters by allowing of too many amperes passing; you will gain the same result with more time, or in other words more coulombs in ampere hours, and your storage cells will be in less danger of wear and tear. If you are opposing no work on this multiple arc arrangement, the storage cells are receiving no current. If one 16 c.p. light is burning on the arc or loop in which the cells are, then one-half an ampere is running through; two such lamps are sufficient for a period of a few nights. The larger your wire is in diameter from the mains, and the shorter in length the less resistance it offers to the current; there is always loss to the amperage even in the resistance of copper wire. As the current enters the house, it is for safety made to run over the lead fuses.

This is very important, for it allows of no amperage passing over it of more than a given number according to the size of the fuse, and thus protect against lightning stroke, and what is more important in case your wire should cross with an arc light or street car circuit; in this case it must burn out the instant such a current reaches
it. Also, should you accidentally short circuit any of your wires, for the opportunities are many among the open binding posts and gas pipes in ground circuit, etc., and with all the paraphernalia I shall presently describe. No injury in this case can happen along the main wire, and you can quickly replace your fuse with another.

From your first multiple arc, your now add others according to the number of lights and the different uses that you desire to make of the current, and all controlled by one switch, and each may also have a separate switch. Your lights may be as many as you like and of any candle power. The electric motor may be of \( \frac{1}{4}, \frac{1}{2}, \frac{3}{4} \) or 1 horse power, if necessary. I use \( \frac{1}{4} \) which is all the power a medical man needs.

It drives an air pump for spraying in throat and nasal work, and also a surgical engine for drilling purposes in nasal and antrum disease. Changing rotary into reciprocating motion in the first instance, and rotary to rotary in the second.

The design of motor should be wound according to the current you are using—a motor for 110 volts and a few amperes, as in an incandescent circuit would be very different in winding from a motor on a current of 200 amperes, and six or eight volts as in one driven by storage cells, or different again from one made to run on an interrupted circuit.

An electric motor is simply a dynamo reversed. The dynamo generates and sends its current out from its brushes along the wire. It is then received by the brushes of the motor to the magnets, which attracts and repels, which turns the shaft of the motor as the armature revolves. To regulate the speed of a motor, reduce the amperage; this will necessarily reduce the power and can be done by any rheostat designed for this purpose.

I will next describe the means of reducing this circuit for galvanism and electrolysis of any amperage and voltage. I think I spent nearly two years in perfecting the means I have, because I could find nothing to guide me, and was told by many that to reduce it to such small quantities could not be done. I could plainly see that enough iron or german silver wire in the circuit would reduce the amperage, or that a few lamps requiring high amperage would greatly reduce it and also the amount of wire to be used, until I could get it to such a point that for complete reduction and regulation I could use the ordinary medical rheostats, either water or carbon and german silver, but I found that I could make no impression on the voltage, and that if 110 volts were carrying the smallest amount of amperage, the pain was terrific in electrolysis.

I tried then to reduce the voltage by making the current jump a distance in water, and I soon learned that it could not be reduced by any such means, for if it gets through at all, it all goes. I then hit upon the plan of dividing the current or shunting it. If a current is passing along a wire, and this circuit can be tapped so to speak, by connecting a wire in a manner somewhat similar as is done in multiple arc wiring, then the current will divide part going on the original circuit and part on this shunt wire. In this way the voltage is reduced about one-half each time you shunt. This shunting process can be kept up until you reduce the voltage in a regular series, and by means of a switch you can use such a current as you like. Take for instance nine volts and 250 milliamperes on short circuit, pass this through the current controller or rheostat and then through the milliamperimeter, and you will have a splendid current for both galvanism and electrolysis (the electro-chemical cautery). The current I make use of is regulated in voltage 9, 17, 28, 36, 47, 56, 66, and in amperage from a few milliamperes to 1 ampere. You can regulate to a nicety the milliamperes by the position of your electrodes, the farther apart the more ohms in resistance. In as much as the electro cautery and the electro magnet for eye purposes requires more amperage than the fuses will allow to pass, and if you increase the size of your fuses and take such a great amount of amperage off the dynamo, the chances are that all the lights from it will be greatly depreciated for the time being, and your call for all this strength will be inquired into by the light company.

There is still a greater objection. You can not well use this current, for with all this voltage and amperage—should you short circuit any part of the patient's body from the cautery, the shock would be terrific. If you had shunted the voltage for this purpose, to do away with the possible shock, you have also reduced the amperage, and your fuses would have to be just so much the larger, and you would ask for just so much more current from the dynamo. There is no reason why this can not be done. But you would reduce the lights in the circuit every time you turned the switch of your cautery with this great amount of amperage and small amount of voltage.
My mode of remedying this is the storage cell, always ready whether the dynamo be running or not. Barring galvanism and electrolysis, it is best for all the minor uses of electricity (I refer to the induction coil, electro magnet dental mallet, bell ringing, and in fact any principal of the electro magnet except the mether.) It is the best cautery battery.

Two medium sized storage cells are connected on the main switch of your current so that they can be stored at your pleasure; generally one or two nights a month is sufficient. I seldom charge them as often as this. The Julien cells I now have, have been working nearly two years, and still giving each two volts and full quota of amperes.

Arrange them so that one or both can be used at a time, or better make a small rheostat of german silver, and as there are only two volts the amperage can be easily controlled to any quantity. On this current I switch the induction coil for faradic electricity, which is as you know, regulated by the cylinder pushed in and out of the coil. Remember that the faradic current is not amperage but voltage, circuit made and broken. If you place ten storage cells in series, the voltage will equal about twenty; the amperage will only equal one cell. Place them in multiple and you reverse this state of affairs; then the amperage equals the capacity of all the cells, but the voltage is only two. Let me say in passing that the amperes represents quantity, and requires coal, chemicals, and is expensive. The volt is the quality of friction and wants for its production rapid motion; this in a general way is correct.

There is too much confusion among medical men about this physical force electricity. We know too much of it in theory. It is time we dropped some of our medical terms, and use only those that are made use of by practical electricians. It is time especially to get free in the profession of men of electrical and magnetic empiricism. Only recently a medical man told me that his own body generated such an amount of electricity, that one hand acting at one potential, the other, the opposite, he could make quite a current. He could not any more than slightly deflect a most sensitive galvanometer needle at his best which measures but the smallest part of a milliamper. He may by his body movements generate the fraction of a volt.

The fact is, these clouds will hang over the medical profession until we discriminate in the meaning of terms.

It is really an unfortunate thing for us, that there are such animals as the gymnoti or electric eels, which can make voltage and pretty strongly.

One of the most trying feats a few of us recently accomplished, was to testify before a police judge what constituted a magnetic physician, in order to convict a charlatan, and this simply on account of the confusion of terms and a popular leaning toward the efficacy of this occult power.

This word power of itself is a confusion in terms. Power in physics is one thing, and power in psychology is another. To say that a man has magnetic or electric power in physics, don't mean anything. You might just as well say he has chemical power to influence bodies not in contact by virtue of his body molecular changes. It is so small we can't measure it in units of force, and we certainly can't use it for any purpose.

Magnetism and electricity, (used in this sense) power of suggestion, or hypnotism, mesmerism and animal magnetism as popularly called, belong to psychology, and we medical men think we know about as much about psychology as any one else. Our new State law says, that no person shall practice psychology in the treatment of diseases except a medical man. This is bringing the matter home. We realize that physical medicine is our science to-day. We know little of psychical medicine. Should the day ever come when psychical things are in the reasoning power of man and brought within the bonds of inductive logic, the medical profession will be the first to demonstrate and make use of it for the benefit of mankind, and they will be the first to weld the link that joins them, if there be such a link; then psychology will be lost on the science of medicine.

DISCUSSION.

Dr. Merriam.—If there is anything that thrills me with pleasure in the meeting of a medical society like this, it is to listen to such a scholarly, classical and scientific paper as that we have just heard. I simply wish to express my hearty approbation of that paper. It is a masterly article, and well worth the study of every member of this society.

Dr. A. S. v. Mansfèlde.—I desire to say in regard to this paper that I have a library full of works on electricity and its use in medicine, but I have been destined to listen to day for the first time to an article on the physics of electricity that I was able to comprehend. It is not only a scientific paper, but it is exceedingly practical, and I shall study it with pleasure, when I have the opportunity, in the printed reports of our meeting.
NEBRASKA STATE MEDICAL SOCIETY.

INTRODUCTORY PAPER TO A DISCUSSION ON SUMMER DIARRHŒA OF INFANTS.

By Dr. L. A. Merriam, of Omaha, Neb.

Of the new questions that are claiming the attention of progressive men everywhere, none take a more prominent position among thoughtful medical men, than, that in the prevention and management of diseases, in the near future, sanitary science, will be the chief and most important factor. How to daily live in accordance with nature's laws of health, so as to keep well, and to get well when sick, will be the constant occupation of the physician to teach. It needs no argument to prove the well known fact, that conditions mould, make, fashion and determine for us what we are, our state of health and the number of years we may live. To know what we should avoid, because detrimental and what we should seek, because conducive to health and longevity should be our constant care. The physician of the future will pay more attention to the environment of his patient, see that the laws of hygiene and health are implicitly obeyed. There will be less empirical prescribing of nostrums, more exact and rational therapeutics, less guessing at pathological conditions, more and a better knowledge of the dynamical conditions of disease that precede the organic lesion, less waiting for pathognomonic symptoms, before making a diagnosis, more activity in changing the unfavorable and damaging conditions that exist to favorable ones conducive to health. That medicines may do much when selected properly and given with a well defined object in view no one will deny, but that hygienic conditions are of more importance I fully believe, to be true in many, if not all diseases. Confiding ourselves to a small portion of the diseases we are accustomed to treat, I ask that you bring to bear upon the topic, all the recent and progressive ideas you cherish, and looking at the field of Summer Diarrhœa of Infants from the latest and most scientific elevation, give us your wisest and best conclusions as to the unanswered problems under discussion.

Diarrhœa itself is but a symptom of certain deranged or changed conditions, and as such is quite common in many of the diseases to which children are subject; hence we may well inquire if there be any such disease as summer diarrhœa. That infants do have diarrhœa in summer, that they often become very sick while this condition exists, that they do waste away and sooner or later die, with diarrhœa as a prominent symptom, all are well aware.

Under the general term of summer diarrhœa I have intended to include those disorders of children which may be properly classified as "The Diarrhœal Diseases," but which are by some termed more minutely as catarrhal dyspepsia, the indigestions, infantile atrophy, acute and chronic gastritis, or gastro-intestinal catarrh, or entero-colitis or inflammatory diarrhœa. No doubt some difference of opinion will arise as to the proper naming of these troubles, but this is a small matter compared to the nature of the dynamic conditions that precede, and the pathological lesions that follow. That these are debatable questions, because of our lack of scientific knowledge concerning them, is well known, but I trust we shall receive further light ere the discussion closes. To what extent micro-organisms enter as a factor in causation, whether directly or indirectly, how they are to be prevented from gaining an entrance and how they are to be dealt with when they have become unpleasant tenants of the young child, and helped to aggravate, if not
cause the troubles named, will, I trust, be thoroughly discussed, after being unfolded by the one to whom this part of the subject has been assigned. While overheating and chilling of the body are without doubt very prominent circumstances in the matter of causation, I fully believe, improper feeding to be the most active cause in producing, and correct feeding the all important requisite in the treatment of these various conditions. To enter into an elaborate discussion of what, when, and how, children should be fed, would be to trench upon a field delegated to another, yet I will say that in my opinion, too frequent feeding is the greatest mistake made by mothers, and not appreciated by most physicians.

That the pathological changes existing in these so called "diarrhoeal diseases," might have been prevented by proper management during the dynamic period, no one thoroughly conversant with their causes will deny. What these pathological processes are, and how they are to be differentiated, has been left to one well qualified to elaborate the subject to your entire satisfaction.

While I regard the use of active medicinal agents as absolutely necessary in many cases, I am certain there has entered into the treatment of these cases too much empiricism and guess work in prescribing, too little knowledge of foods, digestion and assimilation, too much crude medicine and polypharmacy, and too little rational therapeutics.

This subject will, however be handled in a scientific manner by one abundantly qualified to dispose of it, and I leave the further consideration of the whole matter to those who may follow me, and to the resulting discussion, which I trust will be scientific, practical and exhaustive.

WHAT ARE THE PRIMARY UNDERLYING ETIOLOGICAL CONDITIONS GIVING RISE TO SUMMER DIARRHOEA IN INFANTS, AND WHAT ARE THE BEST HYGIENIC METHODS TO BE ADOPTED TO PREVENT THEIR OCCURRENCE?

By J. P. Lord, M. D., Omaha.

In an editorial on the "Influence of Temperature Upon Mortality," Shrady says: "That it is well known that there is a fixed and definite relation between climate and disease, certain diseases being peculiar to certain climates. Thus in the colder regions we find most prevalent the diseases of the respiratory tract and kidneys, together with certain fevers, while in warm climes we note diseases of the digestive organs, in addition to certain specific fevers, distinct from those met with in the northern portions of the earth's surface. In the so-called temperate regions, where it is very hot for a portion of the year and very cold for another portion, we find diseases of both the kinds above mentioned, summer being marked by the prevalence of many of the diseases peculiar to the tropics, while in winter the diseases of the north prevail."

The truthfulness of this statement in regard to the influence of climate on disease is well exemplified in the prevalence of diarrhoeal diseases of infants and children in the hot months. The very name summer diarrhoea brings us face to face with the chief cause, heat, which is the primary underlying etiological condition which produces summer diarrhoeal maladies in infants. It acts directly on young children by depressing and rendering more susceptible their nervous energy and by enfeebbling the digestive organs, and by increasing, but weakening the action of the heart. The indirect effects of heat are caused by fermentative changes in the food of in-
fants and surrounding domestic and civic filth. Much has been said and written of bad hygienic surroundings of these little unfortunates as a causative factor in the production of these maladies, and while I do not belittle the importance of this factor, I do believe that its importance has been overestimated. For it has been shown that infants in these surroundings, fed upon sterilized milk furnished from dispensary daily in seven three-ounce sealed bottles, that they did well, notwithstanding their environment.

We are to remember that infants, surrounded by filth, are most apt to be neglected, and that numerous causes immediately become operative, and the greatest possible ignorance is shown in feeding. Suffice it to say that experiment has shown that correct feeding in the midst of all other disadvantages removes the greatest factor in the production of summer diarrhoea. Did I say that improper feeding was the greatest factor? Yes; but it is not the primary underlying causative condition giving rise to summer diarrhoea. Heat is the primary and the underlying etiological condition. Making a favorable condition for the production of diarrhoea when correct feeding and proper hygienic methods are not observed, and it is so strong a factor that it will often produce the disease when the best known methods are observed. And I think that it will continue to do so, to a great extent, for all time. Just as we will continue to have pneumonia and bronchitis during the cold months.

If we are correct, then, in our deductions, what is to be done, for we cannot escape the summer heat, the underlying cause? We must seek to render inoperative this ever present factor—seek to prevent fuel being added to the flame by administering such nourishment as is pure, fresh and sterile, of such formula as is suited to the infants' powers of digestion and assimilation. Its drink also should be free from bacteria and the atmosphere also should be as good as possible, but this is really least important of these last requirements mentioned.

While it is shown by good authorities that the existence of summer diarrhoea in a neighborhood infects the atmosphere with specific forms of bacteria, which will, if communicated speedily, produce the disease. Yet it is, I think, more reasonable to presume that bacteria have hitherto been more frequently introduced directly into the gastrointestinal canal by food and water infected in such surroundings than by inhalation with the atmosphere.

We have seen also that heat is a direct cause, by producing depression of the nervous system, which in turn alters the circulation, weakens digestion and produces anæmia. A weakened digestive power produces diarrhoea by allowing partially digested food to pass into the lower bowel, there to decompose and form irritating gases, which excite peristalsis and light up an intestinal catarrh and form a hotbed for the breeding of bacteria of more active and virulent forms than those said always to be present in greater or less numbers in the healthy intestinal canal.

While bacteria are usually an active factor, they are not necessarily so from the start. Irritation from acid fermentation of undigested food may exist, increase, and through the successive changes in a few weeks or months become full fledged cases of gastritis, gastroenteritis or colitis, any one or all combined from the effects of improper feeding alone, which is sufficient without bacteria to produce intestinal inflammation and consequent diarrhoea.

The infant may have an impaired diges-
tion from a variety of causes, anaemia, scrofula, rachitis, marasmus, improper feeding or improper nursing, and if from any cause the infant has poor digestion, before the hot months arrive it is almost certain to be made worse from the influence of heat, upon its easily depressed and unstable nervous system and from the changes that take place in the aliment, within or without the intestinal canal. Heat having been given so prominent a place in the causation of this affection. Stress will be laid on such measures as will lessen its effects both upon the system of the infant and upon its food before its consumption. It has been shown upon good authority, that warm bathing or sponging best equalizes the circulation, reduces the temperature and sedates the nervous system of infants and children suffering from the usual ill effects of excessive heat. Such knowledge should be disseminated in such a way as to do the most good. Cold sponging is better than none, but even this is not practised to the extent which it should. Young infants especially do not get enough water internally, they should have more to compensate for the increased loss of fluids in hot weather. From the effects of heat upon the infant and its digestion at this time more pains should be taken to know by chemical analysis the constituents of both mother's milk and cow's milk in cases where it disagrees, that it may be corrected in time, before a life is sacrificed in experimenting with medical treatment.

Anaemia plays an important role in the production of summer diarrhoea by starving the nervous system and cheating the stomach of the food for a good digestive fluid.

The conditions which produce poor digestion must be denominated primary, and underlying causes, and they are quite numerous as we have already seen. In fact there are in some so many causes operative, that it is only too apparent that these little unfortunates are only born to die, and little can be expected of their digestive capacity. The doctor is handicapped from the very start and when mother's milk of good quality won't sustain them, what is to be hoped for, in the artificially fed, no matter how scientific and painstaking all else. But doctors can't be held responsible for blighted ovi, nor for those a little further advanced in development, these scrofulous, marasmic, syphilitic and rachitic infants.

Exclusively breast fed babies, from healthy mothers, without the predisposing causes enumerated are comparatively safe from diarrhoeal maladies. Why? Because the nourishment is suited to their digestive capacity, and because it is always fresh and sterile.

Now, then, if the care of the infant is what it should be, it is comparatively safe, as I before stated. On the other hand, clothing, bathing, fresh air, and all else avail little or nothing, if the child is artificially fed, with a food which is entirely unsuited to its digestion. Such an infant, seldom, unless by mere chance, can run the gauntlet of a summer characterized by several protracted heated terms, especially is this true in a city, where the air may be redolent with specific forms of bacteria, which almost surely, sooner or later, find their way either into the food before it enters the body, or are developed within the intestinal canal, because of the favorable conditions for their production. This statement I believe to be reasonable, and borne out by clinical observation and by microscopic research.

We have touched upon various causes which favor the production of summer diarrhoea, but the chief exciting cause is well recognized to be improper feeding. Improper feeding may produce diarrhoea
in other seasons, but improper feeding plus the direct and indirect influences of heat is the most frequent of any single primary cause of summer diarrhoea in infants. Improper feeding is the most frequent primary exciting cause, but extreme heat the sole underlying cause of so-called summer diarrhoea just as cold is the primary underlying cause of pulmonary affections.

If this be true then, what are we to learn? That our great effort must be directed to the removal of preventable causes. We cannot escape the primary and underlying cause, heat, but we can by proper and well directed efforts do much to remove exciting causes. We must then direct our attention to the foremost of them all. Improper feeding being the chief preventable cause, and, besides, the most easily remedied, that should receive our earliest attention. This is beyond individual effort, though the doctor can do much. A plan should be formulated and boards of health should intercede for the protection of these helpless beings. We all know that men even must be protected against themselves. Why not intercede for helpless babes and protect them against an ignorant community and their own mothers. The better part of the laity is slow to learn what the doctors are only half impressed with, namely, the furnishing of infants with fresh, pure and sterile milk. This being the case what more can be expected from the poor, ignorant and the shiftless. Local boards of health should come to their rescue. When this is done doctors will not have so much reason to be appalled at this shamefully high infant mortality in summer. If certain epidemic, contagious or pestilential diseases appear in any quarter or corner of our land, and produce even a single death, the government and local boards of health are immediately up in arms against it, and the result is so great that many of us have never seen a single case of these diseases. On the other hand what is done to prevent this disease under consideration, the fatality of which is greater in a single season—I will venture the assertion—than has been that of a century from small pox, cholera and yellow fever combined. Truly we strain at a gnat and swallow a camel. A National Board of Health should supply local authorities for universal distribution, pamphlets in all languages, instructing the people on matters pertaining to the care and feeding of infants. Infants especially should be protected against impure and unwholesome milk. This leads me to some remarks on the subject of foods, reform in which has much to do with the prevention of summer diarrhoea in infants. The subject of infant foods and hygienic methods to prevent summer diarrhoea in infants are subjects bearing a peculiar close relation. For does not every physician especially those in large cities know that the babies’ milk is frequently only slightly less contaminated than the contents of the kitchen swill bucket. City milk must receive not only that sanitary and hygienic treatment and care which is so absolutely necessary from the time of milking until in the hands of the consumer, but, more attention must be paid to the production of an article that is wholesome and this involves me in a large subject, but briefly it means healthy cows kept in healthy places, fed with grass, hay and grains and supplied with plenty of good water. Half the milk supplied to Omaha is vile stuff, produced from poorly selected dairy stock, fed all the cheap refuse possible to be obtained, and the stables and barns are very unsanitary. I cite Omaha, all cities are about alike in this and while the larger cities may have more rigid requirements,
they are not enough better to compensate against the extra time and distance required to reach the consumer. Super-added also is the increased danger of infection in a city. So that metropolitan milk becomes worse than that of an ordinary sized city.

We need government inspectors of dairies just as much and more than we do for stock yards and packing houses. And milk in transport or local delivery should besubject to rigid inspection. The people should be instructed in the care and feeding of infants. We must get at the bottom of our very imperfect sanitary system and make the necessary reforms. The successful handling of these cases must be in prevention.

SECOND QUESTION—TO WHAT EXTENT DO BACTERIA OR GERMS ENTER AS FACTORS IN THE CAUSATION OF THIS DISEASE, ETC.

By Dr. G. L. Humphreys, Kearney.

In answer to the second question, as to the causation of summer diarrhoea of infants, the facts which I am enabled to present to this society must prove as meager and unsatisfactory to you as they have proven to myself. I promised the chairman of this section to look the matter up at our last meeting, but finding the literature of the subject unsatisfactory, as regards quantity and scientific value, I wrote, before the printing of our programme, begging to be excused from making any report, and supposed I had been dropped therefrom until within the last three weeks.

I fear that this hurried report will neither be an honor to myself nor prove profitable to this society. Summer diarrhoea is not nearly so prevalent in the section of the state from which I come as it is at a lower altitude, consequently I did not have as many cases during the past summer as was desirable to make a satisfactory bacteriological study.

That germs and bacteria are often a causation of cholera infantum appears more than probable, as I find that intestinal discharges of these little patients are the habitat of 30 separate varieties of microbes.

Finding that it would prove to be the work of years to differentiate, cultivate and experiment with such a host of infinitesimal enemies, single and alone, I begun to look about me for co-laborators to assist in this prodigious undertaking. I was not long in discovering that the microscopists of Nebraska were almost unknown to me and those whom I did know were specialists in other lines of work and could not be expected to take a lively interest in the microscopical examinations of excrementitious substances altogether outside the line of their special work.

Vaughn, of Ann Arbor, says in regard to this class of diseases that all attempts to find a morphologically specific germ have failed and the labors of Booker, of this country, and of Escherick, of Germany, have shown that no one species or variety is constantly present. A germ which is frequently present one season will not be found at all the next. The failure of Koch’s first rule, viz.: “The germ must be found in all cases of this disease,” says Vaughn, does not prove that summer diarrhoea is not of bacterial origin, for Baginsky and Stadthagen have shown that the bacilli discovered by Baginsky produce a chemical poison which induces diarrhoea in the lower animals. And it has been shown that at least three of Booker’s bacteria produce poisons which have an inimical effect. We are, therefore, justified in concluding that the diarrhoea may be due to any one or more of a number of germs which differ from one another sufficiently mor-
phologically to be classified as distinct species. The similarity among these bacteria will not be discovered by a study of their size, form and reactions with stationary re-agents, but by a study of their chemical poisons, the agents by virtue of which they cause the disease.

The study of the chemical factors in the causation of the infectious diseases opens up before us a field in which much work must be done. In the first place we must ascertain what germs are toxigenic. This would necessitate a chemical study of all kinds of bacteria, both the pathogenic and non-pathogenic. The influence of the various secretions of the body on these germs must also be investigated. Some bacteria are destroyed by a normal gastric juice, while others are not. It is also impossible to cultivate many varieties in other than alkali media. The fact that chemical poisons are concerned in the production of cholera infantum has, I think, been abundantly proven. In the first place the symptoms in this disease are so very similar to those induced by a number of gastro-intestinal irritants, which at the same time depress the nerve centers, that the suggestion that the disease might be due to chemical poison, has been favorably received by the profession.

That tyrotoxicon and toxalbumen often enter into the causation of cholera infantum, I am firmly convinced. One writer, moreover, states that this poison has been found in a sample of milk a part of which had been given to a child not more than two hours before the symptoms of a violent attack of the disease manifested themselves. One of the cases which I treated the past summer was promptly cured by a change of diet in the cow that furnished the milk. This cow had been confined in a stable and fed upon hay and a quantity of corn meal. That fermentation took place instead of digestion was evident from the quantities of flatus which issued almost constantly from the intestinal tract of this animal. The quantity was so great as to be audible more than half the time. A cessation of the corn meal diet brought about a cure of the baby. That many vegetable products eaten by animals deleteriously affect the milk there can be no doubt, and that the digestion of certain weeds by the cows often cause summer diarrhea, I think can be safely inferred. If the iodide of potassium can be detected in urine within ten minutes after an ordinary dose has been given, and if thesecretions of the kidneys can be tainted within thirty minutes after partaking of asparagus so as to cause an odor resembling decayed horns, why can not the secretions of the mammary gland be more or less affected by many substances taken into the stomach. That such is actually the case most of you are aware, for who has not tasted butter rank with the smell and taste of wild garlic, or almost as bitter as quinine from the fact of cows having eaten of a common bitter weed to be found in August in old pastures. But to return to the germs. I shall not attempt the conclusions that germs do or do not cause cholera infantum further than to say that three poisonous bodies have been isolated from three of Booker's list of summer diarrhea microorganisms, small quantities of which injected under the skin of kittens and puppies caused retching, vomiting, purging, collapse and, death. Evidently here are three germs differing from one another morphologically sufficiently to be classed as different species, but belonging chemically and toxicologically to the same group with twenty-seven more to be heard from.
The prevention of summer diarrhoea and cholera infantum becomes a more difficult task than those who believe that a single micro organism is concerned in their causation admit. All bacteria which are capable of growth and reproduction within the intestines of the infant, and of the production of chemical poisons during their development must be excluded.

While these studies will prove of great interest from a scientific standpoint, I fear the practical good in a therapeutical sense will be quite as problematical as the famous tuberculin of the eminent German professor who discovered it.

QUESTION—WHAT ARE THE PATHOLOGICAL CHANGES PRODUCED IN THE DIFFERENT ORGANS AND TISSUES IN SUMMER DIARRHOEA OF INFANTS WHEN THE DISEASE IS ALLOWED TO RUN ITS NATURAL COURSE WITHOUT TREATMENT, OR WHEN IMPROPERLY MANAGED?

By William F. Milroy, M. D., Omaha.

In attempting to answer this question I shall follow the pathological classification of my honored preceptor, Dr. L. Emmett Holt, as set forth in Keating's Cyclopaedia of the diseases of children and elsewhere. I will not undertake to present to you anything that is original but only to bring before you briefly, for the purposes of this discussion the present views of those who have had time, opportunity and the disposition to investigate thoroughly the matter before us.

Within a few years past much attention has been given to the study of the summer diarrhoea of children but this has turned largely upon the etiology of the malady and has given little additional knowledge as to the pathological changes which occur. To this statement I may make the one exception the relation of bacteriology to these changes.

If any one doubts the truth of my remark let him compare the descriptions given by the writers of twenty-five or thirty years ago with those most recent. The Medical and Surgical History of the War of the Rebellion contains accounts of pathological states occurring in acute diarrhoea which might almost be transposed bodily into a recent work on "Diseases of Children," and answer well the purpose of an account of the "Pathological Anatomy."

I. Acute Desquamative Catarrh.—The first pathological variety I mention is acute desquamative catarrh. In a large percentage of the fatal cases of the group of diseases classified as summer diarrhoea, no lesion is discovered, except a desquamation of the superficial epithelium of the intestine or of the stomach and intestine. These cases have a very acute course and if uncomplicated no anatomical change takes place in the other organs of the body.

Clinically the above remarks apply to cases of true cholera infantum as well as cases of digestive diarrhoea. It is disappointing to find so slight lesions in an autopsy occurring upon the body of a child which has been the victim of so terrific a malady; and yet not more so in this disease, than in several others.

II. Acute Catarrhal Inflammation.—Usually the lower part of the ileum and the colon suffer most. Sometimes the whole of the small intestine and rarely only the colon is involved. The gross examination shows the intestine more or less distended with gas and containing material semifluid, greenish or brownish in color and quite offensive. There is sometimes swelling of the mucous membrane to a degree sufficient to be evident without a lens but by the aid of such a
glass the swollen follicles give the surface a velvety appearance. Congestion is always present to a variable degree. The lymph nodules are commonly enlarged (appearing the size of mustard seed). This is a feature more constant in the colon than in the small intestine.

Microscopically—The epithelium is broken down and the products of its degeneration are seen in the lumen of the tubules. The lumen of the tubular glands is contracted from swelling of the adenoid structure which surrounds them. In some cases entire tubular glands are missing. In very severe cases a dense infiltration of the mucous membrane, with round cells, extending as deep as the muscular coat is found. In milder cases and especially those of shorter duration this is less marked and less extensive. Superficial ulcerations occur in severe cases of the catarrhal form, but more commonly in the croupous. They rarely descend to the muscularis mucosae, but leave the fundi of the tubular glands. They are caused by a softening down and destruction of all the structures on the surface, or near it, of the mucous membrane.

The lymph nodules are enlarged mostly from an increase in the number of their round cells. In very long cases these nodules sometimes break down. The blood vessels are engorged and greater or less extravasations are very common.

The lesions of this variety are capable of being recovered from in most cases and in children having good constitutions there is no marked tendency to become chronic.

III. Inflammation of the Lymph Nodules with Ulceration.—This ulceration but rarely takes place in Peyers' patches. It occurs far more frequently in the colon than in the small intestine, and they are more severe in the lower portion of this organ. The ulcers begin as very small lesions in the top of the nodule and extend until the whole nodule may be destroyed, but rarely penetrate deeper than to the muscular layer of the intestinal wall.

The microscope shows a swelling of the nodule from infiltration of the cells. These break down, and unless the process be arrested, the reticular network of the nodule is destroyed, the cells escaping as pus into the intestine. The adjoining tissue is also infiltrated and the ulcerative process may extend in the neighborhood mainly in the submucosa. Coalescence of several of these may form a big ulcer.

The course of these cases is quite prolonged and they terminate commonly fatal.

IV. Acute Croupous Inflammation.—This is usually a primary condition, not as a rule complicating diphtheria. The location of the lesion is, with few exceptions, the whole of the colon and the last two or three feet of the small intestine. Examination by the naked eye shows but little false membrane and no sloughing.

The intestine does not usually contain very much fecal matter, but its walls are not thrown into folds as in health under such circumstances. The walls are stiff and three or four times the normal thickness, and of a dark red color, except where membrane exists, and here it is a grayish green.

Microscopically, perhaps, the most conspicuous feature is the dense infiltration of the mucosa and often the submucosa as well, with round cells, to a degree sufficient to obliterate in some places, all the normal elements and in others to greatly distort them.

Fibrin coats the surface in a few places, but in more there is none. It also occasionally infiltrates the deeper tissues. Remarkable as it seems with
all this infiltration sloughing, with the formation of deep ulcers, rarely occurs in these cases. They are generally fatal, but in the few which recover the restoration of the parts destroyed is a very tedious process.

As to the other organs of the body, I have already intimated that little pathological alterations of any significance occur. Those states characteristic of febrile diseases in general prevail in these, but are in no wise characteristic.

The relation of pathogenic bacteria to the summer diarrhoea of children remains to be mentioned, as it refers to the pathological conditions which are seen, though the gentleman who has preceded me has thoroughly discussed their very important relation to etiology.

Notwithstanding the very elaborate and laborious study of the bacteriology of the intestines of children afflicted with summer diarrhoea, it still remains to be shown exactly how the bacteria produce the lesions that are so fatal.

Dr. William Booker, in a communication to the American Pediatric Society in 1889, quotes the results of Escherich, Baginsky and others in regard to the normal or constant milk-feces bacteria. Of these there are two, viz., the bacterium lactis aerogenes, found in the small intestine of healthy milk-fed infants; and bacterium coli commune, found in the large intestine under the same conditions. The difference in the action of these two obligatory milk-feces bacteria upon milk sugar, consists in bacterium lactis aerogenes producing chiefly acetic acid while bacterium coli commune produces besides acetic acid, a considerable quantity of lactic and formic acids. Dr. Booker says:

"In examining the stools of children having acid diarrhoea, according to Koch's culture method, Baginsky succeeded in separating two species of bacteria which liquefy gelatin, one of which produces a green coloring matter and is frequently found in water the other being non-chromogenic. The latter was found constantly in the diarrhoea stools and proved quickly fatal to animals, and Baginsky thinks it probably plays an important role in the pathogenesis of diarrhoea."

Interesting experiments were made to prove the behavior of this bacillus with the bacterium lactis aerogenes. If the two are inoculated at the same time upon gelatin supplied with milk-sugar, the bacterium lactis aerogenes shows an active development with evolution of gas, while the white liquefying bacillus ordinarily does not develop, and but exceptionally causes a liquefaction in the gelatin.

This led Baginsky to the opinion that bacterium lactis aerogenes, under conditions most favorable to its growth can prevent the development of pathogenic organisms and that we have in the acetie acid fermentation of milk-sugar by bacterium lactis aerogenes a remedy which serves in the infant organism to protect the intestinal wall from pathogenic bacteria. When, however, this fermentation exceeds a certain degree, which may happen in abnormal conditions of the intestine, it destroys the bacteri lactis aerogenes and lays the foundation for pathological processes of various kinds.

Lesage separated from the feces of infants having a green diarrhoea a bacillus which has the property of producing green coloring matter, becoming more darkly green when exposed to the air. This bacillus is found in great abundance in the upper part of the small intestine. When injected into the blood of the lower animals they appeared in the duodenum in 10 or 12 hours and caused by their increase in the intestinal contents the green diarr-
rhœa. The same results were obtained when the bacilli were injected directly into the intestine or fed to animals. In the mild diarrhoea the only symptoms were the green stools increased in number, but in severe cases there were also pulmonary and nervous symptoms. This bacillus is not found in water or milk. It spreads in the air from the drying diaper and is taken into the mouth in breathing.

These facts and many similar bear more directly upon etiology than pathology, and yet they seem to show the agency of bacteria in the development of these diseases. Yet in autopsies made early the bacteria are found only upon the surface of the mucous membrane, or very near it, though penetrating deeply soon after death.

It appears pretty certain that it is not the bacteria directly, but rather their ptomaines, which produce the lesion, and that these act mainly upon the blood vessels.

FOURTH QUESTION—IN THE TREATMENT OF THE SUMMER DIARRHŒAS OF INFANTS, WHAT MEDICINAL AGENTS ARE VALUABLE AND WHAT IS A RATIONAL OR SCIENTIFIC EXPLANATION OF THEIR THERAPEUTIC ACTION.

By H. E. Harrington, M. D., Bertrand.

In presenting to you this subject for consideration, I shall not try to name all of the various medicinal agents which have been lauded at one time or another for the cure of these summer diarrhœas of infants. I shall endeavor to simply call your attention to those remedial agents and measures which clinical, empirical and theoretical, as well as physiological experiences have shown to be the most beneficial.

Then what are the indications for treatment in an ordinary case or cases of summer diarrhœas of children.

I believe that experience has well shown that 1st, eliminants, laxatives or cathartics are indicated; 2d, antiseptics; 3rd, sedatives and astringents; 4th, antipyretics and sodorifics; 5th, anodynes and stimulants. Under these propositions, and five indications, I believe that all cases of bowel troubles in children can be treated, so far as medicinal agents are capable of influencing these disorders. Of course I am only speaking of the medical aspect of the cases which, in my opinion, is secondary to the proper hygienic and dietetic management of them. This part of the treatment of these disorders you have had the pleasure to listen to in a very able paper presented to you by Dr. Lord, of Omaha.

I believe, and I think it is the general consensus of the best authors and practitioners, that in commencing the treatment of a case of summer diarrhoea in children, that we should give first a cathartic or laxative, (unless there be decided contra-indications to the giving of the same.) The indication points rationally to the removal of the effete and vitiated secretions together with the bacteria, ptomaines and other detritus which occur to a greater or less extent in all of these cases.

How shall we best accomplish this object. I am a firm believer in the antiseptic and cholagogus as well as laxative and cathartic efforts of the mild chloride of mercury, (calomel.)

This drug may be given in one large dose, say gr. n to gr. v, at once, repeated in four or six hours, if its characteristic stools are not observed. It should always be combined with the bicarbonate of soda, in doses of gr. i to v, or calomel may be given in fractional doses as gr.
to \( \frac{1}{2} \) every half hour, until the desired effect is obtained.

This drug will stimulate all of the glands from the parotid to the smaller glands of the intestines, in fact it stimulates every glandular organ in the economy, thereby it causes the said glands to eliminate if possible, any poisonous or deleterious micro-organisms which may have found entrance into the various glands which are in connection with the alimentary canal. Also to excite these glandular organs to secrete in a normal physiological manner.

Say from two to six hours after giving the calomel give a full dose of castor oil or syr. rhei compositus. This dose should be large enough to sweep out thoroughly all foul, fecal and poisonous detritus which may be present in the bowels. Then we have, so to speak, a comparatively hygienic and antiseptic condition of the intestinal canal to begin with, in which we may hope to get the effect of other corrective medicinal agents.

If there is pyrexia with a full bounding pulse, flushed face, hot head and dry skin, I believe that tinctureaconitegiven in doses of \( \frac{1}{2} \) to 1 M. every half hour or hour to a child one or two years old, until the pulse becomes slower and the skin moist; by so doing we may hope to reduce the pyrexia. By slowing the pulse we get dilatation of the cutaneous arterioles and capillaries, and by so doing there is a larger volume of blood sent to the surface, this derivative effect tends to relieve the internal congestion of the stomach and bowels, and at the same time produce diaphoresis, which is very important in assisting to dissipate the pyrexia in all of the acute fevers and inflammations.

This antipyretic treatment of course would not apply to a case of profound prostration and debility with feeble pulse and cold clammy skin, the pyrexia in these cases is best treated by stimulants and warm sponge baths with a little alcohol or whisky added to bath. These baths may be given every three to six hours according to indications.

The medicinal agent which I have found most useful to control the fever in these cases is acetanilide given in suitable doses. My experience with this drug has been quite extensive. I have administered at least 10,000 doses of acetanilide, and I have never seen anything but beneficial results, when given under proper circumstances. I have never given a dose of it that I was afterwards sorry for. I have never given a dose that has produced cyanosis, gastric distress or caused collapse. This drug may be given to a child from one to two years of age, in doses of gr. ii.-iv. every four hours under proper indications for its use, until the pyrexia is brought nearly normal, then the dose may be given at longer intervals and in smaller doses. If there be high fever with prostration and you elect to give acetanilide don't forget to combine with each dose, a suitable quantity of good diffusible stimulant in the form of brandy or whisky.

My observations with this drug lead me to the following conclusions: It is a safe antipyretic, acting safely, surely and promptly; it is an analgesic and anodyne, and also antiseptic, to a considerable degree, like the other derivatives of the coal tar group.

Alternating with the antipyretic treatment of these intestinal disorders, antiseptic and astringent medicines are indicated.

Antiseptics to destroy germs and prevent their further development; for this purpose we have a large number of remedies. First amongst the antiseptic agents Sir Sidney Ringer places bichloride of mercury, given in the proportion
of gr. i of the bichloride to 3xii of distilled water. Dose of this solution is one teaspoonful every two or three hours. The indications for the use of this drug will be found especially where there are slimy, bloody stools, with pain and tenesmus. Or we may, according to Gross, give mercury with chalk under the same indications for a day or two. The dose is gr. \( \frac{1}{4} \) to gr. \( \frac{1}{8} \) every hour or two. Salol is an antiseptic of proven value. Its pleasant odor and being nearly tasteless makes it a very desirable medicinal agent to give to children. The dose is for a child at two years from gr. i to gr. iii every two or three hours.

Bismuth salicylate is another admirable antiseptic and sedative astringent; as is also the subnitrate of bismuth. They may be conveniently combined with other astringent and anodyne agents if indicated.

Sulpho-carbolate of zinc is a powerful antiseptic astringent and nervine. The dose of it is gr. i to ii, repeated every four to six hours, or oftener if necessary. It should not be given if the stomach be weak and easily nauseated, for in such cases it will not be retained.

Antiseptics and astringents may be combined, as for instance salol gr. ii, bismuth subnit. gr. v, sacch. lactis gr. v. Something like the above, with perhaps a little dose of solid opium, if there be very great pain and profuse discharges; the opium acts by virtue of its well known anodyne and astringent properties.

There are many that condemn the use of opiates in bowel diseases such as occur in summer, but I believe that judiciously administered they are very useful, not alone, but in conjunction with proper feeding and antiseptics.

There is nearly always an improvement in a grave case of summer diarrhoea coincident with the checking up of the number of stools in a patient. Of course the alimentary canal should have been thoroughly cleansed out in the beginning of the disorder, the bowel then put under antiseptic treatment and rendered as aseptic as possible. Under these conditions, with good dietetic and hygienic nursing, we may feel justified, and I believe it to be a very useful measure to combine a suitable dose of a good preparation of pulv. opium or the gum. It relieves pain; it produces sleep; it checks the bowels; it gives the bowels physiological rest. It should not be given if there is a determination of blood to the head, as is evidenced by delirium, restlessness and rolling of the head. Under these conditions it is contra-indicated, and will surely aggravate the case.

When this condition supervenes it must be met with the hot or cold pack counter irritation of the extremities and the internal administration of stimulants, with perfect quiet and proper feeding.

In some of those extremely bad cases accompanied by excessive vomiting and purging, small doses of pure beechwood creosote, say \( \frac{1}{4} \) of a drop every fifteen to thirty minutes will be found to do great good; it may be given in simply pure water, or in wine or elix. of pepsin. Its beneficial effect is produced by its sedative effect on the gastric filaments of the pneumo-gastric nerve, it is a very efficient antiseptic. Where the stomach is extremely irritable and will not retain food or drink, the withholding of the same for a time is clearly indicated for a manifest physiological reason, and that is, if the food and drink, are not digested and assimilated, they simply act as foreign substances, and aggravate the case. The rectal administering of food and drink then under these conditions should entirely take the place of oral ali-
mentation, flushing the bowels with a solution of bichloride of mercury of a strength of 1-5,000 to 1 in 8,000 repeated three or four times in the twenty-four hours. The solution should be used as warm as possible, and given with a hard rubber syringe having no metal attachment. The indications for using these enemas are: frequent bloody, slimy discharges accompanied with tenesmus, or in the same condition as where it is to be given per orem. The two ways of administering may be used at the same time, or the rectal administering may be resorted to when the stomach will not retain the medicinal agent. After having flushed the rectum with the proper strength of bichloride solutions, care being taken to introduce as much of the medicinal agent as the patient can hold, then after retaining it for a few moments let it pass off; then inject a sedative and astringent, like tincture opium gtts. v, and plumbi acetas gr. iv, in half an oz. of starch. This amount is for a child one year old. This injection may be used every four to six hours, according to circumstances.

Every particle of food used by a child should, so far as possible, be thoroughly sterilized and peptonized. A very active and useful digestive ferment is composed of say 15 pepsin pure in lamellis, glycerine, aq. chloroform, aq. menth pip. in suitable doses, according to age, of its active principles. If the secretions are alkaline, combine with each dose of the above, gtts. iii to v of dilute nitro hydrochloric acid. If instead of being alkaline they are acid, sour and acrid, then do not give the acid, but give the digestive ferment, alternately with suitable doses, say one or two teaspoonfuls of the mistura cret. comp. every four hours. This last should be continued until the secretions are in a normal condition. This mixture is beneficial by reason of its antacid effect. Ipecacuanha, according to Phillips and Bartholow, and many other world known authorities, is recommended highly. It is the remedy par excellence so called by them. The indications for its use are frequent slimy, bloody stools, with pain. The remedy may be given in doses of from gr. ii to v, to a child one or two years old, in a little milk, repeated every four hours for a day or two. If at the end of two days it has done no good it had better be discontinued. To get its full therapeutic effect, it must be given with boldness and decision; if so given, it will abort a large percentage of those epidemic cases, if seen within the first three days. The patient should refrain from taking drinks of any kind, and keep perfectly quiet, in order to retain the medicine by the stomach. It is good practice to give some liquid preparation of opium before giving the ipecac to help the stomach retain the medicament.

The action (therapeutic) in these diseases of ipecac is said to be by virtue of its stimulating properties on the liver, and also by its eliminating and cathartic action. It is said to cure diarrheas and dysentery by reason of its cathartic action, then by stimulating the liver to secrete normal bile, which being the natural antiseptic and laxative which assists the diseased tube to regain its natural physiological condition. If the ipecac should not be retained by the stomach don't be discouraged, but so soon as the vomiting stops give another dose. You will not have to repeat the dose many times before it will be retained by the stomach. Give the ipecac every four hours until the characteristic stools are produced, which are highly colored bilious stools. After this is produced stop ipecac and give pepsin and bismuth subnitrate in suitable doses several times a day.
In those cases of summer diarrhoea where the main symptoms are looseness of the bowels, after having thoroughly regulated the food, clothing and hygienic conditions of the child, that gum opium, camphor and acetate of lead are very serviceable agents to control this very annoying condition. This combination is sedative, astringent and antodyne, and in proper doses it fulfills every indication.

You will find in those diarrhoeas of infants or children, characterized by excessively greenish stools which scald, and irritate the anus and nates and are caused by a vitiated condition of the hepatic secretions. That there is nothing better for their relief and cure, than the internal administration of the phosphate of sodium, given in doses of v. to x. grs. three times a day, until the secretions are in a healthy condition. The excoriations around the anus and nates should be treated by strict cleanliness, and then some dry fine absorbent powder that is antiseptic, dusted over the parts, say bismuth and boracic acid. You will find a very efficient substitute for calomel in the phosphate of sodium, in those cases of green stools, or where the condition of icterus is present. Beside, you can use this remedy in cases where people object to the using of calomel, with marvelous results in many cases.

Another remedy for these green diarrhoeas is lactic acid, given in the form of a lemonade, containing from one drachm to three drachms in twenty-four hours.

The treatment of diarrhoea of children by Prof. John Aulde's method, of administering the arsenite of copper in very minute doses, has not in my hands given favorable results, such as claimed for it by its very able and distinguished author. Prof. Aulde's method is to dissolve a tablet containing 1-100 grains in from four to six ounces of water, and giving a teaspoonful every ten minutes for the first hour, then hourly, or half hourly. Its action is that of a germicide and astringent. I would respectfully submit this treatment of Prof. Auldes to you for investigation and observation. Messrs. Parke, Davis & Co. prepare the arsenite of copper in tablet form, each containing 1-100 of a grain. I am under obligations to the above firm for a sample of one hundred of these tablets.

Where the stomach is extremely irritable, you will find in addition to what I have already given, that counter irritation over the stomach will greatly assist in quieting the irritability of the stomach, and assist it to retain other food or remedies, or give very small doses hourly for a while, of cocaine muriate and calomel, and bismuth, until the stomach is quiet.

When there is severe griping and tenesmus, a small piece of ice may be introduced into the rectum occasionally, with a very happy result in the majority of cases.

When it becomes necessary to use stimulants, and the vital forces are nearly overcome by the enemy, you will find that nux vomica, or its active principle, strychnine, is one of the most powerful cerebro spinal nerve stimulants which we possess, and given in proper doses, as say 1-100 to 1-80 gr. to a child every three or four hours, will, under very extreme conditions of depression and collapse, carry our little patient safely over the danger spot. Erythroxylon coca is also a valuable stimulant in such cases. The coca cordial is an elegant form in which to administer this powerful restorative agent.

Sulphate of quinine in small doses is by no means a remedy to be despised, especially when the disease takes on a malarial or intermittent form, for in this
form of summer diarrhoea it is the great sheet anchor.

Rest, in all cases of summer diarrhoea, is one of the most useful auxiliaries at our command, and we should see to it that it is properly enforced, especially in all grave cases. And the physician that looks after all of the things that surround his little patients will be the most successful. Be sure and look after the food, bathing, clothing, drinking, sleeping; and see that your little one has proper rest. This last is one of the most essential factors in treating successfully these diseases.

Finally, protect your little patients from the excessive heat of our summer as much as possible. Keep them cool in health, as well as in time of sickness, and by so doing you will prevent many cases of this dread malady. I am a firm believer that the great etiological factor in the production of this disease, is heat, causing general perturbation of all of the nervous apparatus, thereby causing a derangement of the whole glandular system, and consequently being the great factor in the causation of this disease, for without proper glandular secretion, elimination and absorption, the system must of a necessity collapse, for how can we hope or expect to keep our bodies in a healthy condition if we do not take proper care of our great motor power, the cerebro spinal and sympathetic nervous systems. Then, I say, look well to your nervous system, for from it come all the phenomena that we call life, and without proper care, we will see that which all men dread so much, death.

DISCUSSION.

By Dr. A. S. Mansfelde.

I was unfortunate enough to be prevented by duties in behalf of the society from hearing some of the material presented here on this subject; but the reading of the paper on treatment, made me think of a little experience I had fifteen or twenty years ago, in having the pleasure of reviewing a little work by one of the most prominent of the medical profession of this country. He had two chapters devoted to summer diarrhoea of children, and showed that it was due to high temperature and climatic changes, coming on at the end of June and during the month of July and August. Then he goes on to state very learnedly that the cure was to be found in a preparation made from the bark of the apple tree, Phloridzin, and very much used at that time. Well, I could not tell how this tonic was to do away with the high temperature, and I earned a very sharp tongue lashing for my criticism.

Some years ago it was said in this society by a man of whom I had a better opinion then than now, that if the high temperature was the prime cause of the mortality in diarrhoea of children in the summer, why not reduce the high temperature. And he did it by taking a common kitchen table and putting into the drawer of the table ice, and keeping the baby underneath the table; thus reducing the high temperature. I think this is the correct idea. But is it really true of the high temperature, that it is the cause of this disease of the baby, or is it simply a physical condition, reducing the fluids of the body at this particular period of its existence. Put yourself in its place at that time. When the mother changes from the breast to food during the summer, that changes the food of the infant from eighty-five per cent. of water and fifteen per cent. of solid to eighty-five per cent. of solid and fifteen per cent. of water, and the sun takes away an additional amount of water besides. I should prepare the intestinal canal of the child by a thorough cleansing of the stomach and bowels. I then would put that child on an emulsion of castor oil with a little turpentine. I would also use little powders like chalk or bismuth for the disease, almost homoeopathic in quantity, directing the mother to give one powder every half to one hour in a tablespoonful or more of drinking water, thus securing my object—the furnishing to the baby the required
amount of water. The consequences of such simple practice were such that the attention of older physicians was drawn to the success of the then young practitioner. If I had added the brilliant idea of keeping the child in an ice-box, I would have been able to come right to the common sense view of the matter.

Dr. M. L. Hildreth.

While I would agree with some of the criticisms made I do not believe there has been any individual idea whatever in that paper (Harrington's) which can be very strongly criticised. Of course he has presented a large array of remedies, and it looks very formidable to group them together in that way, but I think the doctor feels very much as I do in laboring with these cases successfully. I would rather have power to control the food of the child than anything else; and if I could do so, I would in most cases throw the medicine away. Of course, here in Nebraska, especially outside of one or two of the largest cities of the State, we do not meet with the difficulty in the atmosphere that they do in New York. In the country towns it is comparatively easy to manage. I do not believe there is in that paper one drug advocated which can be said to be inefficient or bad. Most of the remedies that have been spoken of I think I have tried at one time or another. We do not have, in our part of the State, very much trouble with this summer diarrhoea of infants. I believe most of you, gentlemen and ladies, if a patient comes to you with summer diarrhoea, will prescribe something. The moral effect is to be looked after, of course, and the fee is to be looked after, and some kind of a prescription would be given.

Dr. Whitten.

I do not think we can condemn that paper. The gentleman who wrote that paper did not expect you to give every remedy to one child. His aim was merely to give, in that paper, the different remedies that could be given. I am a great advocate of calomel. And if we take the most modern reports from those who believe in the germ theory, we will find that they are giving calomel to small children with good success. Giving it in the first stage is one of the first principles, and some gentlemen who are experienced say, that where the germs are found, if it is given in small doses as a germicide, it does equally well and is as efficient as the bichloride. There are some remedies mentioned in this paper that are excellent, and as I said before, we are not to give all to one little infant, but it is a very nice collection to select from.

Now in regard to heat, you will find that if heat is not the greatest enemy to infants, it is certainly one of the most potent agents in producing fermentations, production of microbes. If that is the cause; if not, then the cause for them comes in secondary, and there are other poisons, and so forth, to be connected with it. But it is certainly a potent agent to propagate, and you will find that the death rate is much larger in any place during the hot weather than during cold weather; and while ice placed on the table, or under the table or in the room, might be of some benefit; it would be of more benefit to that child to take it away to where better hygienic conditions exist.

Dr. B. B. Davis.

 Anything that adds to our knowledge of the treatment of this troublesome disease which affects infants so much, especially in cities, is something that ought to be very closely listened to and very closely considered. It seems to me that the one thing that has done more to lower the mortality in New York, is the institution of floating hospitals or excursions for the children. Going away from the foul, contaminating atmosphere during the heated term in the cities. And I have, in the country, adopted the plan of keeping children afflicted with this disease in the open air. Have them taken out early in the morning before the sun gets warm, and keep them out two or three hours, returning them to the house before the extreme heat of the day; and again in the evening let them be taken out after the heat of the day is past. And it seems to me that this has resulted very beneficially.
I do not believe that the bacterial origin of this disease has received too much attention. We sometimes think
people are getting a little crazy on that subject, but I have no doubt that the bacteria have a great deal to do with propagating the disease. I am a great believer in sterilization of food, and read with interest, the paper on the subject of sterilization by Dr. Seifert. He has a method of his own, using sterilization in the morning and evening and having enough bottles to last through the day, and he even uses this in some cases, where the child was at the mother's breast, rather than to use the mother's milk, where this disease exists. He has the bottle especially prepared for that purpose. These bottles are boiled twenty to thirty minutes, then hermetically sealed, and are ready for use. It seems as though opium and bismuth are the needs, but we need a great deal more than that, and therapeutics takes third place in the disease.

Dr. Hewitt.

I think doctors are too careless about looking up what our president in college used to give us as the first thing to do to determine what is the matter. You say summer diarrhoea, which is very indefinite: We should look to what are the causes of that and then remove the causes. In a great majority of instances it is due to improper diet or condition of the food and often, I think, too much food or too often. I think when called in to see one of these cases the first thing to inquire into is, what the child has been taking as diet, and then, if you find out that it is cow's milk, find out what the cow has been eating, whether weeds or whether it was in the barn or eating grass, and when you get down to the point, you will get at the basis of the cause of summer diarrhoea. Of course, all admit that the heat has something to do with it, and teething also has something to do with it. There has been some talk about calomel. In my early experience I had a sister with cholera infantum. The doctor gave the case up but my mother did not give it up. She says, "But you have got to do something." He says, "There is just one thing I can do." "What is that?"

"Give a little calomel." She says, "Give it." And he did give it. And the child began to recover and is alive to-day. I have learned this from some authorities that two grains of calomel taken into the stomach, by means of the gastric juices, was turned to bichloride, and I believe that more than two grains is simply a nuisance.

Another thing, I think in treating these cases we often go in and look at the patient and prescribe something, and we come in again and the patient seems no better, and we think as there is no favorable result the medicine is not proper. I do not think that follows. But in being called into a case, we ought to sit down and carefully consider what we ought to do, and then follow it up as seems best. My experience is, that a little calomel and castor oil to start out with, thorough irrigation of the bowels afterwards, with close and strict diet, will in a great majority of cases prove successful.

Dr. Shields.

I wish to say for Dr. Harrington that he is a very fair practitioner. I do not think that he practices in the shotgun manner in which that paper was prepared.

I think as to the use of calomel, that there are different effects to be derived from that remedy. We might get an astringent effect by small doses and an antiseptic effect or a cathartic effect. And there is one other remedy that I have not heard spoken of here that I use in these cases, and that is pulverized ipecac. This is, I think, a very efficient remedy in some cases. One other remedy that has been mentioned, I think, is very important, and that is opium. And that is one of the remedies that I think should not be combined with any other remedy, for the reason that with these the dose may be increased or diminished, while other remedies may be given for twelve to fifteen hours, perhaps, without change of time or quantity.

Dr. Knapp.

I do not wish to discuss this paper in any other way than simply to compliment the author of the scheme which has produced this very exhaustive series of papers, and I regret that we have not
had the pleasure of listening to the paper of Dr. Lord. If he can elucidate to our minds clearly the underlying physiological conditions that give rise to this summer diarrhoea then we will be prepared to say whether the lines of treatment laid down here are correct, or incorrect.

The bacterial theory or idea connected with the causation of summer diarrhoea I am not a very staunch believer in. I never did believe that there were so many worms as some claim, even if they are microscopic. It used to be the principle in my early childhood days to give a dose every time there was anything the matter of pink and senna, and I think this principle is still in existence in a great measure, and has reached the medical profession. We give calomel to kill the worms, and I don't know but we are resting on about as secure foundation as our mothers were, as some of our patients live through, and some of the children lived through. But some investigations that have been carried on to bring out these papers are to be commended. Dr. Humphreys' and Dr. Milroy's papers were certainly very good, and show thought with a great deal of investigation in the right direction which may be productive of much good. If we show worms are the controlling cause of this trouble, we are death on worms, and these papers may lead us in the right direction, and we may be able to find out whether worms are the cause or whether it is largely atmospheric conditions accompanied by the heat of summer. I think not enough stress has been laid upon the heat as a causative agent in the dynamic influences, which are certainly very formidable. I hoped possibly in this paper of Dr. Lord's we might have some of these physiological principles brought forth for our discussion.

I think that the sterilization of food is a very important thing, especially when the milk used is from several cows. It is very simple, where you have a child that is having summer complaint that is fed from the bottle. The milk can be sterilized in an ordinary wash-boiler, especially if you have two—one that will sit inside the other. It is better than all the patent concerns, although they have the patent steam-cookers. Heat the bottles thoroughly and pour the milk into them and then subject them to a hot water bath, but do not boil them. One gentleman has suggested that some authority has advised that the milk be boiled. Boiling the milk cooks it and coagulates the albumen flat, and the infants do not like it; whereas, milk cooked in the water bath, or steam they do not object to. Some of the apparatuses for
this purpose are called steam-cookers, and the cotton plug suggested is just as good as a patent one or a rubber one, and milk sterilized in this manner has been known to keep for a month absolutely pure and sweet. There is a good deal in it, too, more than can be compassed in a short discussion. The milk often has to be diluted. To do this you can take flour and boil it for a long time, and you have converted the starch into dextrin, a substance easily digested, by cooking it, say twenty-four hours, or perhaps longer. After having prepared a bag gruel can be made from it in that way, and the milk can be diluted with this gruel; and if vomiting is present, put in a little lime water with salt added. I think the principle thing in these cases, however, is the diet of the child. As far as treatment is concerned, I have not a great deal of faith in many remedies. I believe emptying the bowels with calomel or castor oil. I think the best effect is a cathartic effect. And then the remedy which I depend on is bismuth with bicarbonate of soda. And I believe very strongly in the use of water, to be internally and externally given. Cold water used freely is a very simple way of managing such cases, and I believe it is far better than any stereotyped medicinal treatment.

Dr. Aukes.

I just want to state this, that I think probably the doctor in preparing the paper on the treatment of summer diarrhoea gave about all the remedial agents thought of at the present time.

In my experience last summer I treated a great many cases with arsenite of copper, one-fifth grain to four ounces of water; a teaspoonful and a half in one hour. The treatment consisted in regard to the milk, of keeping it in a good pure atmosphere; do not overheat it, and do not overcrowd the stomach with anything. We have to be just as careful with water as with anything else. There is a vast difference in water. You find water that is hard, water that contains alkali, and you find surface water that has been used two or three years, and they say it is good water; but, as I said before, there is a vast difference in water, and we have to take all these things into consideration and use our own judgment in each case. I do object to giving a great many remedies to babies. And I have found out that usually the less we give of different preparations the better we are off. We should use our judgment and give explicit instructions to the mother.

Dr. Mansfelde.

It occurred to me when my friend the treasurer spoke of killing worms that the antiseptic treatment of this disease can be carried to the extent of producing indigestion of food. If you take earth and make it absolutely antiseptic and put seeds into that earth and keep moist with distilled water, the seeds will not germinate. Transfer the same principle to the intestinal canal of the child, the foods will not digest.

Dr. Knapp.

My friend on the left is pretty near coming around to the theory that the damage is done by the excrementitious material generated by the worms.

Dr. L. A. Merriam.

No one enjoys, I think, any more than I do the little thrusts given by the worthy members, my warm personal friends, when they refer to some of the terms I have used, such as "dynamic conditions," by which I mean—and they do not know it—that it means those functional changes or derangements that proceed from visible organic lesions, the time when we can do more to conquer acute diseases than after the organic lesions have taken place. I have no desire to discuss the excellent papers nor the criticisms nor to say much about medicinal treatment but there is a point which has not been discussed that in my opinion is the chief one in the treatment of these cases. While I heartily admit that the depressing influences of hot weather have much to do with debilitating the patient and inducing a condition favorable for this disease, I do not believe that teething is a cause. Do you have summer diarrhoea in the winter? or do you have any diarrhoea of any kind much in the winter? and do not some children get teeth in the winter as well as in the summer? I wish to impress upon you all, that to
my mind, while many of the things that have been stated are true, that the greatest cause of our summer diarrhoea is—by whatever name or kind you may call them—the greatest factor in their causation is feeding too often. Now I do not say feeding too much, but feeding too many times a day. When a child is three months old, it is old enough to be fed its breakfast and dinner and to have its supper at night, the same as a working man and no more. I know some of you will find some fault with that. And I am glad you do. But I speak that which I know, that you feed your babies too many times in twenty-four hours. When I am called to the treatment of a case, I interrogate the mother as to the number of times the child nurses, how many times she gives it the bottle; and you will find, too, that the mother does not give her healthy baby any water to drink. That is a gross mistake. Children need water to drink and they need it on an empty stomach. You give horses water to drink before you feed them, not after. You should give water to drink on an empty stomach, and you should give babies water to drink a little while before you feed them. If they are sick with summer diarrhoea and I am called, I immediately wash out the stomach or rectum or give some cathartic to clear out the alimentary canal. I then say to the mother, "will you follow my directions?" She says, "I think so." Then I say, "Do not give your baby a particle of food or drink of any kind for twenty-four hours, until I come again to-morrow." I was called a couple of years ago to see a child and the mother said she wouldn't do it. I was cruel. I started to go and said: "You can have your way and can see your baby languish and die, have a coffin and a wreath of flowers and have the recollection that you have killed your baby." She cried and said she would try. The baby had had twenty stools in the previous twenty-four hours. I said give that stomach a rest, that is the best medicine in these troubles. The next day, what? Thirteen stools. The next day give the baby what it wants to eat in the morning, again at noon and at night. And she said she would do it. The next day, nine stools. Following up the same treatment the next day, seven, and the next day, four, and so on until the baby was well. I made five visits and the baby was discharged, well.

Some of you maybe do not want to do that, you may want to make more money, with twenty or forty visits. I say do less. Give the baby what it wants but I think this thing of rest is more important than calomel or anything else you can give it. Sometimes where it is very bad I only allow feed twice a day, maybe in the morning and at night and some cases only once a day, and after it gets better two meals a day. Do not give anything between meals but water and you will find if you follow that up and impress it upon the minds of the mothers that they feed babies too often. I have found babies that were nursed fourteen times a day and given the bottle four times I mean to feed it all it wants whether you nurse or whether the bottle is given. Give it all it wants at breakfast; let the next time be at dinner, and the next time at supper. I will not treat a case unless the mother or nurse will come down to my rules of feeding. Then after they get well if they want to go back to feeding fourteen times a day it is their own lookout and they will soon have to call the doctor again. I always sterilize the water.

Dr. Mansfelde.

I beg the pardon of this society but I must enter my most emphatic protest against any such utterance on the floor of this society that a baby of three months under any circumstances whatever ought to be limited to three meals a day. Now there is a difference existing between the vitality and capacity for work, between the people of this country and the people of Europe. The men of Europe of fifty years are good, hardworking laborers. At forty-five to fifty years of age in this country a man is entirely used up for good labor. Now the reason for it and the sole and only reason is the most unphysiological method of feeding our people in this country when they are hard at work. A man gets up at five o'clock in the morning, gets his breakfast at six;
has an hour to get to his work in the larger cities and works until twelve o'clock. That is six to seven hours that a man must work on his breakfast. He works two hours or more on an empty stomach. Is there a physician in this house that cares to make an operation at 11:30 when the patient has had his breakfast at six o'clock. It is this that cripples the laboring classes of this country; that they are compelled to work on empty stomachs two hours in the forenoon and again in the afternoon. It is ruining our people, and to bring it down to the nursery is too much for me to stand, and I arise to protest in behalf of the baby.

Dr. Merriam.

I am delighted to have my friend Dr. Mansfelde go on record in the manner in which he has stated, and I desire to go on record as I have in the manner I have stated. I remember a few years ago when I made some statements in a meeting of our Medical Society, to which my genial friend objected as he has to what I have said to-day; but in the course of time and scientific progress my brother now fully concurs with me in some of those points presented. I think in the near future he will accept also my proposition that healthy babies three months old should be fed only three times in twenty-four hours, and in summer diarrhea should certainly never be fed more than three times, sometimes twice, sometimes only once, and sometime, for the first day or two, not at all. I am willing to go on record in this way, and if you follow this plan you would not lose half as many babies as you do. I have not had a baby die with summer diarrhea for some time and I don't expect to.

CODEINE IN THE CURE OF THE MORPHIA HABIT.

By Mrs. M. Ryerson Butin, M. D., Madera, Cal.

Codeine, discovered at the same time with its twin morphia, fell into disuse, only to be revived after many years, and its properties found equal to its sister alkaloid.

"Barbier in 1834 therapeutically administered found it to have a special action on the sympathetic system. He found it to be of great use in lessening pain in persons presenting symptoms of irritation of the solar plexus."—Therap. Gazette.

Some 20 years later Berthe made a much more extended investigation and confirmed Barbier's observations.

Dr. T. Lauder Brunton has found that in gastralgia and enteralgia, with or without organic lesion codeine is very serviceable.

Dr. M. Loewenmeyer finds it useful in these affections, also in those of ulcers, carcinoma of the stomach and carcinoma of the liver, of the intestines and peritoneum, and in pain arising from disease of the genito urinary system. Codiene renders excellent service in phthisis, bronchial catarrh, pleurisies, pneumonia and asthma.

To Dr. Pavy belongs the distinction of having used it in diabetes and he is corroborated in its use in this disease by Drs. Lender, Shingleton and Smith who also successfully used it in the treatment of diabetes mellitus and insipidus.

Dr. Fische has used it for more than five years in all cases where morphia was indicated and recommends it as being as reliable as morphia and much less dangerous.

He says that "it possesses the narcotic effect of morphia and it is free from the danger of producing the habit.—Therap. Gazette.

Dr. Schmidt, of Wiesbaden, says: "It causes the morphia craving to vanish permanently.

PHYSIOLOGICAL ACTION.

Codeine is analgesic, and to some extent hypnotic. In large doses producing contraction of the pupils.

It seldom affects the appetite and rarely produces nausea, never vomiting or constipation, but on the contrary
produces peristaltic action of the intestines. The alkaloid occurs in brilliant white crystals of bitter taste and soluble in 80 parts of warm water. It may be administered in powder, pill or suppository. Dose: The ordinary dose is from $\frac{1}{3}$ to $\frac{1}{4}$ grain.

My attention was first called to the use of codeine in the cure of morphinism, by an article by Dr. Schmidt of Wiesbaden and published by Lehn and Fink, in Notes on New Remedies.

I would most earnestly recommend that each and all procure and read this article before and while treating patients with this remedy.

Dr. Schmidt has been very successful in his cure of this class, and his advice in their management is inestimable.

After obtaining the perfect confidence of his patient and after repeated assurances to him that the patient shall not suffer, Dr. Smith commences a non-compulsory treatment. For a few days the ordinary dose of opium is continued. Then a gradual diminution begins and continues until only a very small dose of opium is taken.

Codeine is then substituted in doses large enough to control all disagreeable symptoms, when it is gradually withdrawn and the patient is taking none.

He may now be made aware of the fact or kept in ignorance awhile by taking a placebo if thought best.

Before and during the period of reduction the patient is put under well regulated hygienic restrictions. Diet, exercise and rest in the recumbent posture, must all receive the most scrupulous care and everything done to restore lost nerve tone.

By gentleness and patience, which this class of cases particularly demand, the self respect and will power are gradually restored and the patient feels conscious of a new strength of purpose. He is aware also of a gain in physical vigor.

There is a gain in weight and increased appetite, refreshing sleep, a clearing up of the complexion, absence of stupor, incident upon taking opium and a buoyant feeling upon awakening from sleep. It is evident to himself and all observers, the patient loses nothing and gains much by the substitution.

Relapses are to be guarded against for a long time afterward, by a dose of codeine when needed, for any reason whatever.

It is unnecessary to say the care of these cases should only be undertaken by a careful, skilled and conscientious physician, and at a pleasant and quiet retreat.

I sincerely hope you have hereby learned enough of the properties of codeine, which will help to bring it into the prominence it deserves, and that by its use in your hands, as in mine, the pitiable victim may find relief.

THE USE OF HEART AND NERVE SEDATIVES IN THE TREATMENT OF FEVER.

By Wm. Protzman, M. D., Lincoln.

This, gentleman, is an important subject, not only to the physician, but also to the patient; therefore I shall endeavor to argue this subject, not from experience alone, but also from a scientific standpoint as I understand it. Yet perhaps I may not comprehend the magnitude of this subject in its true physiopathological light. As I am free to confess to the intelligent members of this society, that perhaps I do not possess that high degree of scientific acumen or mental reservation to exclaim "Eureka," neither do I plead professional or private cares in extenuation for my limited knowledge in this interesting field of
medical science. As I am well aware that we are living in an age when scientific thought is not surrounded and governed by the tyrannical priesthood of "Primitive Greece or Ancient Rome," when ignorance and superstition were recognized factors in the successful treatment of disease, but in an age when all the environments that human intelligence and skill can devise, and when scientific medicine is fast approaching an epoch, when the hidden mysteries of nature are being stripped of her mystic vail, and when she must reveal her secrets in open day. Fever is only a symptom of disease, the outward sign of internal changes. The metabolic changes that are brought to bear upon the functional activity of the various powers of the body during fever, according to physics and physiological chemistry, are caused from over stimulation of the normal factors of heat, in other words to over production of physiological resistance in almost every tissue, even in Amoeboid protoplasmic changes that are constantly taking place in every tissue of the body. Now then in order that we may intelligently comprehend the therapeutic indications for heart and nerve sedatives that are so universally prescribed by the different professions of medicine, we find it of the greatest importance to first metabolize in our minds the true physiopathological conditions that cause thermal heat of the body; however, before giving toxic sedatives to jugulate fever, I ask that you go with me into the field of physics and physiological chemistry for a solution of this important subject; here we are taught that heat is one of the imponderable agents that is caused from the transformation of potential into kinetic and other energies of the body; here we learn that the normal as well as abnormal heat depends upon combustion or explosion of protoplasm, caused from molecular movement and vibrations of their component atoms, that are constantly taking place in every tissue of the body. These changes are caused by a factor called irritability, and on which all amoeboid protoplasmic changes depend for their power of locomotion, contraction and vitalization. Irritability, according to late physiologists, is the incontrovertible factor of life, pure and simple. Destroy this factor and death instantly ensues in every tissue of the body; not only so, but it is the recognized guardian over every tissue, muscular and nerve fiber. Through the factor of irritability, the nacent physiological powers of every tissue are warned against the introduction of pathogenic microbes and other irritant poisons. The uniform heat of the body is due to the reciprocal relation that exists between the amount of heat produced and the amount that is given off. The greatest source of thermal heat is derived from the oxidation of muscular tissue, the formation of C into CO₂, H into H₂O, and proteids into urea; any irritant, therefore, that increases the transformation of potential energy stimulates oxidation and increases the production of heat. Now then, when irritant poisons are introduced into the system, through the factor of irritability stimulates the physiological resistance causes explosion of protoplasm and increased evolution of heat.

Fever therefore is the result of increased physiological resistance that assists the elimination of poisons from the system, and not the cause of disease. Yet how often do we prescribe poisonous sedatives when the temperature ranges from 100 to 105 ° F. irrespective of causes or consequences; to reduce the temperature, we begin with our aconite verat. vir. antipyrine, antifebrin, antipyretic, doses of quinine or some other potent sedative, to reduce the temperature appears to b
the height of our scientific ability. Those remedies are usually prescribed with this positive injunction, to repeat the dose every three or four hours until our next visit. This treatment is kept up very often three or four days, or until the physiological resistance is reduced, the transformation of the different energies upon which oxidation of tissues depend; the formation of C into CO₂, H into H₂O and N into urea are reduced to a minimum, etc. After having paralyzed the recuperating powers of the system with our toxic sedatives that are more destructive to the hemoglobin of the red corpuscle than venesection; we discover the result of our treatment, exemplified by extreme exhaustion and the probable fatal termination of the vital powers; then we begin with powerful stimulants to rouse the paralyzed energies that but a short time previous we so persistently tried to destroy. Now then let me ask the intelligent physician in what way have we benefited our patient by the use of those toxic remedies. Have we not added a double poison that helped destroy the vital powers of the system? Have we not locked the door of elimination, thereby prepared the soil for germ fermentation? We have added toxines and ptomaines, diminished urinary and bile secretion, arrested the formation of urea, retarded the destruction of toxines and ptomaines that are always found abundant in fever. While I admit their antithermic powers to reduce the temperature reaching the maximum at 40°. Therefore, any medical agent, the administration of which, has the effect of lowering the temperature only, should be interdicted since it paralyzes the physiological resistance and destroys the germicidal powers of the blood.

If this be true, why, let me ask, administer toxic remedies that depress the resisting powers of the body, that add toxines and ptomaines, merely to control a symptom of disease, when we have at our command antithermics that are free from those obnoxious principles? Experience taught me long ago that cold and tepid baths, packs and spongings, mild cathartics and diuretics are much safer and better antithermic agents, that not only reduce the temperature of the body, but that assist elimination of disintegrated tissue, toxines and ptomaines, that stimulate the coraling forces, that equalize the amount of heat given off with the amount evolved, that relax congested capillaries and sebaceous glands of the skin that assist physiological resistance and restore co-ordination of nerve centres, that assist the transformation of the different energies of the body that soothe vasomotor irritation, quiet nerve centres and procure refreshing sleep. They add no toxic ptomaines that help destroy the remaining vitality of a weakened constitution. I have not prescribed sedative remedies in sedative doses in many years; yet I do not wish it to be understood that I proscribe these remedies in their entirety as I am well aware of their potential powers for good as well as evil, more especially where a temperature suddenly threatens the life of a patient, they become necessary adjuncts to milder measures. Also in stimulant and tonic doses we find them almost indispensable, especially digitalis.

Whether the therapeutic action of the
Toxic sedatives is confined to the oxidation of tissue, the formation or prevention of formation of C into CO₂, H into H₂O, N into urea; or whether they have a peculiar local action upon cell fermentation or nerve centers, whereby they regulate the development and radiation of heat, I have no time to discuss; practical theories supported by experience are what the practicing physician is after, instead of abstract hypothetical doctrine.

HEAT STROKE.

By A. B. Somers, M. D., Omaha, Neb.

Frank Moles, Polander, aged 28, a thick set robust, muscular man weighing one hundred and seventy-five pounds, finished his day's work in the Omaha and Grant Smelting and Refining Works at six o'clock, July 13, 1890, and started for home. Before getting outside of the yard he fell in a convulsion and was picked up in an unconscious condition. The foreman acting on instructions previously given him by and for his guidance in such cases, removed the man to a cool place and applied ice to his head until my arrival, in response to a summons by telephone.

One half hour later I found the man with a temperature of 110° F. hot, dry skin, rigidity of muscles, contracted pupils, small frequent pulse, difficult respiration, frothing at the mouth, and total insensibility, in fact all the indications of impending dissolution.

Having been so unfortunate as to lose one case of heatstroke yearly for each of two previous years, and attributing the result partially to loss of time taken for the removal of the patient to the hospital before actual operations were begun, I resolved in this case to take active and vigorous measures for the reduction of temperature at once and on the spot. Fearing a failure of the heart's action, I immediately gave a hypodermic of morphia gr. 1/4 with atropia gr. 1 1/100, and also placed a tablet containing 1-100 gr. nitro-glycerine on the back of the tongue. I ordered two large buckets filled with ice and water and immediately commenced pouring hydrant water—temperature about 70° F—over his body from the head to the feet. In ten minutes I rolled him on his face and poured the iced water previously referred to on the back of the head, neck and spine. This process of douching the body with hydrant water continuously and pouring two buckets of iced water on the spine every ten minutes was continued for an hour. Fifteen minutes after treatment was begun there was free emesis of undigested food and spontaneous evacuation of the bowels. I also discovered a reduction of temperature of one degree at this time. In a half hour I repeated the morphia atropia and nitro-glycerine.

With the second douching of iced water there were spontaneous movements of the extremities which increased with each successive douching until the sixth time when he nearly clambered onto his feet but would have fallen only as I supported him.

At the expiration of one hour's treatment the temperature registered 104° F, a reduction of six degrees. Feeling that he was fairly inside the danger line so far as temperature was concerned, we wiped him dry, dressed him lightly and removed him to the hospital and put him in bed. This occupied another half hour of time, and on testing his temperature I had the satisfaction of finding it still further reduced one and one half degrees, a total reduction of seven and one half degrees. I instructed the nurse to feed him liberal quantities of whiskey in case he became able to swallow. The next morning, fifteen hours after the attack, I found the man with a tempera-
ture of 102° F still unconscious, but able to swallow liquids from a spoon. During the day consciousness returned; there was a gradual reduction of temperature to a normal point on the third day from the attack, July 16th. At this time there was frontal headache, dizziness, congestion of the eyeballs and jaundiced condition of the surface which lasted for several days. He made, however, a rapid recovery and returned to work in two weeks, and has done good service during the year with the exception of being very sick with catarrhal pneumonia during the past month. Had I been prepared by having a good syringe at hand I should have given this man large enemas of cold water in addition to the treatment already spoken of, and I would recommend this as a valuable adjunct to the external application of cold.

Taking the report of this case as a starting point from which to draw conclusions, I beg leave to make a few statements in regard to high temperatures and the treatment of the same that are somewhat at variance with the commonly accepted opinions on that subject. We physicians and the laity of Nebraska have seen during the past few months some very extravagant statements in the daily press of unprecedented high temperatures coming from apparently reliable sources. It is safe to say that some of these reports must have been grossly untrue, and in all of them the area of high temperature must have been very limited.

Experiments have shown that if the heat in any vertebrate animal exceeds 113° F, coagulation of the albuminous principle of the muscular system takes place at once and that the sudden cardiac deaths occurring from heat are doubtless due to coagulation of the heart's myosin. The heating of the brain from a normal to a temperature of 108° F. produces insensibility with or without convulsions, and death occurs if the temperature be raised to 113° F.

Heat stroke may be confounded with heat exhaustion, a condition in which the temperature is reduced below normal, hence the use of the thermometer will immediately render a clear diagnosis; and as the condition is directly opposite to heat stroke, so also is the treatment directly opposite, namely; the application of heat instead of cold.

The prognosis of heat fever is always grave, the published statistics giving a mortality of 40 to 50 per cent.

One of the popular errors of the day is that heat fever is due largely to the rays of the sun falling directly upon the person affected; hence the term sunstroke so commonly used. As a matter of fact many heat strokes occur at midnight as surely as at noonday. Of the two fatal cases that I have seen, one occurred at 10 p. m; and persons working in protected places where a free circulation of air is interfered with, are more likely to be overcome with heat than those working in an open field in the full glare of an unclouded sun; for this reason more people are afflicted in cities than in the country. The disease is due directly to heat, but the dryer the atmosphere the greater the degree of heat that can be borne. The capacity of the body to endure with safety an external temperature much above 100° F. is due to the protective effect of cutaneous transpiration and evaporation; yet the sun temperature of our large cities often rises above 130 ° F. and the hot air bath is often taken as high as 150° to 250° F. and Alabert, the "Fire King," entered an oven heated to 600 ° F. without suffering serious inconvenience. Of course an atmosphere at this temperature very largely charged with the vapor of water would cause immediate death.
Contrary to a generally accepted idea, the use of alcohol as a beverage is a pre­
disposing cause of this disease, and the
man that drinks a sufficiency of pure
cold water will endure a greater degree
of heat than the man that drinks beer
or any of the stronger alcoholic bever­
ages. Fatigue is another predisposing
cause, and my experience has been that
the great proportion of cases of heat
strokes take place after 3 p.m. to 6 p.m.,
at a time when the temperature of the
atmosphere is not at its highest; but at
a time when the vital forces have been
exhausted by a hard days' work. Prof.
H. C. Wood has quite clearly demon­
strated the theory “that there is
somewhere in the cerebro spinal sys­
tem a centre whose function it is to
prohibit the production of animal heat;
also a vaso-motor centre which regulates
the dissipation of the bodily heat; and
that fever is due to disturbance of these
centres, so that more heat is produced
than normal and proportionately less
heat thrown off. Let it be supposed that a
man is placed in such an atmosphere
that he is unable to get rid of the heat
which his body is forming. The temper­
ature of his body will slowly rise, and
he may suffer a gradual thermic fever.
If early or late in this condition the in­
hibitory heat centre becomes exhausted
by the effort which it has been making
to control the formation of heat or be­
comes paralyzed by the direct action
of the excessive temperature already
reached, then suddenly all tissues will
begin to form heat with the utmost ra­
pidity, the bodily temperature will rise
with a bound, and the man drop over
with some of the forms of “coup de
soleil.”

The essential thing in the way of treat­
ment of this formidable affection is to re­
duce the temperature as rapidly as pos­sible, and for this purpose cold water or
ice comes nearer being a specific than
any remedy in the materia medica is for
any ill that flesh is heir to. This rem­
edy should be applied at once and un­
sparingly; the pouring of water over
the surface being, in my opinion, more
effective than immersion. This process
has a stimulating effect on the heart
itself, yet it may be necessary to resort
to cardiac stimulants hypodermically as
well, and nitro-glycerine may always be
administered successfully by the mouth,
even with a patient in a semi-moribund
condition.

Hypoderminics of antipyrene are re­
commended by some authors, but I can con­
ceive of no rational basis for the use of
this or any of the popular chemical
antipyretics. In fact I am doubtful if
the use of chemical antipyretics is ever
justifiable for the reduction of fever un­
less the remedy be a specific for the
diseased condition producing the fever
by acting directly on the disease germs
as we suppose quinine does in malaria
and mercury in syphilis. On the other
hand the effects of chemical antipyretics
must be injurious for they interrupt
only for a time the processes which pro­
duce the fever and which are necessary
for a cure, and the fever returns again as
soon as the effect of the drug has passed
away; the tendency to relapse being a
marked characteristic of fever reduced
by chemical antipyretics.

In conclusion allow me to urge you to
try cold water promptly, unsparingly
and fearlessly for the reduction of high
temperature in heat stroke.

SOME CHANGES IN THE TREAT­
MENT OF CATARACT.

By H. Gifford, Omaha, Neb.

I have chosen this subject because
every physician, whether or not he ever
operates for cataract, is occasionally
called upon to advise a patient as to the
proper time for an operation, and the change of ideas upon this point has been such that the oculist frequently has to contravene the advice of physicians whom he knows, in general, to be able and well informed. Sir Wm. Bowman, one of the fathers of modern opthalmology, formerly advised never to operate for cataract so long as the patient could see large type with either eye, and the rule of most oculists but a few years ago, was to wait until the cataract in question was so far developed as to prevent the eye from counting fingers held before it. The reasons upon which this practice was founded were, first, the natural disinclination to subject an eye, still possessing any useful visual power, to an operation involving more or less risk; second, the fact that in the pre-antiseptic days the danger of the operation was considerably decreased by a thorough development of the cataract. This was owing to the greater completeness with which a thoroughly matured cataract could be extracted, the remnants of soft cortical matter left by an immature cataract being a fruitful source of infection. Artificial ripening of cataracts by means of incising the capsule had long been practiced by a few operators, but the general opinion condemned this method as dangerous and the rule of allowing cataracts to mature by the processes of nature was generally adhered to and condemned many patients to long years of useless half-blindness.

The proposition of Foerster to make a preliminary iridectomy and hasten the maturation of the cataract by massaging the lens through the cornea was received with more favor; it has been adopted to some extent by perhaps the majority of oculists, and its use would doubtless have become even more general but for the progress of antisepsis, which first began to achieve notable results soon after the publication of Foerster's article. The success of more efficient precautions against infection favored the return to the so-called simple operation for cataract, that is, extraction without an iridectomy, which had years before been abandoned on account of the greater danger of suppuration of the cornea which attended it. Antisepsis also diminished the danger of leaving in the anterior chamber fragments of soft cortex from an immature cataract and as at the same time the safety with which injections can be made into the anterior chamber, for the removal of such fragments became established, the practice of allowing patients to pass years of suspense before doing anything for their relief, rapidly fell into disuse. At present, although there is no uniformity in the method of procedure, the rule is general to interfere in some way as soon as the sight of both eyes together is so far reduced as to interfere with necessary occupations or even with comfort. We may massage the lens through the cornea after evacuating the aqueous, either with or without an iridectomy. This sometimes causes the cataract to mature rapidly; in other cases, however, but little effect is produced upon the transparency of the lens and the massage has to be repeated or some other method adopted. In the latter case, I consider an incision of the lens capsule done with antiseptic precautions, a justifiable procedure. Finally in all cases where the patient is over sixty years of age, Schweigger and other good authorities consider it safe to extract immature cataracts without any preparatory operation whatever, on account of the consistency which the lens generally presents at that age. The practice of washing out the anterior chamber for the removal of cortical fragments as
well as for a more complete antisepsis is one which many operators have adopt-
ed as a routine practice. It is certainly a harmless and in some cases a neces-
sary procedure. For performing it, various special syringes have been in-
vented, but as these are liable to get out of order and are more or less difficult to sterilize thoroughly, I prefer to use a simple glass tube with a bent point of the proper size, such as anyone can make in a few minutes. This is steri-
lized with the other instruments by boiling, and as for irrigating during the operation, I always use a freshly boiled boracic acid solution; it is only neces-
sary to fit this tube into the rubber ir-
rigation tube and with it wash out the anterior chamber as thoroughly as may be desired.

As a striking example of the benefit which a patient sometimes derives from this change in the management of immature cataracts, I give the following brief history: G. H. aged 44, came to me Feb. 23rd, 1890, patient has for years worked before a furnace containing white hot iron. His sight has been failing for two years. Examination shows incipi-
ent cataract in both eyes; pigment at the extreme periphery of the choroid collected in large black clumps; eyes otherwise normal, R. E. V. 20-200 L. E. 20-70. No improvement from glasses.—
Advice given to have nothing done until further failure of sight interfered with his occupation.

October 20th, 1890, patient returns saying that vision no longer suffices for the work, which requires careful judg-
ment as to the color of the hot metal. Examination shows cataracts slightly advanced—R. E. V. 20-200 L. E. 20-70. Here was a man with a large family, earning good wages as a skilled iron worker, who if his cataracts had been allowed to mature naturally would have been condemned to give up, probably for several years, the only trade of which he knew anything. Nevertheless there was naturally some reluctance to expose an eye with vision equal to 20-200 to the dangers of cataract extraction. The patient however chose to be operated on and a small iridectomy was made in the right eye, followed by massage of the lens; this having in the course of a few weeks no perceptible effect on the transparency of the lens a small incision was made through the anterior capsule. Following this the lens soon became almost entirely opaque and was extracted without difficulty. The healing was prompt and after a loss of less than three months time from the first opera-
tion the patient was able to perform full duty at his former employment. The cataract in the other eye will of course be allowed to ripen in the natural way.

With regard to the mode of operating upon ordinary mature senile cataract the readoption of the extraction by a periphe-
ral corneal flap, without performing an iridectomy, is becoming more and more general. In its favor can be said that it is simpler, less painful and less disfigur-
ing and gives probably somewhat better vision on account of the preservation of the round movable pupil. Opposed to these advantages is the chief objection that without an iridectomy a prolapse of the iris seems bound to occur in a cer-
tain proportion of cases. My own somewhat limited experience with the operation has been on the whole favor-
able. The cases which heal without accident give an ideal result and although in some of my cases an iris prolapse has occurred this has not materially af-
fected the final result. But while we may agree with Knapp that the opera-
tion without an iridectomy is the proper one for the great majority of cases, where both eyes are good, except for the
cataracts, it seems to me unquestionable that where safety alone is to be consid­ered the divided operation, that is, a preparatory iridectomy followed after three or four weeks by the extraction, gives a slightly better chance. At a meeting of the British opthalmological society not long since, during a discus­sion on the treatment of cataract, a prominent oculist ventured the assertion that there was not a man present who if he had to submit to the extrac­tion of a cataract from his own eye would not choose the divided operation, and the assertion was not opposed. On account of this slightly greater surety I always advise patients who have lost one eye to have their cataracts extract­ed by the divided method.

Finally, passing over the numerous slight modifications of procedure which are constantly being proposed and abandoned, I wish to call your atten­tion to a point in the treatment of trau­matic cataract which though not ex­actly new, receives so little attention in most text books that it is well worth considering. I refer to the danger of the use of atropine in fresh cases of wounds of the lens in adults. Here it should be remembered, the chief danger is that the swollen lens will so obstruct the out­flow from the vitreous or aqueous cham­bers or both as to induce a glaucomatous condition with consequent permanent loss of sight. Under these conditions, atropine, if it causes any considerable dilatation, simply aggravates the danger, and if used at all it should be only in a weak solution for the purpose of quieting the ciliary muscle, not to dilate the pupil. I speak feelingly on this point because I am certain that in the early days of my practice I caused one man with recent traumatic cataract, to lose the sight of an eye by ordering a stronger solution of atropine than he had already been given by his physician. The reason why this common misuse of atropine does not do more harm is that in these cases the iris is generally so congested that it fails to respond to the solutions com­monly employed. Where, from any cause, the desired dilatation is produced, harm is much more apt to result than when no treatment whatever is used.

REPORT OF PROGRESS IN THERA­PEUTICS.

By H. E. Harrington, M. D., Bertrand, Neb.

GENTLEMEN:—In presenting to you this report of the progress of materia med­ica and therapeutics, I am aware that in the short time that is allowed for each paper presented to this society, there is not time even to allow a re­viewer to touch on the recent advances in this department of the medical science. Although the advance in any onesingle instance perhaps has not been striking, but there has been a general advance all along the line, slowly to be sure, but nevertheless steadily towards a more perfect science in the art of curing and alleviating diseases, based, when possible, on physiological and pathologi­cal reasonings and deductions, which is the only scientific and true art of the remedial agents for the cure of disease; of course we are obliged by ob­scure pathology, in some cases, to still administer remedies empirically, as has been done from the earliest history of medicine to the present time. But we hope to reach the goal of true materia medica, and therapeutics ultimately based on true physiological and patho­logical reasoning.

I shall call your attention, so far as time will allow, to some of the more common diseases, and their more recent treatment, as well as to some of the older treatment, which have stood the test of clinical trial, and have been found
worthy of our confidence, and merit a still further investigation.

Let me call your attention to *phthisis*. Dr. Shurley and Gibbs report a very beneficial effect in tuberculosis, by the injection of the chloride of gold and sodium, in doses of 1-24 gr. increased to 1-8 gr. The injections are given daily for several weeks, or alternated with iodine every other day. The remedial agents must be chemically pure, and if the iodine causes too much irritation, or disturbance of the alimentary canal, it must be given in smaller doses or interdicted for a few days. Of course the general dietetics and hygienic, conditions of the patient, are at all times, and under any kind, or system of treatment, to be looked after scrupulously.

Dr. O. F. Bennett, of Chicago, endorses this treatment, and thinks it worthy of a further investigation. I would say that so far as my experience goes, that in the treatment of pythisis the highest point of nutrition should be obtained that is possible, to attain this end we should look especially after the food, clothing, exercise and general hygienic condition of our patient.

Of internal medicines I would call, especially, your attention to administering of medicinal agents by way of the pulmonary mucous membrane by inhalation. You will find that the inhalation of a mixture containing one part of tincture of iodine, one part of pure birchwood creosote, and two parts of purified chloroform in doses of ten to fifteen drops, from three to six times a day, will give great relief to those distressing coughs, night sweats, and general debility. The medicine should be dropped into a little absorbent cotton and put into an inhaler made of perforated zinc that will just nicely fit over the nose and mouth. The cotton should be renewed fresh each time. The inhalation should be used from ten to fifteen minutes at each sitting and several times a day. You will find it will improve the cough, appetite, flesh and sleep, and the expectoration is made easier, cough less troublesome, night sweats less profuse, in fact, in the especially bad cases it will give great relief and relieve much suffering.

Of course the therapeutical action of these well-known remedies is well known to all of you. The medical action is due to their antiseptic, tonic, alterative, anodyne and stimulant properties. By using this channel for the administering of your remedial agents, you do not disturb the stomach and bowels, and therefore you can use these viscuses for the administration of food and nourishment and thereby build up the tissues of the body as much as possible, for so long as we can maintain our patient's normal weight (as a rule), we may keep this scourge at least partially under control and make our patient comfortable.

Aristol is one of the new remedies. It is, chemically speaking, bichloride of dithymol, and is said to be very useful in tuberculous skin ulcerations, and in doses of gr. one to gr. three, combined with hypophosphite of sodium, in cases of fetid bronchitis and gangrene of the lung, in a few days, or a week the sputum loses its offensive odor, and the general conditions are greatly improved. For local use an ointment of the strength of one drachm to an ounce of lanoline or vaseline is the usual form, or it may be used as a dry powder. It is antiseptic, alternative and non-irritant. Aristol will take the place of iodoform in all cases nearly, where the latter drug is indicated, without having the disagreeable odor which iodoform has, as aristol is odorless.

**PROF. KOCH'S LYMPH OR TUBERCULIN.**

Much has been said pro and con about Prof. Koch's treatment of tuberculosis
by the injections of a lymph which has been prepared, as well as originated, by Koch, after a process which he has kept secret up to the present time, I believe.

The world was electrified last spring when at the International Medical Congress, held at Berlin, Dr. Robert Koch read a paper stating that he believed that he had discovered an agent by which consumption could be cured. Every medical journal, as well as the secular press at large, have heralded the glad tidings all over the world. But let us see how time has used this famous lymph, and also see what the present status of the treatment of tuberculosis by the lymph, also called tuberculin, and another name is paratoloid, is now regarded.

I have gleaned from many sources and have come to the conclusion that the treatment of consumption by Koch's lymph is, and has been very much exaggerated, both for and against its remedial effect and curative value.

There are up to this date, I believe, a few recorded recoveries from tuberculosis in its incipient stages, by the use of the lymph. No case of undoubted pulmonary tuberculosis, in an advanced state has been cured permanently so far.

On the other hand nearly all cases of advanced phthisis, are rapidly made worse and the downward course of the disease very materially hastened in its tendency toward death.

There are many cases of incipient phthisis, which when seen before consolidation has taken place to any considerable extent, and before any cavities have formed which are claimed to be benefited very much by the lymph. These patients improve, that is many of them, the cough becomes less, the patient gains in general embonpoint. But if the lymph be used until it fails to produce its characteristic reaction, which occurs within a few hours after its injection, consisting of general malaise, shiverings, headache and fever, which gradually passes off in the course of a few hours. If after the symptoms subside, the injection is repeated from time to time until no reaction follows, and the patient allowed to go without treatment for a few days. Then re-inoculated with the lymph, the characteristic symptoms will, in nearly every case show themselves. On the other hand in some cases of undoubted phthisis, the lymph failed entirely to produce its characteristic effect, thus proving that it is not a specific and also, that as a diagnostic agent, it is not always to be relied on.

The lymph, when used as a remedial agent in those forms of local tuberculous disorders of the joints and skin, which are susceptible of having a communication externally, are very much benefited as a rule. Lupus also is very satisfactorily treated by the paratoloid. The lymph is said to be very useful in leprosy. That the number of deaths that have been reasonably attributed to tuberculin, are many, and that it is a powerful agent, which it is not probable will become general in the treatment of tuberculosis in the hands of general practitioners, there seems to be scarcely a reasonable doubt.

But under proper conditions of the patient and under the care of trained physicians and nurses, where the lymph can be given properly, and its effects watched there are many cases, no doubt of true incipient consumption that can be greatly ameliorated or cured, there remains scarcely a doubt amongst many very competent observers, while many claim it is of no use and will not use it at all. The medical faculty of the university of Bonn have abandoned the use of both "Koch's" and "Liebreich's" lymph for tuberculosis, claiming that it is too dan-
dangerous a remedy and that it does more harm than good.

Dr. J. B. White of New York, advocates the injection, hypodermically of a solution of the chloride of gold and manganese in a one per cent solution of carbolic acid. The dose to begin with is one minim, repeated according to its effect, it is said to produce a set of symptoms, very much like Koch's tuberculin, the injection to be repeated after the reaction from the former injection has subsided, and kept up for weeks, it is claimed that the effect is very satisfactory, the patients gain in every respect, especially tuberculous glands and local ulcerations due to this cause are favorably modified, as also is the cough, the appetite increases, the patient gains in flesh, and night sweats are favorably modified, and the patient feels altogether more comfortable.

Still another investigator, Professor Liebreich of Berlin, has also brought into prominence the treatment of tuberculosis by the hypodermic use of the cantharidate of potassium. This agent is also called oscarine, this remedy seems to be gaining in favor amongst investigators in Berlin; it is said to be very beneficial, but great care is necessary in its employment, and an eye kept on the kidneys, for it is liable to produce congestion and inflammation if used in too large doses, or repeated too often. Of course time and thorough investigation can only determine the therapeutic value of these new methods of treating phthisis, and we must await with patience the final edict of those honest, patient observers whose investigations shall definitely show the real value, or otherwise of these new remedial agents; then we may place them in their proper place, amongst therapeutic agents if they shall have been found worthy of confidence.

Diphtheria—In the treatment of this scourge, there has been recently recommended the employment of methyl blue, two parts, with eight parts of sugar of milk, of this powder from gr. v. to gr. x may be blown into the throat and over the tonsils, every two hours, it is claimed by some recent observers, to have a very decided curative effect in diphtheria. Any of the standard powder blowers may be used to apply this remedy with.

Or chloral hydrate of a strength of one drachm to one ounce of glycerine applied to the throat every two or three hours with a camel's hair brush, or sponge, probang, or other suitable instrument. I am from a considerable experience convinced is a very efficacious means, as we might expect from such a remedy by reason of its well known powerful antiseptic action.

Of course this is only intended as a local remedy for the faucial manifestations of this disease, and must be used conjointly with remedial measures aimed at the systemic condition produced by this disease. Such systemic treatment should consist of powerful tonics, haematics, stimulants, alteratives and highly concentrated food, as the system seems to require.

Let me especially call your attention to the peroxide of hydrogen \( \text{H}_2\text{O}_2 \), as a remedial agent, theoretically and practically as one of the most powerful, sure and certain of all the drugs in the materia medica, in this fell scourge, diphtheria, used as a sprayer or applied by means of a suitable probang to the throat every one to four hours as seems indicated. You will see decided improvement in a few hours, as a rule: The membrane necroses, withers up and comes off in flakes, which under the microscope is seen to be composed of only dead and disintegrating fibrin, there is an absence of pathogenic germs, espe-
especially Loeffler’s bacillus. The remedy is a perfectly harmless remedy and may be given internally in doses of from 15 to 60 minims, repeated every two to four hours with benefit. This remedy is useful in this disease by reason of its powerful oxidizing effect, due to the liberation of its surplus of oxygen when brought into contact with diseased organic tissues.

Salicylic acid is also a powerful agent given internally and applied locally in the strength of 30 grains to the ounce of glycerine to the throat by means of proper applicator, will be found a very useful agent in diphtheria, by reason of its powerful antiseptic, antifermentative and germicide properties.

The chloride of mercury, corrosive sublimate, may be given in some cases and it is the “remedy.” It may be used as a spray in the strength of 1-4000 to 1-6000, it may be given internally in doses of gr. 1-40 combined with from three to ten drops of the tincture of the chloride of iron. This dose may be repeated every two hours if deemed necessary or given at longer intervals.

That the tincture of the chloride of iron is one of the oldest and one of the best remedies for this disease, I believe is generally conceded by nearly all physicians of experience. Its value may be materially enhanced by the addition of from three to ten grains of the chloride of ammonium, this combination is not an exceedingly bad mixture to take, as one might at first suppose, given in simple syrup. It makes a very nice mixture. The tincture of the chloride of iron is haematic, tonic, antiseptic, locally astringent and a powerful germicide both locally and constitutionally, hence its effect should be undoubted in diphtheria.

Counter irritation over the enlarged lymphatic glands in the neck may be, and I believe is a remedial measure of no small importance; ten grains of the red oxide of mercury to an ounce of vaseline or lanoline, applied with gentle friction twice a day to the enlarged lymphatics, for a few days will cause a very decided diminution of the swelling.

The application to the membranous exudation of a ten per cent solution of pure carbolic acid in glycerine applied by means of a suitable applicator, every two to four hours is a very useful measure.

Resorcin also in a 20 per cent solution of glycerine, applied to the throat is also an agent worthy of confidence and further trial.

In the treatment of pneumonia there have been some new things advocated, as well as the revival of some of the older methods of treatment. Notably amongst the old methods resurrected is the employment of cold for the reduction of the pyrexia of this disease, repeated, according to effect produced, as often as is indicated.

This treatment of the thermogenic condition of pneumonia seems to be decidedly contra indicated according to the very elaborate experiments and observations made by Dr. Lipari of Palermo; he has demonstrated that the endothelial injection of the pneumonic sputa, containing pneumococci in abundance from animals which have died of pneumonitis is negative in results, if the normal condition of temperature of the thoracic cavity; but if a short time before the injection the animal be exposed to the cold, the result was that eighty per cent died while in those that were not exposed, the result of the injection was nil.

Dr. Lipari claims that the cold paralysis the ciliated epithelium lining the bronchial tubes causing hyperaemia and swelling, favoring thereby the descent of
the pneumococas downward into the alveoli of the lungs. If this view of the pathology of pneumonitis is correct, it would seem that cold would be decidedly contra indicated. However, clinical therapeutics will precede those theoretical doctrines until the latter can be fully demonstrated. Personally I am not a believer in the use of cold in the treating of this disease, and I believe that Dr. Lipari's exceptions are well taken, and based on true physiological and pathological reasoning.

The tendency in pneumonia to death is mainly due to cardiac failure and cardiac thrombus, to these two conditions especial attention should be paid, with cardiac tonic to prevent paralysis of this organ. The sulphate of strychnia, in doses of from 1-60 to 1-20 of a grain given hypodermically, or if the stomach be in a good condition for assimilation, by way of this viscus, the dose to be repeated every two to four hours, as deemed necessary by the condition of the pulse. There is no doubt that in many cases the use of alcoholic stimulants is carried too far and that the cardiac ganglion is exhausted by the very means aimed at its relief. Alcoholic stimulants when used for their medicinal effect, whether it be in pneumonia or any other disease, should be suspended or the dose lessened or increased if they do not improve the general condition—namely, cause less delirium, quiet the pulse and improve its volume and produce a tendency to a more natural sleep. If, on the other hand, they aggravate the delirium and produce wakefulness, and increase the frequency, as well as lessen the force of the pulse, they should be under these conditions, either suspended or given in smaller doses. Then give strychnia, digitalis or strophanthus, carbonate of ammonia, under these conditions fulfils a double indication, namely, a heart tonic or stimulant and as a very superior agent to prevent the formation of a heart clot. When given in doses of from 5 to 10 grains, in a little simple syrup well diluted every hour or two, continued day and night, will obviate this condition of heart clot, if any remedial agent will.

Oxygen is claimed to be a very useful agent in pneumonia, as we naturally expect it to be from its composition. It is given by inhalation in those cases which present a profound adynamia with feeble pulse, marked cyanosis and a general failure of the vital powers. This useful agent has the very serious drawback of not being portable to any considerable extent, by reason of the cumbersome apparatus necessary for successful generation.

Veratrum viride has the recommendation of some very high authority, especially Prof. H. C. Wood, of the University of Pennsylvania. This remedy if used at all should be confined to strictly active, sthenic cases, occurring in strong patients with a very decided plethoric condition. In ordinary croupous pneumonia under the above named conditions no doubt it is an agent capable, when given in suitable doses and watched carefully, of producing great good in this disease.

However, gentlemen, with all due respect for the able champion of this remedy (Prof. Wood), my advice to you is not to use this remedy in every case of pneumonitis, especially in those cases of catarrhal pneumonia so very common for the last two or three years, caused no doubt by the morbific agent which produces la grippe, influenza, or what is a much better name, epidemic catarrhal fever.

I say that in this form of pneumonia be careful how you use veratrum viride. I have seen cases where death was no
doubt due indirectly to its use, and a number of other cases which were left for weeks with a consolidated lung, which could only be cleared up by very careful medication and feeding continued for several weeks.

In this condition where there is delayed resolution, first look well to the feeding of the patient. And as a remedial agent to produce absorption I believe that you will be highly pleased with, the syrup of hydriodic acid, given in doses of from one to three drachms, three or four times a day in a little water, according to the age of the patient, I have found it very efficacious.

Counter-irritation over the affected lung should always be used. For this purpose the red oxide of mercury, 20 grains to one ounce of vaseline, applied and rubbed in thoroughly twice a day until the skin is very sensitive, or it blisters, then waiting for a few days and applying again, will very materially assist in the absorption and liquefication of this exudation and cause its removal.

**Influenza**—In the treatment of this disorder, anodynes, antipyretics, sudorifics and tonics, have been the agents used as a general rule. For the fever, general aching and especially for the headache, the administration of antipyrin, phenacetin, exalgine and acetanilid, have as a rule given the best results and when the patient was seen early and put to bed and any of these remedies given in pretty liberal doses, repeated every three or four hours until decided diaphoresis and reduction of pain and fever occurred, has aborted the disease in a few hours, or a day or two. These drugs, especially acetanilid, I have had considerable experience with. I have given at least 10,000 doses of acetanilid with the best of results in this disease. I have given it to ordinary adults in doses of 6 to 8 grains, repeated every four hours (for days if necessary), and I never gave a dose of it that I was sorry for. I have never produced the poisonous condition of the system which we see written about so much, namely, a form of intoxication or staggering, with general cyanosis and debility with mild delirium. This condition I have only seen occur once, and in that case the patient, a drug clerk, took about fifteen grains at one dose and repeated the dose in half an hour. For the relief of a bad headache it relieved his headache all right, but it produced very marked cyanosis, and some debility, lasting for several hours; not to such an extent however as to stop his work. He took it on his own order and doubtless was ignorant of the powerful effect of this apparently harmless drug. However no bad effect, resulted from the taking of half a drachm within thirty minutes to him.

Quinia in tonic doses seems to be a useful drug in many cases. So also is bismuth subnitrate given for the gastric irritation with which many cases are greatly annoyed, a good preparation of pepsin should always be combined with it.

For the neuralgic pains which occur as a result of the irritation produced upon the nerves by this morbid agent, whatever its nature is, the administering of exalgin in two to six grain doses, or phenacetin in ten grain, or antipyrin in fifteen or twenty grain doses repeated, will usually give great relief, giving at the same time of tonics like strychnia, arsenic, quinia, pepsin, bismuth, in suitable combinations, will assist greatly in the restoration of the systemic equilibrium. The general treatment of disorders of the various organs of the body, such as gastrointestinal catarrh, pharyngitis, catarrhal pneumonitis, bronchitis, hepatitis or
cystitis, or any other organ on which the morbid agent of epidemic catarrhal fever concentrates its deleterious influence, must be treated on general principles, the same as when catarrhal inflammations attack these organs under ordinary conditions. That we have no specific for this scourge is well demonstrated by the mortuary reports in both medical and secular, as well as international papers, but we must treat the indications as they present themselves. And in many cases all of our faculties and resources will needs be brought into action if we hope to save our patients from the subtle effect of epidemic catarrhal fever, la grippe, or influenza.

THE USE OF ELECTROLYSIS IN GYNAECOLOGY.

By C. Rosewater, M. D., Omaha.

About a year ago, I sent a circular to every regular physician in Nebraska, asking them to kindly let me know the extent to which they had made use of electrolysis in gynaecological practice and the results obtained in each case. The answers were few and meagre, only about 40 answers being received to over 780 inquiries, and of these only four claimed to have used electrolysis at all. So I decided to give up the plan I then had of writing up a resume of the subject with the experience of the entire medical profession of Nebraska, and postponed writing up my own experiences for some future occasion.

This is a comparatively new but very promising field for investigation and work. Electricity has of course been used for many years, but its application for the treatment of gynaecological troubles is of rather recent date. Cutter and Kimball were, I believe, the first ones to use electrolysis for the cure of uterine tumors, especially fibroids, in a systematic manner, but their method of puncturing through the abdominal walls into the uterus with two needles connected with strong galvanic currents was so dangerous that it found but few followers, and never took root as an accepted gynaecological procedure. In the works of Thomas and Munde, both published in 1880, I find no mention of electrolysis, but Bartholow, as early as 1881, recognizes it as a very useful agent in certain classes of gynaecological disorders.

I shall not occupy your time by attempting to trace the present accepted methods of using and applying electrolysis through their various stages of development, but simply wish to say that, among the numerous workers in this field, Tripier and Apostoli, in Europe, and Martin and Massey, in this country, were the ones mainly instrumental in popularizing the use of electrolysis in gynaecology by laying down definite rules for the easy guidance of the profession in its application.

The effect of electrolysis is produced in one of two ways, either by chemical action of the substances liberated by the different poles, the positive liberating acids and oxygen, and the negative alkalies and hydrogen; or a certain process of resolution of tissues more remote, the exact explanation of which has not yet been arrived at.

Electrolysis has been used in almost every disease with which gynaecologists have to deal, but in some of these instances it has been discarded in favor of other and better measures. In enlargement of the uterus, whether due to the products of chronic inflammation, to a lack of involution, or to new formation of tissue other than malignant, electrolysis is today considered the treatment "par excellence," and operative measures are
only resorted to after it has been given a thorough trial. In catarrhal conditions of the uterine canal, mild electrolytic applications will generally bring about a return to a normal condition.

In order to apply electrolysis, it is necessary to have the following apparatus: a good and sufficiently powerful battery. I have used a fifty cell Barrett battery, which has given me satisfaction in all cases, and has the advantage of being small, compact and portable; a water rheostat to regulate the strength of the current and enable one to turn on, increase or diminish the latter gradually without shocking the patient; a milliammeter to measure the strength of the current so as to know just what amount of current is passing through the patient; an intra uterine and an abdominal electrode. The latter, as devised by Apostoli, consists of a round mould of potter's clay covered with cotton batting or cloth. As this was rather heavy and inconvenient, a plate of metal, covered with an ox bladder in such a manner as to be able to hold warm water, was devised. This, however, has the disadvantage that the bladder will sometimes thin out at one point and suddenly burst. If this happens when you are treating a patient, as it has a couple of times to me, you are placed in a not very enviable position. I now use a round, flexible tin plate, covered on one side with felt, which can be soaked with hot water and moulded to the shape of the abdomen of the patient. Connecting cords must also be used to connect the various parts of the apparatus. In the combination which I use, I have two Mackintosh cords, one end of each of which is ground down to fit the Barrett battery. With this apparatus, I have had no difficulty in regulating the current and getting a weaker or stronger one, as the case may desire.

In the treatment of troubles of the mucous membranes, I have found the weaker currents of from 25 to 75 milliamperes, to be of much greater value than the stronger ones. In cases of fibroids, the current used may run up as high as 150 to 200 milliamperes without injury to the patient, if care is taken in turning on this current gradually and not by sudden fits and starts.

In general, the positive pole is to be used when there is too much tendency to hemorrhage, while in most other cases the negative pole is used, but even in this, I find equally good authorities differ, they all, however, conceding to the positive pole the power of a hemostatic.

Electrolysis is counter indicated in general in all acute inflammatory affections. Massey also warns against its use in papilloma of the broad ligament, and in ovarian tumors.

The following are some of the cases which I have treated, the results in each of which will speak for themselves.

Case 1.—Mrs. M., age 45 years, a tall, well built lady of excellent physique, called at my office March 13th, 1889, presenting the following history: On February 11th, 1889, during the time of her menstrual period, she was thrown out of her carriage, striking on her side when she fell. She immediately experienced a sharp pain in her right side, but a prominent surgeon who examined her at the time claimed that he found no bones broken, and that she had simply been badly shaken up and frightened. He prescribed medicines, but failed to give any permanent relief. On the contrary, her pain grew worse, until, on the date above mentioned, when she called at my office.

She had always enjoyed good health, except when four years ago (in 1885) a hard lump was removed from her left breast. With the exception of the peri-
ods of gestation, and lactation of her four children, the youngest of which was then six years old. She had always menstruated regularly and without pain. Since the time of the accident she has not menstruated.

I found on examination of the chest an oval lump of the size of a hen’s egg in the anterior auxiliary line on the right side in the course of the eighth rib and corresponding to the seat of pain. It was evident to me that this rib had been broken, callus had formed, and the pressure of this had kept up and aggravated the pain. She complained of pain lower down in the abdomen, which I could not attribute to the fractured rib, and so I examined the pelvic organs. The fundus of the uterus seemed to present two distinct halves, the right one hard and nodular, somewhat of the shape and size of a kidney with the hilus turned upwards, and the convexity downwards and outwards. The left half of the body of the uterus was softer, more normal in consistence and size. There had been no history of amenorrhea, dysmenorrhea, or menorrhagia, and the only symptom pointing toward any possible trouble in the uterus had been an indefinite dragging sensation in the pelvis. No discharge and nothing abnormal about cervix at this time. I prescribed an anodyne liniment, and some pills containing ergotin and nux vomica, following otherwise an expectant policy.

March 27. I again examined patient, finding the left half of the womb larger than before and rather round. It felt like a rubber ball, and when compressed would immediately regain its former round shape upon relaxation of pressure. General health good. Right half of uterus same as before.

April 8th. The left half of uterus still keeps on growing, distinctly gives He-}

gar’s sign of pregnancy, that elastic rebound of the uterus following compression and relaxation. It is about of the size of a uterus two months pregnant. No menses have appeared since the time of the accident. Patient looks and feels well, with the exception of a slight nausea every morning. Balance of the day she feels O. K. I informed her that I suspected she was pregnant, but she denied the possibility of such an occurrence. For the present, all active medication was discontinued. On meeting her husband the same day, he was still more emphatic as to the impossibility of pregnancy.

April 15th. Condition still corresponds to assumption of diagnosis of pregnancy. Right half of uterus has not changed in size or shape since first examination. Left half round as a rubber ball, rebounding upon relaxation of pressure. Morning sickness still continues. General health otherwise good. Vagina soft succulent. No discharge from uterus. Cervix soft just as in pregnancy. On the day after this, Mr. M. told me that his wife had become reconciled to the diagnosis of pregnancy and was feeling quite well, so that I need not call again until sent for. (This was April 16.)

May 22nd. On being called again, I found a very marked change during the last five weeks. The patient did not feel so well as before, complained of backache and pain in the thighs especially when standing or walking around. The uterus had taken on a rapid growth, and was of the size of a large California orange. The body of the uterus was now of the consistence of cartilage, unyielding, no longer gave the sensation of rebounding noticed earlier in the history of the case. Pregnancy was now out of the question. It was undoubtedly a fibroma or sarcoma. I suggested hysterectomy, and intended to turn her over to a surgeon who had done this opera-
tion before, but the patient would not have any operation, so I called a consultant to settle on some definite course for the future: The latter agreed with me in the diagnosis, and the plan hitherto pursued, and suggested that I try electrolysis in this case. I suggested this to the patient, at the same time telling her that I had never treated a case in that way before, and would first have to obtain the necessary apparatus. With the understanding that it was to be a mere experiment, and that I was to be relieved of all responsibility, that she was to continue under treatment at least six weeks, unless her condition became such as to imperatively demand cessation of this course—with an understanding as to all these points, I purchased the apparatus and set about treating her. The strength of current used ranged from 40 to 150 m. p., the length of time the application was continued was four minutes, and the poles used were the negative intrauterine and positive abdominal. The applications were made about once in five days.

Result. It was about the middle of June before I had procured the necessary apparatus and was ready to begin the treatment. By this time, pain in the flexors of the thighs, with shooting pains in the thighs, was complained of. After about three weeks' treatment, the tumor had apparently diminished in size somewhat, the aches and pains had also become less frequent and persistent, and the patient felt greatly encouraged. The electrolytic treatment was continued about two months, but with the exception of the above there was no change. Toward the end of this time the pain in the thighs became more severe and persistent, the general health of the patient was rapidly failing, and a hard lump of the size of a hen's egg had formed at the sterno clavicular articulation of the right side. Her husband took her to Wisconsin, their former home, but stopped on the way at Chicago to consult Dr. N. S. Davis, who pronounced it to be a case of malignant tumor, and advised cessation of all active treatment. She should return home and prepare to die, as she would not live longer than about three months. This advice had the effect which might be expected of it. She now began to fail rapidly, and died in December 1889, just ten months after being thrown out of her carriage. The abdominal tumor at the time of her death was as large as an eight month pregnancy. I asked for the privilege of a post mortem, but this was denied me.

This case is of great interest in several particulars: First. It shows the unreliability of Hegar's sign of pregnancy. Second. The difficulties in the way of a proper diagnosis in the earlier stages of this case were such that the error of assuming it to be a pregnancy was in a measure justifiable. The cessation of menstruation, the gradual enlargement of the uterus, the morning nausea, the absence of cachexia or glandular enlargements were symptoms which might mislead the best of us. Third. The question also arises as to whether, if this was a malignant sarcoma from the start, the electrolysis had any influence in hastening or retarding its growth.

Case 2—Mrs. H 43 years old, mother of eight children, the youngest of which is three years old, came to me Sep. 30, 1889, from the northern part of state, with the following history. She is of medium size, with healthy complexion, and claims to date her ailment back two years. For a year after the last child was born, she felt pretty well; but then she noticed that her menses were becoming somewhat more profuse at each period and the intervals shorter. Dur-
ing the intervals a leucorrhoeal discharge kept on. Dysmenorrhoea was also complained of. The uterus was found to be enlarged so that the sound entered three inches. Also somewhat anteflexed and endometrium bled upon slightest touch of sound. Diagnosis, subinvolution with endometritis chronica. Treatment, internal administration of ergotin and nux vomica, and locally twice a week the positive pole of Barrett’s battery from 50 to 100 m. p. After five treatments, menses reappeared almost without pain and were not so profuse. Patient returned home feeling improved, and promising to return, but never did return nor write about her condition.

Case 3—Mrs. K. H, 43 years old, a rather small, but well built lady, with healthy complexion and hair turning slightly gray, came to me December 31, 1889. She has had four children, the last one some eighteen months ago, since which time she had been in good health, until about a year ago.

She complains of pelvic pain, pain in the back and groin increased during menstruation. Menses regular, profuse and accompanied by expulsion of clots. She can feel a lump in the lower part of her abdomen which has alarmed her, and on account of which she came to Omaha to be treated. Menses have appeared regularly, somewhat profuse and painful, but lasted only four or five days, with no discharge between times. Sound passes into uterus 3 1/2 inches without any obstruction, and is not bloody when withdrawn. Uterus upon bimanual manipulation is found to be considerably enlarged, somewhat anteflexed, but not tender to pressure. The enlargement of the uterus seems to involve the anterior wall more especially. Pressure in right ovarian region is somewhat painful. Vagina presents a normal appearance, no signs of congestion or cyanosis being perceptible. Cervix enlarged, somewhat hardened and thickened, rather paler than usual, and os normal in size and appearance. Diagnosis, subperitoneal fibroid.

Treatment consisted in the application of the galvanic current, with negative pole in uterus, and positive on abdomen. This increasing the hemorrhage occasionally, the application of the positive pole intruterine became necessary. This treatment was applied three times a week during the first month, twice a week during the second, and about five or six treatments were given during the third month, at the end of which time the uterus only measured two inches in depth, the menses were painless, normal in quantity, and lasted but two days. She now went home, after procuring an entire electrolytic outfit, and having her physician come to Omaha to learn how to continue the treatment. I heard from her from time to time through the mails, and she has remained in good health ever since.

On April 6th, 1891, she came to Omaha again to inquire as to whether the treatment might not be discontinued now that she was practically cured. I found uterus still measuring but 2 1/4 inches, and normal in shape and position and advised discontinuing the treatment for a while. I have not heard since from her, and judge from this that she has remained well.

Case 4—Mrs. H., of Omaha, Neb., age 31 years, mother of boy who is six years old. Ever since birth of that child she has suffered from dysmenorrhoea and nervous headaches preceding the onset of the menstrual flow. The pains would cease as soon as the flow was well established, but for two days previous to this she was almost helpless, and found herself compelled to stay in bed. In December, 1889, she applied to
TWENTY-THIRD ANNUAL SESSION

me for treatment. I found uterus anteverted, measuring 3 inches, with a cervical endometritis. There was a laceration of the cervix with slight ectropumof lips. I treated her by the old method of applying iodine and glycerine by means of a probe wrapped with cotton to the cervical canal, and boro-glyceride tampon. After three months' treatment by this method, I could only see slight improvement. The dysmenorrhoea and nervous headaches still occurred, though not quite so bad as before. On March 7th, 1890, I thought I would abandon this method of treatment and try the application of electrolysis. Accordingly, I made negative cauterization of the cervical canal with a current of the strength of about 75 m.p. and duration of about five minutes. Patient returned in about a week, reporting that menses had set in three days after last treatment, without pain or headache. Treatment was discontinued, but patient has been entirely free from pain at her menstrual periods since. This result, following one application of electrolysis, is certainly remarkable.

Case 5—Mrs. D., 28 years old, came to me for treatment of an endocervicitis with uterus bound down in a strongly interverted position and slightly lacerated, as three years previous she had had a miscarriage, following which she was sick in bed for 16 weeks with a pelvic cellulitis. In January, 1888, I attended her in confinement with her first child. The first stage of labor was delayed considerably by irregular dilation of the os. This in turn was due to old inflammatory deposits, which held the junction of body and cervix bound down at certain points and prevented the regular dilation of the canal. During the year 1889, I treated her several times for cervical catarrh by the old method of local medicinal applications to the endocervix. I always found the uterus firmly bound down in an anteverted position. The treatment would benefit her for a while, but then again the old trouble would return. Thus it went, until January 27, 1890, when I decided to try the application of electrolysis. A mild current of 40 m. p. was applied to the cervical canal for a period of four minutes. These applications were repeated at intervals of from 3 to 5 days, with the exception of the menstrual period, during which time and for forty-eight hours afterwards no application was made. The last application was made March 28th, 1890. On April 5th, patient reported that she had missed her regular monthly period, and thought pregnancy had set in. I found the uterus now freely movable, forward and backward, as well as upward and downward, and, as the cervical catarrh seemed to have stopped, the treatment was now discontinued. In the early part of May, 1890, she returned to me, complaining of nausea and vomiting occurring every morning. I found uterus enlarged and with a thick glassy discharge issuing from the cervix. The cervical catarrh had returned, and I thought it safe to try the application of electricity on the local diseased mucous membrane, in order to determine how far this was to blame for the vomiting. After two applications, the vomiting was greatly ameliorated, and the local condition improved. Treatment from this time was discontinued, and patient passed through a perfectly normal pregnancy, which terminated in a normal labor, January 3d, 1891. The only complication during this labor was a very severe post partem hemorrhage, due to atony of the uterus and probably also too great haste in the delivery of the placenta.
The puerperium was perfectly normal, and both mother and child are now in the enjoyment of the best of health.

Case 6—Mrs. J. H. H., troubled with cervical catarrh, relieved by one application of electrolysis on September 29, 1890. Has reported herself free from trouble as late as April, 1891.

DISCUSSION.

Dr. Milroy.

I have been very much interested in the paper of Dr. Rosewater. My attention was first called to this method of treatment particularly by Apostoli, the father of the method, in a paper which he read at the International Congress at Washington in 1887, and since that time, I have used the method somewhat, though not very extensively. I was first induced to use this apparatus for the treatment of a patient whom I had for a good many months, for the treatment of chronic pelvic inflammation, together with inflammation of the cervix. She had been treated by various other methods which had not been very satisfactory. The battery I used is the Leclede, (a modification of the Laclanche) cell, from which I have been able to secure the current I desired to use. In the first place, there was a good deal of pelvic tenderness; I was able to relieve that in the course of two or three weeks with applications of the positive, being the active, pole, and applying the negative pole to the vagina. The other apparatus is similar to Dr. Rosewater’s abdominal electrode. I used one that I prepared myself. It consists in a copper plate, which is imbedded in a mass of potter’s clay, covered with absorbent cotton, and then again a covering of coarse crash, such as is used for towels, over the part which comes in contact with the abdomen. Over this is placed a covering of sheet rubber to protect the clothing from moisture. For intra-uterine application, I have used a similar electrode to that of Dr. Rosewater. Mine is one made by Wolfe, of Omaha, for me, and for the inter-vaginal applications, I use also an electrode prepared by myself. A simple disc of copper is placed at right angles and soldered to a copper wire, insulated. This electrode can be made any size you desire by the addition of cotton or more clay. Now then, with this apparatus, I relieved this pain in a very short time, and by the use of intra-uterine negative cauterizations, in which I used 75 milliamperes. I was able to relieve the patient, and cause her discharge in a very short time cured.

I recall one case which I had, in which a woman had had her uterus very much displaced, following improper treatment for abortion. She was menstruating about half of the time. For two weeks she would menstruate profusely, and then for two weeks it would subside. After about three negative cauterizations of about 50 milliamperes, I suspended treatment, expecting a menstruation to occur, and told her not to come back until after the menstruation was passed. And when she came back, she said she had waited a week beyond the time it was expected before it occurred, and that the time of menstruation was five days duration instead of two weeks. During the interim, the treatment was continued, increasing the current to about 150 milliamperes, and, following this, she went the full 27 days, and the menstruation occupied three days. And while the other symptoms were disappearing with about the same rapidity, the uterus was reduced, not to the normal size, but nearly so.

I remember one other case which impresses me very favorably with the treatment. It was a case of dysmenorrhea. I proposed to operate on the woman; she had been a very strong woman, but the sub-involution had been in operation for four or five years and produced very small effects, but within the last six months the change had been more marked, and she was then reduced from a large, strong, fleshy woman to a small, frail one, menstruation being quite excessive, and the uterus measuring four and one-half inches in depth. After four applications, the uterus was reduced more than an inch in depth, and the backache and pains, and the severe abdominal pains, and the different symptoms, you are all familiar with in such cases, just vanished within two or three weeks.
It was to me a wonderful thing to observe after what we had had under the old method of treatment.

Dr. Mansfelde.

I have used electrolytic treatment for the last three years. I want to say in behalf of that treatment that every statement that has been made is not enough to say what electricity will do in the course of time for suffering mankind. I was not so fortunate as to listen to the paper read yesterday on the dynamo in medicine. We cannot use electricity successfully if not fully acquainted with the laws governing it. Here is an electrode being used. How many know that the effects of electricity depend upon the condition and size of this point and the one put on the abdomen. If the surgeon should by accident or intent apply this instrument to every part of the mucous membrane of the uterus, the person will never have another child. Drs. Thomas, Munde and Keith have drawn attention to that point. I have used these instruments for several years, and I want to say with the eminent doctor of England, Dr. Keith, that what the surgeons in the past have done with the knife, the modern surgeon, by the use of electrolysis, can do without the knife.

Dr. J. E. Summers.

I want to say that I have ordered myself a complete outfit for the use of this method of electrolysis. But I want also to state that there is another side to this question. I have had, within the past two months, two cases brought to me; one in which it was supposed that the uterine fibroid was to be reduced very rapidly, and other good effects to be produced, and all these promises were made for the use of this method, but were not fulfilled. And the patient was obliged to submit afterwards to surgical operation. Another case that came to me, was a woman who had posterior displacement of the uterus. She had been under treatment for some time and all the methods had been used which are generally advocated, electricity among others, and all contributed to the condition she was in when she came to me, which was such that I was obliged to open the abdomen and use surgical treatment. These are some of the cases of my experience.

Dr. Rosewater.

Now, in regard to the objection raised by our worthy president, here, I forgot to state how I obviate that point. I introduce that tip as far as I calculate to apply the electrolysis, and, during the process of application, I use rather a weak current, and gradually withdraw my electrode, cauterizing the whole canal, but no one point too severely. By that means, I obviate the necessity of purchasing another instrument.

Now about the cases that Dr. Summers spoke of. It is not claimed by any of those who treat by electrolysis mainly, that they do away with the surgeon's business. There are numerous cases, as Dr. Mansfelde has said, that can be relieved without the use of the operating knife, and there are cases in which, after electrolysis has been used, it will be necessary to resort to an operation. The results of electrical treatment are largely dependent upon the carefulness of the operator, and thoroughness with which he understands his subject. And the case which Dr. Summers reported may be one of those, which, if carefully treated, might have resulted better than it did. There are some points that I wanted to bring out in my paper that I did not. One of these is, will electrolysis, applied in cases of malignant tumor, hasten the growth of that tumor? I think it will. And, as soon as the physician is aware of the malignant nature of the tumor, I think electrolysis should be discarded.

CHLORAL AS AN ANÆSTHETIC IN LABOR.

By J. P. Lord, M. D., Omaha.

Chloral was introduced to therapeutics in 1869 by Liebreich. And, like all patent drugs, it has had its strong friends and not a few enemies. It maintains, however, a wide range of usefulness, and, in the hands of the intelligent and careful physician, it supplies a place that cannot be filled by any drug yet known to therapeutics.
Its use as an anesthetic in labor is not new, and I can add little or nothing to what has been already well written. But, believing that most practitioners have overlooked or ignored the strong testimony in most all of the text books, or to this especial use of chloral, I venture at this time to refresh the memory of some, and instruct others, perhaps, in what I regard as a slighted or a neglected medical education. I speak advisedly, for, upon considerable inquiry, I find that comparatively few make any use of this agent for this purpose, and those who do use it, do so simply to relax a rigid os.

My experience with chloral dates from the beginning of my practice, and my testimony only corroborates what has been laid down by standard authors. I take the liberty to quote extensively from them, somewhat at the expense of your time, not only because they are better authority than I, but for the reason that you would not, I think, believe that it had so much, and such strong, endorsement.

I will not take the time to quote from the scores of those who have testified to its value in labor, but will content myself with a few of the more familiar authors. I quote from our own Bartholow.

"Although chloral does not directly suspend the functions of the sensory nerves, it relieves certain kinds of pain, due to irregular or overaction of unstriped muscular fibres. Very great relief is afforded by chloral to the irregular pains of the first stage of labor, which cause suffering, but do not advance the case—the so called 'nagging pains' in popular obstetric language. Rigidity of the os uteri and soft parts may be corrected by the timely administration of chloral, and exhaustion may be prevented by giving it in such a way as to suspend irregular uterine action, and procure sleep, after pains are stopped by chloral."

Ringer gives chloral respectable consideration under this head.

Playfair says: "The peculiar value of chloral in labor is, that it may be safely administered at a time when chloroform cannot be generally employed. It cannot, it is true, compete with chloroform in its power of relieving pain, but it produces a drowsy state, in which the pain is not felt nearly so acutely as before. It is the first stage of labor, while pains are cutting and grinding, and during the dilatation of the cervix, that it finds its most useful application. It is especially valuable in those cases, so frequently met with in the upper classes, in which the pains produce intolerably acute suffering, but with little effect on the progress of labor. In them, the os is often thin and rigid, and the pains very frequent and acute, but little or no dilatation is effected. When the patient is brought under the influence of chorale, however, the pains become less frequent, but stronger, nervous excitement is calmed, and the dilatation of the cervix often proceeds rapidly and satisfactorily. Indeed, I know of nothing which answers so well in cases of rigid, undilatable cervix, and I believe its administration to be far more effective, under such circumstances, than any of the remedies usually employed. The object is to produce a somnolent condition, which shall be protracted as long as possible. For this purpose, 15 grains of chloral may be administered every 20 minutes, until three doses are given. This generally suffices to produce the desired effect. The patient becomes very drowsy, dozes between the pains, and wakes up as each contraction commences. It may be necessary to give a fourth dose, at a longer interval, say an
hour after the third dose, to keep up and prolong the soporific action, but this seldom is necessary, and I have rarely given more than a drachm of chloral during the entire progress of labor. Another advantage of this treatment is, that, while it does not interfere with the use of chloroform in the second stage, it renders it necessary to give less than otherwise would be called for, and thus its action can be more easily kept within bounds. Therefore, I am inclined to consider chloral a very valuable aid in the management of labor, and believe that it is destined to be much more extensively used than is at present the case. So far as my experience has yet gone, I have not met with any symptoms which have led me to think that it has produced bad effects, and I have known many patients to sleep quietly through labor, without expressing any excessive suffering, or asking for chloroform, who, under ordinary circumstances, would have been most urgently calling for relief.”

It was in 1874 that Dr. Playfair presented these claims of chloral to the profession, and he has ever since been a strong advocate of its use. While he recommended it especially in the first stage at first, he now goes farther, and, on the floor of the meeting of the British Obstetrical Society last year, recommended its use until the head pressed upon the perineum, then chloroform.

In one of our most modern works, The American System of Obstetrics, four pages are given to extolling this use of chloral in labor. Many authorities are quoted by them, agreeing as to this value of its use. They begin with Simpson, who began using it before it was a year old, and follow on down to the present time, with a great array of authorities whose experiences and conclusions are quite similar. The author says: “A careful survey of the authorities upon the use of chloral in labor, shows a striking absence of that disagreement as to facts regarding its action, which is the case with chloroform. Interference was no longer a novel thing when chloral came under observation; moreover, the effect of chloral does not vary so widely with the dose, and especially it does not vary so rapidly as with chloroform. Whatever the explanation, there is a general unanimity of testimony as to the effect of chloral upon the various elements and processes of parturition.

1. It is a quieter of nervous agitation; a stimulant for mental despondency, a soother of irritability, and a tolerably efficient remedy for hysterical manifestations.

2. Its anaesthetic power is decided and considerable. Nevertheless, it cannot rival chloroform in its absolute power over pain. The sufferings of labor are lessened, but unconscious delivery can scarcely take place.

3. Its effects upon uterine contractions are, like chloroform, regulating and tending to restore them to their normal type when they are spasmodic or irregular. In such cases, it may seem to increase uterine action. All authors agree that uterine action is not lessened by chloral.

4. The strongest and most abundant testimony is in regard to its influence in promoting dilatation of the os, when pains are more irritating than effective. In cases in which dilatation is slow or unusually painfully, in which the pains are irregular or spasmodic, the benefits of this anaesthetic are as incontestable as advantageous. For the concluding of labor, however, when expulsive power is active, and especially for the passage of the head through the vulva, chloroform is preferable, as the surgical degree
of anaesthesia is often required. The administration of chloral does not interfere with the use of chloroform at a later stage.

These results are verified by all who have made this especial use of chloral. The comparatively few whom I have found who use it in this manner have nothing but praise for it. Without it is used to the extent named, it will be found of comparatively little value in annulling any considerable pain. One drachm, more or less, will be required in almost all cases. I have myself given from 80 to 120 grains, with no untoward effects, but would not advise such liberal doses. The amount required depends upon the extent to which the chloral is antidoted by extreme pain. I recall one case, characterized by an unusually prolonged first stage, covering two days, in which I gave upwards of 300 grains. This case was a primipara, 38 years old, and required an excessive amount. I do not sanction this practice, but recite it to give courage to those who are afraid to start out in the use of chloral, by giving a drachm in divided doses. More than twice the quantity I gave is reported as having been given without a bad result, but these were cases showing remarkable tolerance. Sixty usually, sometimes 80, in the more severe cases, and rarely 100 grains are required.

The practitioner who carries chloral in solution in his obstetric bag, and uses it in these amounts, and uses it as a substitute for other anaesthetics, is rare, in my observation. I have known a few, and these indorse it unqualifiedly. These few have used it almost to the exclusion of chloroform in a majority of cases. I know one able practitioner, who indeed seldom uses chloroform, finding chloral all that is demanded. In some correspondence with this gentleman, he styles himself the same "chloral crank" as ever. Says he always used it, except to try other methods, but finds chloral the most satisfactory. Never had an accident nor any bad complications attributable to the drug. Says it does not predispose to postpartum hemorrhage, as does chloroform.

Writers are quite well agreed that chloral does not lessen the contractile force of the uterus, but rather strengthens and lengthens them, regulating the force and frequency, and by annulling pain gives the patient heart and courage to make voluntary effort; there is no fret and worry, and when the supreme hour arrives, she faces what is before her without complaint, and never quails as does she who has tossed and turned for hours, perhaps, in a frantic way, to escape the exquisite sufferings peculiar to the first stage of some cases of labor. Chloral fills the bill when the patient greets the doctor with the anxious query, that comes so early from some, before the os is little or only partially dilated—"doctor! doctor! can't you do something? I cannot endure it."

Chloral is of particular advantage to the practitioner, and especially the busy one, when called to see a case like this—and they are not infrequent. Patient having had pains sometime, fairly regular, os some, perhaps considerably, dilated, patient says time past, or quite up for being sick, or perhaps time reported not up, but doctor don't know but what it may be, don't matter, who can tell? You give 30 to 60 grains chloral, in divided doses. Patient's pains will either stop, and she go to sleep, and the doctor go his way, or she will immediately begin to make progress by developing regular and strong pains with the accompanying relaxation characteristic of the action of chloral, and the obstetrition is assured that his
services will be needed. Nothing rivals the action of chloral in cases like these. Morphine may stop the pains, but who knows how soon they will return? Chloral is also preferable to opium in controlling after pains; but, this being foreign to the subject of this paper, will not dilate upon it.

DISCUSSION.

Dr. W. O. Henry.

I think this is a valuable paper for the reason that it directs our attention to a remedy that perhaps many of us have overlooked. I remember when I was in college, our professor spoke of chloral, and spoke of some cases in which he had used chloral in large doses, running as high as, maybe, 120 grains in two hours. And he said in two or three cases there had been actual delivery in unconsciousness. I have used chloral satisfactorily in my practice, although I have never used such large doses as the doctor spoke of. I think I have never used as much as a dram in labor, and yet it has produced very satisfactory results. I think we should be governed by the effect produced. I think when the pains can be borne readily by the patient, eight or ten grains should be enough.

Dr. Smith.

I have had some experience in the use of the drug spoken of, and lay more stress on the dose that is given. I commenced practice under the impression that I should give twenty grains at a dose, and frequently it would be followed by delirium, and frequently it would produce vomiting, and these symptoms were not pleasant. Afterwards, under the instruction of Professor Miller, of Chicago, I commenced giving ten grains at a dose, and repeating it every 15 minutes until the desired effect was obtained, and I think it is much better to give a small dose, and repeat it, than to give large doses, further apart, I think we get a better effect.

Dr. Butler.

Is it not a fact that the action of chloral is uncertain? In the July number of the Chicago Medical Journal, 1879, there was a case reported from Missouri, where eight grains of hydrate of chloral, repeated three times, killed the patient; and my experience has been that its action is uncertain.

Dr. Mansfelde.

You will remember that Baron Liebig discovered chloral first, and years afterward Liebreich introduced it to the medical profession as a means of cure. I desire to say that of all the remedies in the Materia Medica, there is one that I would not wish to be without in the treatment of the diseases of children, and that is chloral. My experience extends over the last seven or eight years. I had one case of labor in which I gave the lady chloral, I think it was the first time I had used it under those circumstances, and I was more than surprised—I was gratified by its action. The labor was actually a pleasure to the woman instead of a pain. Do not carry chloral around with you in solution. I don't do it. I carry mine in substance, and use it when it is needed. All this talk of carrying chloral hydrate around in solution is not a compliment to the physician who does it. It should always be in substance, and when used the dose should always be repeated within the hour, until the effect is obtained which the physician is seeking for.

Dr. Lord.

There were a good many points in connection with the paper, that I had to leave out on account of lack of time, and there were a good many things, a good many "ifs" and "ands," that I could not bring in at all. Of course this drug must be used with discretion. You cannot give large doses without knowing the condition of your patient. You may give a remedy heroically in that way, and, when it is as potent as chloral, if given indiscriminately, you will have some trouble. It must be used as carefully as chloroform; and, while chloroform is safe in most cases, a careful physician will use it with caution. I want to re-urge liberal doses. Ten grains I do not believe is sufficient, unless given very frequently, and for some doctors it will give very satisfactory results. It may improve the labor by making it more regular, but it will not relieve the pain to any considerable extent, unless it is pushed.
If there is vomiting, it will be necessary to use other methods of administration. Of course, chloral is always to be well diluted when given by the mouth, and must also be well diluted when given by the rectum, as is necessary where there is vomiting. I wish to say that I do not use it in all cases. I do not use it to the extent that you would perhaps infer from my paper. But it is a valuable remedy that can be used in a great many cases to the greatest advantage, and it is one, I have become fully convinced, is not used well. I do not believe it is used to more than a very small per cent in cases where it ought to be used. I think it has been overlooked and neglected. It is one of the things we have given up, and it is one of the things I think we ought to go back to.

Dr. Butler.

Would you consider the use of chloral interdicted in any disease of the heart?

Dr. Lord.

Yes, I would.

Dr. Mansfelde.

Do you make that statement unqualifiedly?

Dr. Lord.

I would not state unqualifiedly. It should be used with precaution. In any weakened condition of the heart, I think it should not be used.

CHRONIC CERVICAL ENDOMETRITIS.

By Wm. F. Milroy, M. D., Omaha.

In calling the attention of this Society to the subject of Chronic Cervical Endometritis, I do it, prompted by the feeling that is expressed by Macnaughton Jones, when he says: "As it is the most frequent, so it is often the most obstinate and inveterate of uterine states." The testimony of gynaecologists is, I believe, unanimous that this disease is more commonly met with by far than any other of those peculiar to women. I have been impressed, also, particularly of late, with the difficulty there is in many a case, in securing a thorough cure. It occurred to me that, if this is so common an experience, it might not be without profit to turn our attention to the matter, and furnish an opportunity for the suggestions that those present may be able to offer from their experience. In the short paper which I now present, therefore, I do not attempt to do more than outline a well-worn subject.

The fusiform cavity of the cervix is lined with a mucous membrane, disposed in ridges and folds and studded, according to Tyler Smith, with ten thousand Nabothian follicles. In a cervical endometritis, these structures, and particularly the glands, are involved. These are swollen, and have often their mouths gaping open. The villi, or papillae, especially those on the vaginal surface of the cervix, become diseased, and the result is an abrasion, or even a deep ulceration. However, that which ordinarily occurs, is an hypertrophy of the villi of the part, giving the condition that is known as granular degeneration. This is confined to the vaginal portion, as it may extend upward into the cervix.

Prof. Thomas enumerates the causes of this disease as follows:

I. Predisposing;
   Natural feebleness of constitution;
   The existence of a cachexia, tuberculosis, etc.;
   Impoverishment of the blood from chlorosis, or other causes;
   Prolonged mental depression;
   Insufficient nutriment;
   Excessive lactation;
   Frequent parturition;
   Subinvolution;
   Styles of dress which depress the uterus;
   Want of exercise and fresh air, etc.;
II. Exciting causes;
   Displacements of the uterus, especially flexious;
   Excessive or intemperate coition;
The use of intra-uterine pessaries; Puerperal endometritis; Acute non-puerperal endometritis; Exposure or fatigue affecting a subinvolted uterus; Efforts at production of abortion and prevention of abortion; Vaginitis, specific or simple; Obstructive dysmenorrhoea; Cervical polypi; Laceration of the cervix; and many others.

Of the symptoms, leucorrhoea, dragging pelvic pains, increased by exercise, and menstrual disorders of various sorts, are the most common which are of a local character. Constitutional symptoms appear sooner or later. These are nervousness, irritability, despondency, hysteria, loss of appetite, dyspepsia, and anaemia, accompanied or followed by such complications as cystitis, vaginitis and cervical hyperplasia.

Locally, the os may or may not appear enlarged, and the lips of the cervix puffed. It is frequently abraded in appearance, from the granular degeneration present, this extending sometimes well out from the os and over the cervix. The characteristic discharge is compared to the white of egg—tenaceous and adherent closely to the cervix. Unless the inflammation is confined to the glands, there will be found tenderness upon moving the cervix and a congested appearance. When only the glands are involved, the physical signs are not so well marked.

**Prognosis.**—Many cases improve, from alteration in the conditions which environ the patient, without surgical or even medical aid; and some get well in this way. As I have already intimated, however, many of them are extremely obstinate and resist all efforts to effect a cure. If very protracted, the tendency is to the development of an hypertrophy of the connective tissue, resulting again in displacement and other very serious complications.

Prof. Thomas remarks: "Even in minor cases, great caution should be observed as to fixing the time at which recovery will take place. Even in the mildest case, which has lasted for some time, from four to six months will probably elapse, before perfect cure can be accomplished, and even after this a relapse will be very likely to occur, unless preventive measures be adopted and strictly adhered to."

Having thus hastily glanced at the pathology and natural history of the disease, the matter which I had more particularly in mind, i.e., treatment, may be referred to. I suppose there is no fault, in the management of surgical cases of all classes, so likely to occur as the neglect of the constitutional condition of the patient. In this age of perfected technique, when each detail is so fully worked out, there is a strong tendency in the mind of the surgeon to rely upon these measures to the neglect of that which is more important, constitutional treatment. We may exercise the utmost skill in local treatment, but if we have not the *vis Medicatrix Naturae* to do the real work of repair for us, our labor will be in vain.

It is a principle uppermost in the mind of every rational surgeon that the first indication for treatment is the removal of the cause of disease. A glance at the list of causes, predisposing and exciting, which I have enumerated, suggests at once the difficulty which may be found in accomplishing this.

I believe few cases of Chronic Cervical Endometritis will be found in which benefit will fail to be obtained by tonic treatment.

This may consist not only in the drugs, which are expected to increase the ap-
petite, improve the digestion and the general nutrition of the patient, but also in certain sanitary regulations which tend to the same end. It is important that the patient be made to understand at the outset that no material benefit may be hoped for in a few days or a few weeks. The cure of her disease is something which will not be made to hurry, and there is not the slightest use in attempting any treatment, unless they will agree to persevere and carry out faithfully the physician's instructions. I have observed that the moral effect of this upon the patient is favorable, for otherwise she will be sure to be discouraged long before there has elapsed sufficient time to hope for good resulting from the treatment. I have observed too that there is an advantage in this practice to the surgeon. For, when he has carried on his treatment for a number of months, and can discover no appreciable improvement, he is about as much in need of moral support to enable him to continue his effort as is the patient. Regulation of the bowels, and care as to digestive disorders; securing out-of-door exercise, according to the strength of the patient; securing also an abundance of sleep, of which much is required; the removal of any depressing influence, such as lactation or mental anxiety; the discontinuance of overwork, especially that which involves much standing upon the feet; the administration of the vegetable tonics, the mineral acids, and iron, together with cod liver oil and a full diet;—these are some of the general measures which in most cases will require attention. To go into a detailed account of these would occupy more time than is proper.

In cases in which the disease has not progressed very far, the above considerations being successfully attended to, all that may be required locally will be a soothing injection of hot water, with perhaps some material, such as common salt, infusion of linseed or slippery elm, added to it.

In other cases, which have made more progress, the topical applications vary with the individual case.

Carbolic acid, tincture of iodine, chromic acid, nitrate of silver and fuming nitric acid, are some of the topical applications which are in common use. As regards the selection of the drug to use, great care should be observed, lest by too severe treatment, an acute metritis be lighted up.

Only yesterday, an experience occurred to me which will illustrate this point. I was visited by the husband of a young woman, whom I have had under treatment for this disorder for a number of weeks. She is one of those hypermodest persons who will only answer questions in monosylables and that with difficulty. At each visit, when questioned as to the after effects of the treatment of the preceding visit, she insisted that she suffered no inconvenience worthy of mention.

At her last visit to me, a congested appearance of the uterus was evident, and, when inquiry was made, she admitted that three days before, she had climbed upon a table and on this had mounted a chair and washed the ceiling and walls of a room. However, the husband assured me that after each treatment, except the last one, she had suffered very severe pain, sometimes lasting well into the night. There is no question in my mind that the treatment which I had used did material injury, and paved the way for a moderately severe acute metritis, from which she is suffering, and which the table and chair gymnastics precipitated. This case is one, in which the indurated and insensitive condition of more chronic and deep-
er seated cases had not been reached, and less severe measures than those employed would doubtless have answered.

Perhaps the best guide to the real nature of a given case is the character of the discharge. I have seen a single application of carbolic acid induce a cure, with disappearance of all the symptoms; but in such a case, the discharge is thin and of a serous character, instead of the dense substance described as the characteristic discharge.

Indeed, it may be questioned whether such a case can properly be termed chronic, though having evidently been in existence a number of months. Besides the alterative, astringent or caustic applications to which I have referred, Thomas' blunt curette I consider a valuable instrument in the more chronic cases. I have been able with it to reach cases which appeared to resist all chemical applications short of destruction of the glands.

THE PRIMITIVE HISTORY OF OBSTETRICS, WITH A BIOGRAPHICAL SKETCH OF SOME OF THE ORIENTAL PATRIARCHS OF GREECE AND ROME.

By William Protzman, Lincoln, Neb.

We learn from sacred history that 1700 years before Christ, Egypt possessed men who practiced medicine and surgery; that when Abraham, on account of famine, left the land of Canaan and went to Egypt, he found the Egyptians educated in geometry, architecture and medicine; the source from whence they obtained their knowledge is surrounded with fables and allegories. During the Primitive Period, or period of instinct, that ended with the destruction of Troy, 1184 years before Christ, and up to the dissolution of the Pythagorean Society, a period of 640 years later, medicine and surgery formed an indigestible collection of experimental notions, vaguely described, and disfigured by a series of incomplete traditions surrounded by parables. It was during the Primitive Period, that ended at the destruction of Troy, according to ancient and modern historiographers, when Esclusapius, the supposed son of Apollo, figured conspicuously as a physician and surgeon. Apollo was one of the great philosophers, as well as a physician, of Greece. His family consisted of six children. Esclusapius, being the choice of his family, received more attention from his father, also a better education, than the balance of his family. Esclusapius, according to history, made medicine his special study; and, when he grew up to manhood, his profound knowledge in his chosen profession excited the admiration, as well as envy, of his predecessors. In proof of the esteem in which he was held by his countrymen, they erected and dedicated to his memory schools called Asclepieda. While the biographical history of his life is mixed with fables and uncertainties, and, as I have already stated, only in the history of Greece up to the foundation of the Alexandrian Library, during the Philosophic Period 360 B.C., do we obtain, in the least degree, anything reliable in the art of medicine and surgery.

Yet we glean enough from reliable history to establish this great man's ability, and from which we learn that he was possessed with a brilliant imagination, clothed with the faculty of seducing language and morals in paganism. From his unlimited reputation and skill in his chosen profession, he received the offer as surgeon to accompany the Argonautic expedition, which increased his universal veneration, not only of Greece, but also of Rome, and other European countries. According to our historiographers, he stood far above the average of his
countrymen. Unlike Galen, he studied his profession, not by methods of experiment alone, but by that of meditation and mental intuition; always kind to his inferiors and courteous to his superiors. His knowledge of medicine and surgery was kept almost a profound secret by the priesthood as a family heritage. His universal veneration throughout Greece excited the envy and prejudices of Pluto, who laid his grievance before the altar of Jupiter, who in his priesthood wrath, destroyed the greatest and noblest man of Greece."

During the latter half of the Philosophic Period, we find the names of Hippocrates, Aristotle, Galen, and others, whose names are inscribed upon the memory of every intelligent physician in the latter half of this nineteenth century. To those ancient patriarchs belongs the credit of converting ancient mythology, dogmatism and parables into tangible realities. Yet among many of their own countrymen, in and out of the temple, their advanced ideas fell not unlike a rubber ball thrown against the rock of Gibraltar. It is claimed, by ancient historiographers, that Hippocrates was born in the Isle of Cos, of a family in which medicine was hereditary, and that his genealogy, on his father's side, was traced to Esculapius, and on his mother's side, to Hercules. The date of his birth, 460 years B. C.; his age unknown. He traveled extensively through Asia Minor, Macedonia, and Thessaly. He was the first who wrote and published a book on obstetrics during the Philosophic Period. In this work, we find a lucid and methodic description of pregnancy. He visited the principal cities of Europe, communing with philosophers, collecting at all points observations on special diseases, epidemic and constitutional, also on the influence of manners, climate, regimen, etc. He denied the teachings of Malampus and others during the Primitive Period that the expulsion of a child from the womb was due to its own efforts in order to clear itself from its envelopes, etc. But, in order to stop the revolution wrought by this great man's teaching, his envious and jealous confreres formulated charges against him for setting fire to the temple of Cos. Yet their malicious charges had but little effect on his reputation in his profession. Aristotle, and even Plato, his contemporary; cited Hippocrates as authority in his delineation and organization of the human body. And, instead of calling medicine the art of Esculapius, they called it the science of Hippocrates.

The next to whom I shall call you is Aristotle, who was born in Macedonia, during the Philosophic Period, 320 years B. C. Having lost his father at an early age (not unlike many young men of the present age), spent his money in dissipation, after which he applied himself to the study of philosophy and medicine. He went to Athens, where he received private instruction under Plato. Being poor, he was compelled to work, not unlike many of us that worked our way through college. After having finished his studies, he was appointed by Phillip, king of Macedonia, as preceptor over his son, Alexandria, during which time he assisted Aristotle in the collection of an immense collection from the products of nature, etc. This favor excited the envy and prejudices of his confreres, who were unable to conceive how he came into possession of his many relics of antiquity, and who therefore formulated charges against him for stealing and destroying the writings of his predecessors and applying them to his own use, just as they accused Hippocrates for having set
fire to the temple of Cos. He was one
of the greatest naturalists in antiquity.
In a word, he created comparative
anatomy and physiology. He was rich
enough in his merits without being
adorned with the plumes of others.
No man during the Philosophic Period
is more deserving than he, and no one
introduced upon philosophical reason-
ing so many new and interesting facts
in that age of the world. While perhaps
he never dissected the human body,
nevertheless, he corrected many errors
in anatomy and physiology that were
_taught by Hippocrates.

The last to whom I shall invite your
attention is Claudius Galen, who was a
native of Asia Minor, born in a place
called Pergamus. He was placed, when
young, by his father under the tuition of
distinguished professors of that country;
being a young man of strong intellect, and
persevering habits, he profited by their
instructions. After finishing his studies,
he traveled extensively, that he might
obtain still greater knowledge in his
chosen profession. He went to Egypt,
where he remained a considerable time.
After he returned to his native country,
he was ordered by the Pontiff to dress
wounds in public, which afforded him an
opportunity to display his anatomical
knowledge and surgical skill; being an
aristocrat, it also increased his sarcasm
and overbearing disposition. He soon
left his native city again and went to
Rome, where his renowned reputation
and practical skill had preceded him and
secured for him the esteem of the highest
personages. But, owing to his despot-
isim, overbearing disposition, his boasting,
his disdain for his confreres, which
he took no pains to disguise, soon caused
him enemies that rendered his stay at
Rome very disagreeable. But, before leav-
ing this great city, he accused the phy-
sicians of jealousy and stupid ignorance
and of murder, and said that he would
shield himself from their hidden and evil
designs by abandoning the accursed city
forever. His predilections in favor of the
doctines of Hippocrates are well marked.
“No one,” he says, “before me has given
the true method of treating disease.”
Again he says, “Hippocrates has shown
the path, but, as he was the first, was
unable to go as far as he wished; he has
sketched what another completed; he has
opened the path, but has left it to a suc-
cessor to make it plain,” etc. Yet with
all his arrogance and despot-egotism, he
was one of the greatest reformers of his
age; he modernized ancient mythology of
his day into tangible realities, many of
which are adopted by modern scientists
of today. He was the first to classify
the nervous system, also giving their ori-
gin: viz., 8 cervical, 12 dorsal, 5 lumbar,
and 5 sacral. He also describes the nerves
of sensation, and the nerves of motion,
ganglions and glands, He divided the
body into three cavities: viz., thoracic, ab-
dominal and cranial, with a minute de-
scription of what they contained. He
lived during the second century of the
Christian era, and died in the seventy-first
year of his age; but my time precludes
further investigation of this great man
during the anatomical period.

OBSTETRICS.

During the Primitive, Mystical and
a greater portion of the Philosophical
Period, obstetrics, according to Hippo-
crates’ works, was confined to igno-
rant mid-wives. Even Hippocrates him-
selh changed abnormal or mal pre-
sentation to a vertex, or exposed the
child to the Caesarfan operation. The
umbilical cord was not allowed to be severed until after the expul-
sion of the placenta, the child being
placed on an inclined plane to make con-
tinuous traction, to assist the expulsion
of the after-birth, etc. These antiquated
theories were set aside by the teachings of Celsus, who was far in the advance of the doctrines that were taught by Hippocrates or schools of Asclepiadae. During the 16th century, Hippocrates works on obstetrics were revised by Guillemeau. Mauriceau, of France, was the next who published a treatise on obstetrics; his first edition appeared in 1668. From this, many English physicians devoted a good part of their time to this important branch of surgical science. During the 17th century, or reform period, the field in the art of obstetrics was supplied with many new adventurers, the most prominent of whom were Bourgoise, Mauriceau, Portal, and many others, who formed the transition period between the 16th and 17th centuries. During the 17th and 18th centuries, obstetrics began to approach an exact science, under the leadership of Smellie, Leveret and Baudelocque, and, from this time forward, schools of obstetrics were established throughout Europe. To Baudelocque, perhaps more than to any other accoucheur of the 18th century, belongs the credit of many established theories that are taught and practiced by accoucheurs of the present day.

And now, in conclusion, let me ask the intelligent physicians of this Society, after a lapse of over 400 years or more, with all the environments of society and modern improvements, with the precepts of a Thomas, Playfair and a Biford, renowned teachers of obstetrical science, with a Hamilton in surgery, with a Koch, Pasteur, Cohn, and Klebs, in the field of bacteriology, with their illimitable microscope on the one hand, and the immutable and unchangeable laboratory on the other, has the cloud of mysticism, fables and allegories of ancient Greece been cleared away, commensurate with our age, in the field of scientific medicine?
logy, symptomatology, progress and
treatment from all other diseases of the
body only in so far as the structures in­
volved differ from all others. One of the
rarest forms of joint trouble is that
known as Hysterical Joint. So good
and recent an authority as Prof. L. A.
Sayre does not even refer to this affec­
tion in his very excellent work, and men
of years in the medical profession have
not seen such a case. And yet, gentlemen,
it is a real and sometimes an exceedingly
annoying trouble, difficult to diagnose,
and often more obstinate in its hold
upon a joint than diseases which pro­
duce serious pathological changes in the
joint structures, while in this disease, or
rather, condition, no serious alterations
occur in these tissues. Two cases:

Case I. Miss C., aged 22 years, of good
parentage, large and healthful appear­
ance, inclined to fleshiness, was brought
into my office by her father, who stated
that his daughter had been afflicted for
about eighteen months with some dis­
ease of the wrist joint, which had ren­
dered her hand as well as her arm almost
entirely useless. She had been to Kansas
City, and to various physicians, and had
been told that she had a variety of diffi­
culties. One or two surgeons had said
she was suffering from necrosis of the
lower end of the radius, and showed their
faith in the diagnosis by cutting down
upon it to remove the supposed dead
bone, but found none; and there remained
the scar, some two inches in length, the
result of their erroneous diagnosis and
improper treatment.

Upon making a careful examination, it
was quite evident that there was not
inflammatory trouble, either acute or
chronic, in the joint structure or the
tissues surrounding them.

I found her suffering from endocervici­
tis and ovarian irritation, and regarded
her wrist joint trouble as hysterical and
so treated it.

As the pelvic troubles improved, there
was less complaint of the joint, and, in
about five or six months, when the pel­
vic symptoms were relieved, she used her
hand freely. Later she married, and
took up her household duties with a
pleasure, since which time I have heard
no complaint from her.

Case II. Miss F. was a young girl,
of 16 years, tall and slender, with black
hair and eyes, of good family history,
and satisfactory personal history, except­
ing that she had never yet had her
monthly flow.

Her mother brought her to me, saying
that the family physician, and several
others who had examined her, were
unable to decide what was the trouble
with her wrist, which had given her so
much pain for months that she was
almost helpless; and that they had now
bandaged up the hand and arm to im­
mobilize the joint, and they (the doctors)
only feared that the result would be
ankylosis or worse. In this state of feel­
ing and anxiety, the mother asked me to
see the daughter with the family physi­
cian.

The doctor removed the bandages and
splints, when I made a very careful exami­
nation and found no inflammatory disease
whatever, but a very clear case of hyste­ical joint. Upon my recommendation,
all the splints and bandages were
removed, the girl given good tonic treat­
ment internally, and made to understand
that no particular disease existed in the
joint, and that she was to go right along
using the hand without let or hindrance,
and assured that, when her menses came
on, and her general system was in good
condition, her wrist would be all right.
She improved steadily, and soon her
menses were established, and she contin-
so far as I know, teach that it most
commonly affects the knee; and, while I
have never seen a case pure and simple
of this joint, I have seen hysterical mani-
festations in a chronic synovitis of the
knee joint.

When I was in "Rush," I remember
that Prof. Gunn had a case of hysterical
hip joint before the class, but these cases,
I believe, are undoubtedly quite rare.

I have observed, that in the early
stages of hip-joint disease, there is a dif-
ference of opinion among some of the
profession in the state as to whether the
case can best be treated by putting the
child to bed, or by putting on a brace,
such as that devised by Prof. Sayre,
which gives the joint rest and yet allows
the child to be up and around.

Now, it appears to me there ought not
to be any room for difference here; for, if
the case is one in which the brace acts
efficiently, nothing can be plainer than
that the child is far better off to be
allowed the freedom and out-door exer-
cise which the brace permits. Long con-
finement of a child to bed is certainly
not good practice, if it can be avoided.

In cases where the patient will only
need to be confined to bed for a week or
two, and can then be allowed to go
about the house with an ordinary splint
on, thus saving the expense of the special
brace, as in my first case, I can see no
objection to pursuing this line of treat-
ment; but, ordinarily, where long confine-
ment will be required, it seems to me
very plain that a brace should be secured,
if possible.

The indications in all early inflamma-
tory diseases of joints are, perfect rest
for the joint; as nearly as possible a
normal condition of all other parts of
the body secured and maintained.

Authors who treat of hysterical joint,
THE SURGICAL TREATMENT OF EPILEPSY, WITH HISTORY OF A CASE.

By B. B. Davis, M. D., McCook, Nebraska.

Epilepsy is a disease which has no fixed pathology. All cases may be divided into two distinct groups.

(1) Those caused by an organic brain lesion.

(2) Those caused by peripheral irritation.

Neurologists usually make a third group of cases, which has no discoverable cause, or pathology, but I think that all the cases now included in the third will in time be assigned to one of the former groups. The only reason for the third group is, that our present knowledge of the subject is so limited, and our methods of diagnosis inadequate.

From time to time, this or that observer has attempted to show that some form of peripheral irritation is the cause of most cases of epilepsy. For instance, at one time the majority of cases were considered by many to be due to the irritation caused by long and tight prepuces. The result was that for a long time the epileptic, who escaped circumcision, was the exception. However good this treatment may have been, as a hygienic measure, the fits were not permanently cured.

Dr. A. P. Boubaker reports a list of fifteen cases of epilepsy which had been reported cured from the extraction of a carious tooth. No doubt many a good and conscientious M. D. has started out with a tooth forceps in his pocket in the vain hope that he had a specific for the disease.

Dr. S. Weir Mitchell reports the case of a man, 43 years of age, weighing 250 pounds, who, after an injury which caused atrophy of the left testicle, began to have severe and frequent epileptic attacks. Accordingly, Dec. 29th, 1888, the offending testicle was removed. A point in the operation which would seem to prove beyond much doubt that the testicle was the real cause of the trouble is, that when almost ready to sever the spermatic cord, a fit began which was instantly stopped by severing the cord. This patient at the time of the report—three months after the operation—had had no more seizures.

Dr. Mitchell also relates the case of a blind girl, whose epilepsy was cured by the removal of a bean which had long been impacted in the nasal canal.

Emil Pius, of Vienna, relates a case of severe epileptic attacks checked by the cure of a catarrh of the eustachian tube and the middle ear.

I might go on at length citing cases of cures from the removal of peripheral irritations, but, however interesting that might be, such treatment is only applicable to a very small proportion of all cases. The extensive research which has been made on this subject in the past few years has proved, beyond reasonable doubt that a vast majority, almost all cases, in fact, of confirmed epilepsy are caused by lesions which are intra and not extra cerebral.

The definite localization of cerebral functions is still in its infancy. Such careful observers as Seguin, Starr, Mills and Dana, and equally earnest workers in Great Britain, Germany, France and Italy, have made a splendid beginning in this wonderfully intricate and interesting subject.

Just here, a short review of what has been definitely found out may not be a waste of time. The motor area comprises the convolutions immediately adjacent to the fissure of Rolando, the anterior and posterior central convolutions and the paracentral lobule. Roughly speaking, the upper third of this region is the leg centre; the middle third,
the arm centre; and the lower third the face centre. These areas are again subdivided in such a way as to locate the finer movements. For example: if we have a case of Jacksonian epilepsy, characterized by spasm of the biceps of the left arm, we can count upon finding a lesion in the middle third of the motor area, and anterior to the fissure of Rolando.

The visual area is located in the occipital convolutions, and more especially in the cuneus. A lesion on the right side in this region, or in the visual tract between the occipital lobe and the optic chiasm, will cause left hemianopsia.

Starr relates the case of a physician who was the victim of occasional attacks of sudden blindness in the right visual field (right hemianopsia), and concludes that the focus of discharge is in the left cuneus. This gentleman sometimes had an aura, before the hemianopsia, of a red light in the right visual field. This was really Jacksonian epilepsy, characterized by hemianopsia, instead of localized spasms. Bromides diminished the frequency of the attacks.

Starr also relates a case with similar attacks, where, instead of darkness, there were yellow sparks or flashes of light at one side of the visual field. Bromides also diminished the frequency of this gentleman’s attacks.

The cortical areas governing language. In sensory aphasia, the lesion has been shown to be in the temporo-parietal region; in word-deafness, in the posterior temporal region; in word-blindness, in the angular gyros; in verbal amnesia, in the inferior parietal region. In purely motor aphasia, merely the power of talking being lost, the lesion is to be found in Broca’s speech center, which is located in the posterior half of the third frontal convolution of the left side in right handed persons, of the right side in left handed persons.

The location of the lesion which produces agraphia has not yet been definitely located, though some facts seem to point to its situation in the posterior part of the second frontal convolution.

Beyond the general belief that the frontal lobe is the intellectual centre, little is known. In lesions of this region, mental symptoms are usually prominent, but the whole subject of the mind area is still in obscurity.

The temporo-sphenoidal lobe has been supposed to preside over the sense of hearing, though it has not been fully determined. The latest researches go far towards crediting it with this office.

Although the uncinate convolution is not yet thoroughly understood, it is not at all improbable that the centre for the olfactory sense will soon be proven to be located here. Cases reported by Anderson, Hamilton and Hughlings Jackson favor this localization. The case of Hughlings Jackson was one of epilepsy with an olfactory aura, in which the autopsy showed a sarcoma, occupying the anterior end of the temporo-sphenoidal lobe.

Recently, Dr. Landon Carter Gray presented to his class in the Polyclinic a case of epilepsy in which the attacks were always preceded by a perversion of the sense of smell, the most terrible odors, always the same, being present. An operation was contemplated.

Thus, we find that, in spite of the great strides made in the past few years in localizing the cerebral functions, the brain is still the “dark continent,” definite functions having thus far only been found for about one-third of it. The center for the sense of taste is not yet even conjectured, while that for the sense of hearing is not much better known.
The old feeling, that the slightest injury to the human brain would result in death, has retarded the practical results which would naturally be expected from the more thorough knowledge of the functions of the several portions of the cortex. This dread is being lost; and now, thanks to careful antisepsis, the cranial cavity can be entered without great risk, and the improvements of the technique make it possible to do what, a few years ago, had not been dreamed of.

The case I have to report is as follows:

Edward B., male, aged 22 years. At the age of seven, patient was struck on the head by a falling plank, fracturing the skull. It caused neither loss of consciousness nor paralysis. No convulsions at the time, was not delirious, and at no time was his life considered in danger. It seems to have been considered a trifling injury, though there was some suppuration, and some small fragments of bone came away. The history of the injury is vague, the boy having been away from his parents visiting his aunt. I wrote to this aunt in regard to it, and, to the question, "How long was he disabled?" her reply is, "He did not feel well for a few days." No physician was called in, showing what slight attention was paid to the accident.

After recovery, which seemed to be complete, the patient was as healthy as the average boy, until the spring of '85, when he had his first epileptic seizure. This attack was a severe one, and came on in the night while the patient was sleeping with his brother. In about twenty-two months after the first, the second fit occurred; since then they have been coming with greater and greater frequency. The latter part of September 1890, he had five attacks in a period of forty-eight hours. Again, he had a fit October 7th. He had an attack the morning of the 14th and another one in the evening. My colleague, Dr. Jones, and myself were in the room with him at the time of this last seizure. The first thing noticed was a peculiar staring look and a prolonged shrill cry, accompanied by vigorous stamping of the feet. This must have been continued for fifteen seconds before the convulsion supervened. The latter was severe, first tonic and afterwards clonic. Examining the strength of the contractions, we could detect an unquestioned difference in favor of the right side, whether this difference was any greater that it would naturally be in a right-handed person, I am unable to say.

After this, an operation was definitely determined upon. The chief reasons for deciding to operate were:

(1) That there was a depression in the skull on the left side, about two inches above Reid's base line, and one and one-half inch in front of a vertical line, line drawn from the depression just anterior to the ear.

(2) The fits were growing worse and more frequent, and the patient and family were very solicitous, if there was any probability of the fits being due to a local irritation, to have him given the benefit of an operation.

(3) A certain amount of mental confusion, characterized more by slowness in grasping the meaning of a remark and in framing a reply, than in lack of mental power, would be suggestive of a lesion of the frontal lobe.

Patient was well nourished and not much subject to headaches. Has been myopic for several years, the condition having been growing gradually worse. Correcting lenses have been worn for about six months. October 20th, Dr. Jones tested patient's eyes and found vision expressed by 20-200 for each eye.

Operation: October 21st, 1890, 2 p.m.
The bowels had been moved the day previous by a dose of castor oil. Twenty hours before being put upon the operation table, the head had been shaven, and the scalp scrubbed with soap and water, followed with ether, and a solution of bichloride 1-1000. After the scrubbing, a bichloridized gauze dressing was applied to the scalp and kept in position until the operation.

At the operation, I was ably assisted by Dr. G. W. Curfinau, of Indianola, Dr. C. H. Jones, of McCook, and Mr. Oyster, a locomotive engineer, who showed by his cool nerve and good judgment that he would have been a success as a surgeon. After another thorough scrubbing and disinfection of the scalp, the following operation was done: A horse-shoe shaped incision was made through the scalp and pericranium, the convexity being backward, and scalp and pericranium dissected from the skull and reflected forward. This flap was about three inches across, and so situated that the depressed bone was about its centre. Periosteum strongly adherent at point of old fracture.

After the bone was laid bare, a button of bone was removed, seven-eighths of an inch in diameter, with a Gault's trephine, the centre of the trephine corresponding to the centre of the depression in the skull, and the outer border was just outside the outer margin of the depression, the whole depression being included in the button removed. (The site of the operation is shown in Fig. I.) When the button of bone was elevated, a sharp spicule about two lines in length was found to project inward, and to be perfectly adherent to the dura mater. It was not deemed practicable to dissect it free, but a portion of very much thickened dura, one-third of an inch in diameter, was removed with it. Just at this point, the patient had a severe epileptic fit. This spicule of bone was doubtless the irritant which was causing all the trouble.

As soon as hemorrhage ceased, the pericranium and scalp were returned to their original position, and sutured with carbolized silk. The only drainage used was a strand of catgut laid in the wound and protruding at the posterior margin. The wound was then dressed with iodoform and bichloride gauze. The operation took one and one-half hours, and patient had one other fit, besides the one already mentioned.

He rallied nicely from the anaesthetic, there being little shock. Soon after coming out from the ether, there was another light convulsion, and he was put upon six grains each of sodium and potassium bromide, every three hours. During the operation, the wound was kept constantly irrigated by a stream of 1 to 2,500 bichloride solution.

October 22d, 9:30 a.m. Passed a fair night, slept well, and feels bright; some headache. Temp. normal; pulse 78. 3:30 p.m. On account of headache, an ice-water coil was placed about head. Dressings being moist from oozing of serum, new dressings were applied. Pulse 82, temp. 100 2-5°. This was the highest temperature reached at any time. 8:00 p.m. Pulse 84, temp. 98 4-5°. Feels fairly comfortable.

October 23d, 8:15 a.m. Pulse 72, temp. 98 4-5°. Passed a rather restless night. Gave a dose of sulphate of magnesia to move bowels.

October 24th, 8:30 a.m. Pulse 72, temp. 98 4-5°. Passed a good night. Pulse 74, temp. 98 3-5°.

October 25th, 8:30 a.m. Pulse 68, temp. 98 3-5°. Slept well. Headache has ceased. Ordered to discontinue ice-water coil, but to begin using again at once, if head begins to ache. Can begin
to eat a little more solid food, milk and soup having been his regimen since the operation.

October 26th, 9:00 a. m. Pulse 90, temp. 98.9-10°C. Slept well and feels better than any time yet. The rapidity of the pulse is due to his having walked from his bed to the sofa, in another room, while the bed was being changed.

October 27th, 5:30, p. m. Pulse 68, temp. 98.1-5°C. Patient says he feels first-rate, but is very hungry. Wants to know how long he is to be kept in bed. Changed dressings. A little oozing of serum at the point where the catgut strand projected. Removed all stitches. Not a drop of pus. Union throughout by first intention.

October 28th, 8:30 a. m. Pulse 84, temp. 98.2-5°C. Found patient sitting up in bed, eating a hearty breakfast with great relish. Complains that there was some “ringing in the ears,” during the night, but otherwise says that he rested well.

October 30th, 6 p. m. Pulse 70, temp. 99.3-5. At this visit, I was greeted by a very enthusiastic patient. Says for years he had not been able to distinguish persons across the street, or tell the time by the clock across the room; but that he can now do both easily, without the aid of glasses, and he proceeded to prove the truth of his assertions. He also stated that the old “confused feeling” he had always had in the head had entirely ceased. He appears quicker and brighter in every way.

November 22d. Steady improvement since last notation. No more fits. Has been out on the street most of the time, and has discarded his correcting lenses altogether. At my request, Dr. Jones tested his eyes again to-day, and found vision for each eye expressed by the fraction 20-80.

May 8th. At time of writing, vision is found to be 20-70 for each eye. Patient has been at work all winter, and is so much brighter he does not seem like the same person. There have been no more fits.

The button of bone was not replaced. Reason for not doing so was, that I have seen accounts of one or two cases where it did not do well, but acted as a foreign body, and had to be removed finally. There can be no great advantage in returning the bone, and, if it adds one per cent to the risk, it should be left out.

To control hemorrhage, I gave one teaspoonful of ergot, one hour before the operation. The head was encircled just above the ears by a strong rubber tube, tied tight, a device first suggested by my old teacher, Dr. Starr, of New York. To make assurance doubly sure, and fearing capillary hemorrhage in spite of the rubber tube, I surrounded the proposed site of the horse-shoe shaped incision by two rows of running stitches which interlocked. Strong white silk was used for the first, and each stitch and each interval was about an inch in length. Then, taking a strong black thread, to avoid confusion, I passed the needle under the scalp where it had emerged the previous round, and brought it out where the previous suture had gone under the scalp. Then, by drawing both threads very tight, if I have made myself clear, you will see that every segment of scalp in the circle would be squeezed between these two threads in such a way as to effectually control all oozing. The method worked admirably, and, if I have occasion to do the operation again, the same method will be followed.

I have looked through the literature, as far as my opportunities would allow, and made a note of all the cases reported of operations on the brain for epilepsy. Succeeded in finding twenty-six cases,
which, with my own, make a table of twenty-seven cases, which is here appended. I have, in arranging this table, purposely omitted all reports of operations for any other condition than epilepsy. In this table will be found, (1) Name of operator. (2) Date. (3) Cause of the epilepsy. (4) The localizing symptoms. (5) Condition found. (6) The result. (See table on opposite page.)

It will be noticed, in analyzing this table of twenty-seven cases, that fifteen, or 55 5-9 per cent, were caused by traumatisms; and, I think, it is fair to assume that some of the cases whose cause was not noted were also due to injuries.

There are eight cases noted as tumors, distributed as follows: Sarcoma, 4; angioma, 1; fibroma, 1; not stated, 2. There was faulty localization in only one case, that of J. J. Putnam, of Boston. The localizing symptoms are not given. At the autopsy, a tumor was found posterior to the motor region.

Of these operations, there are nine cases said to have had "no recurrence of fits," at the time of the report; eight cases are reported as "improved;" condition not changed," one; and "fatal," nine; of the nine fatal cases, four died of shock; the other five dying from causes not directly connected with the operation. Stating this summary in the form of percentages, we have,

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No recurrence of fits</td>
<td>33 1/3% per cent</td>
</tr>
<tr>
<td>Improved</td>
<td>29%</td>
</tr>
<tr>
<td>Condition not changed</td>
<td>3%</td>
</tr>
<tr>
<td>Fatal</td>
<td>33 1/3%</td>
</tr>
</tbody>
</table>

This table of twenty-seven cases is the work of twenty different operators. Weir and Keen are credited with three cases each, and Abbe, Frank and Sheen with two each. Better results can be looked for when operators have attained a larger personal experience. Then, too, it is likely that better technique will lower the death-rate. Horsley's operations on the brain for all classes of cases give a mortality of 21 per cent. Such were the conditions, that several of the fatal cases would have lived but a short time, if no operation had been attempted.

This table has nothing about it which should be discouraging. Given, a man with confirmed epilepsy, unaffect by medical treatment, doomed to a life of constant danger, conscious that a concealed, but relentless, enemy lurks constantly near, having the feeling that he is a perpetual dread to his friends, and knowing that mental and moral degeneration are almost sure,—and what will he not risk for even a chance to be as other men are! How much would a death-rate of 33 1/3% per cent weigh with such a man against a chance of 33 1/3% per cent that there will be no recurrence of his attacks for a long interval, and with a strong hope that a permanent cure may be effected?

The question now arises, "what constitutes a cure of epilepsy?" I believe there has been altogether too much looseness in reporting cases as cured by both medical and surgical treatment. A case in point is one reported in the May number of the "American Journal of the Medical Sciences," under the caption, "Case of Epilepsy cured by Antipyrine." It illustrates both the looseness with which the word "cure" is often used by clinicians, and also how slender a thread is needed to support the reputation of a new remedy for a disease usually regarded as practically incurable. It was the case of a boy, aged 9 years, who was having several fits daily, at the time of his entrance to the hospital, in the service of Dr. McCall Anderson. Under heavy doses of antipyrine, this patient had had no fits from January 28th to March 12th, an interval of forty-three days. To add to the ridiculousness of this assumption of a "cure," I find, on
<table>
<thead>
<tr>
<th>OPERATOR</th>
<th>YR.</th>
<th>CAUSE</th>
<th>LOCALIZING SYMPTOM</th>
<th>CONDITION FOUND</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. R. F. Weir</td>
<td>1887</td>
<td>Not known</td>
<td>Twisting of right face and arm</td>
<td>Sarcoma, almond size, in left motor area.</td>
<td>Temporary complete paralysis of right limbs, and nearly complete aphasia.</td>
</tr>
<tr>
<td>2. W. W. Keen</td>
<td>1887</td>
<td>Fell from window 20 years before, when 3 years old.</td>
<td>Paresis of right side.</td>
<td>A fibroma, weighing 3 oz, 4 g., found in left motor area.</td>
<td>Recovery, with probable cure of epilepsy.</td>
</tr>
<tr>
<td>3. J. C. Garmany</td>
<td>1887</td>
<td>Fracture of skull from blow of a brick</td>
<td>The old scar</td>
<td>Sarcoma of occipital lobe.</td>
<td>Death from shock</td>
</tr>
<tr>
<td>4. R. F. Weir</td>
<td>1887</td>
<td>Unknown</td>
<td>Painful spot on right temporal bone</td>
<td>Dura apparently healthy, but when opened some serum drained away.</td>
<td>Gradual cessation of fits.</td>
</tr>
<tr>
<td>7. L. S. Pilcher</td>
<td>1888</td>
<td>A traumatism</td>
<td>The scar</td>
<td>Extreme bulging of brain tissue. Sliced off to a level with brain.</td>
<td>Death in five hours, from shock.</td>
</tr>
<tr>
<td>8. — Reeve</td>
<td>1888</td>
<td>Compound comminuted fracture</td>
<td>Scar</td>
<td>Nothing but scar tissue, which was not dissected away.</td>
<td>No recurrence at end of eighteen months after the operation.</td>
</tr>
<tr>
<td>9. — Fischer</td>
<td>1888</td>
<td>Unknown</td>
<td>Mono-brachial paresis</td>
<td>Round-celled sarcoma found in motor area.</td>
<td>Died comatose in two months.</td>
</tr>
<tr>
<td>10. E. H. Bradford</td>
<td>1888</td>
<td>Not given</td>
<td>Sensory aura of left wrist</td>
<td>Tumor weighing 0 drachams found in motor area.</td>
<td>Died in ¾ hours, from shock.</td>
</tr>
<tr>
<td>11. J. H. Lloyd</td>
<td>1888</td>
<td>Not stated</td>
<td>Uni-lateral spasms</td>
<td>Excision of motor centre, which showed atrophy of cortical cells.</td>
<td>Improved marked.</td>
</tr>
<tr>
<td>12. Jacob Frank</td>
<td>1889</td>
<td>Unknown</td>
<td>Pain and spasm in right index finger</td>
<td>Sarcoma involving the middle and lower thirds of sulcus of Rolando.</td>
<td>Improvement, with relapse in a few months.</td>
</tr>
<tr>
<td>14. H. H. A. Beach.</td>
<td>1889</td>
<td>Kick of a horse</td>
<td>Old scar</td>
<td>Spicule of bone ¾ inch long protruding into the brain substance. Circular tissue.</td>
<td>No recurrence eight months after the operation.</td>
</tr>
<tr>
<td>15. W. W. Keen</td>
<td>1889</td>
<td>A fall</td>
<td>Aura always began in left foot Point of tenderness in upper part of motor region of right side.</td>
<td>Exsered the hand centre.</td>
<td>Improved at the end of eleven months.</td>
</tr>
<tr>
<td>16. Lees &amp; Page</td>
<td>1889</td>
<td>Injury to head</td>
<td>Paresis of right arm and leg</td>
<td>Abscess in motor area.</td>
<td>Epilepsy continued. Died from chloroform given three weeks later to check an attack.</td>
</tr>
<tr>
<td>17. Williamson</td>
<td>1889</td>
<td>Struck in forehead with a rivet</td>
<td>Right sided paralysis and convulsions</td>
<td>A huge abscess.</td>
<td>Died on ninth day.</td>
</tr>
<tr>
<td>18. Sheen</td>
<td>1889</td>
<td>Blow upon forehead</td>
<td>Fests began in left thumb and index finger</td>
<td>Button of bone removed and nothing abnormal found.</td>
<td>Died in three weeks.</td>
</tr>
<tr>
<td>20. Jacob Frank</td>
<td>1890</td>
<td>From a previous operation for dementia</td>
<td>None noted, except old scar.</td>
<td>Oedema of meninges.</td>
<td>Improved mentality, and no epileptic fits to the time of report.</td>
</tr>
<tr>
<td>22. Robert Abbe</td>
<td>1890</td>
<td>Not noted</td>
<td>Not noted by any authority.</td>
<td>Oedema of meninges.</td>
<td>At end of three weeks, no more attacks, though he had averaged six, daily, before operation.</td>
</tr>
<tr>
<td>23. R. F. Weir</td>
<td>1890</td>
<td>Trauma, from explosion of a musket</td>
<td>The old scar</td>
<td>Adhesions between dura and pia.</td>
<td>Improved.</td>
</tr>
<tr>
<td>24. J. J. Putnam</td>
<td>1890</td>
<td>None known</td>
<td>Not given</td>
<td>Nothing found at operation. The autopsy revealed a tumor posterior to the motor region.</td>
<td>Died on second day.</td>
</tr>
<tr>
<td>26. E. B. Angell</td>
<td>1890</td>
<td>Not stated</td>
<td>Jacksonian epilepsy, with arm spasms</td>
<td>No lesion found. Exsised motor centre.</td>
<td>Died in three weeks.</td>
</tr>
<tr>
<td>27. B. H. Davis</td>
<td>1890</td>
<td>Blow upon head</td>
<td>The old scar</td>
<td>Spicule of bone ¾ in, long protruding into brain substance, with adherent and thickened dura.</td>
<td>No recurrence seven months after the operation.</td>
</tr>
</tbody>
</table>
looking over the previous history of this boy, that two years before, 'after the application of blisters to the head,' he did not have a single fit for fifteen months. The cessation of all treatment is sometimes followed by a long period of quiescence. A change in treatment, whether a good one or not, usually results in a temporary lengthening of the intervals between the convulsions. I am strongly inclined to believe, with Landon Carter Gray, that an interval of repose of at least five years ought to elapse, before we begin talking much about a cure. This care in reporting results ought not to cool our ardor in regard to the surgical relief of our epileptic patients. It seems as if the removal of a gross lesion, which is certainly the cause of the disease, ought to furnish reasonable grounds for expecting a permanent cure. But we must not forget that the cicatrix from the operation wound may itself produce epilepsy. Nor should we disregard the epileptic habit in cases that have been long affected. There is no doubt that, after operations which remove the entire original cause of the attacks, the convulsions may continue, through a chronic instability of certain cells having been set up by the irritating focus, which does not disappear on the removal of the latter. The prognosis of operations done early would therefore be the best.

In the early history of any new and radical procedure in surgery, it is always difficult to arrive at any agreement in regard to when it is justifiable to resort to it. What one surgeon would consider too conservative another would deem too radical. In other words, the courts have not yet enough precedents for our guidance. This unsettled condition of affairs throws more personal responsibility upon the individual surgeon. There are now a sufficient number of cases of operations on the brain for epilepsy on record to begin to formulate rules.

No man is better entitled to speak upon this subject than Victor Horsley. He lays down the dictum that in all cases of focal epilepsy, where an initial spasm of a segment or part of the body can be detected, an operation should be done. If there is no gross lesion found, the region giving the initial spasm should be excised. Only temporary paresis is likely to follow excision of a centre.

In a paper before the New York Academy of Medicine, in Nov., 1890, Dr. J. C. Minor, in summing up the results thus far obtained from trepanning for epilepsy, states that, of all those who have been operated upon, more than one-half were cured, over one-sixth were relieved, about twenty per cent died, and about three per cent were neither better nor worse for the operation. This gives a higher percentage of successes and a lower mortality than my table. I do not know upon how large a number of cases he founds his statistics.

Dr. Minor in conclusion says: "We have, then, three main indications for trephining in epilepsy that hold good, provided that medical treatment, or the removal of peripheral irritation by other methods, fails to cure or relieve.

"1st. In the distinctly traumatic epilepsies following depressed fractures and other lesions of the skull.

"2nd. In the traumatic epilepsies in which the only visible lesion consists of a scalp wound that is sensitive or tender, and upon which pressure develops either an aura, vertigo, or an epileptic seizure.

"3rd. In all epilepsies, whether traumatic or not, in which the character and development of the seizures are such as to indicate a definite motor area as the seat of a cortical lesion."
It will not be long before the latter proposition can be safely enlarged so as to include not only seizures which indicate a motor area, but also visual, olfactory, and auditory areas. Many persons have an aura characterized by nausea and faintness. May not a centre be discovered for this phenomenon?

In all cases where the question of operative interference is considered, it is important to look well to the aura. It will many times give the key to the situation. The whole phenomenon of the attack must, of course, be carefully and methodically watched and studied, but, upon the correct interpretation of the aura, a great deal depends. It is the most valuable aid we have in definitely localizing the lesion.

Finally, I think the authorities are agreed that it does not seem good treatment to postpone operative interference until the mind has been rendered imbecile, or the epileptic habit established. Do not operate upon insufficient grounds; but, if surgical interference is called for, other things being equal, the best results will follow the earliest operations.

In the preparation of this paper, I am greatly indebted to Mr. Allen Starr for the portion in regard to the present knowledge in localization. I have also used facts gathered from the files of the Medical Record, Medical News, American Journal of the Medical Sciences, Annals of Surgery, and International Journal of Surgery.

DISCUSSION.

Dr. J. E. Summers, Jr.

Some six years ago, at Grand Island, Dr. Hildreth reported a case of compound depressed fracture in a child which he had treated. Just one year ago, this child developed epilepsy, which increased with great frequency, so much so that the case was referred to Omaha, and came into my hands, and I operated in removing two combs, like coxcombs, the cells being filled with a fibrous material. This was removed with great difficulty. This case has progressed favorably, though there have been some convulsions, but they have been less and less frequent, so that, according to the last reports, they amount to practically nothing; but too short a time has elapsed for any definite result to be known. This illustrates a point in the treatment of fractures to which I would like to refer, but haven't time.

About two years ago, I performed an operation on a child who, commencing at the age of three years, had developed epilepsy, showing first in the left lower extremity, extending to the left upper extremity, and later the back. Last fall, he had a convulsion which was very severe, and about nine weeks afterwards he had another convulsion, following which he had hemiplegia on the right side, with aphasia. The contraction of the paralyzed upper extremity was so marked, and came on so rapidly, that it had ruptured a cerebral blood vessel. We removed a large button of bone, but found nothing abnormal, except along the line of the cerebral center, where we evacuated quite a large amount of serum. The further history of this case is, that the child is doing well. He says one word which he did not say before. He says "All right," and says it logically, and before he never said anything but "No, no," and shows other signs of cerebral improvement. The button of bone which we removed is about the size of a poker chip, and is here for the inspection of the Society.

Dr. Hildreth.

A word in relation to this case. Six years ago, I was called to this case. I do not say this to justify myself, but I was working under difficulties. The case was ten miles from anywhere and in a blizzard at midnight. The top of the boy's head was mashed in, and two or three ounces of brain tissue and blood had come out. I found a rent in the dura mater two inches long, or something like that. I elevated the depressed bone partially, removed some loose pieces, and told the parents the boy would die. I was in attendance for two weeks, and then I was taken with an
attack of brachial neuralgia, and could not attend to him; but the wound healed, and I told the father then, that, reasoning from surgical authorities, the case should have been trephined. But, in view of the fact that there was not a solitary symptom of compression at any time, and from consulting the so-called authorities on surgery, I reasoned that perhaps the treatment was all right. But, I find my premises were not well taken in his particular case. However, the boy recovered, and had no indications of any trouble until a year ago this spring. They had in the meantime moved to Omaha, but the father came to me and said the boy had a fit. I said to him, "You have depressed bone there, the result of that injury, or you have compression or irritation of the brain, probably." He said that they had found that the boy had been wearing a collar that was too tight for him, and they thought that was the cause of it. I did not believe that, and said to watch the boy, and if that trouble was repeated to have some one see him. He wanted to know if I would go down there, and I said, "No, I cannot do it, and attend to my patients at home," and I referred him to six names, I think, of men in Omaha, whom I knew well, and told him they were all well able to give him advice, and he fell into Dr. Summer's hands. And he wanted I should come down and be there. I told him I was very much interested in the case, and would like to know about it, and I was satisfied that it was from depressed bone. I have watched the case with very great interest on account of my former connection with it. At the time I first went to the case, I had no trephine with me, and should not have used it if I had. There was no symptom that demanded it then, and I think if I had undertaken to use the trephine alone on the boy, he would probably have been a dead boy.

Dr. B. B. Davis.

I am very well pleased with the way this paper has been taken up and discussed here. There are one or two points that I would like to speak of. One is V. Horsley's statement that more than fifty per cent of the cases of fractures of the skull result sooner or later in epilepsy. If that is true, and I have no reason to doubt it, as the statement from V. Horsley is from good authority, it seems to me that there is a great responsibility resting upon every man who has a case of depressed fracture of the skull. And whether there are any bad symptoms or not. And it seems to me that the surgeon, under these circumstances, even though the symptoms at the time do not demand it, should urge something radical being done. I have known people where there was a lapse of nine years between the injury and the time of the first attack, and I think several months or years elapse before epileptic fits begin in most of the cases.

REPORT OF SURGICAL CASES.

By W. O. Henry, M. D., Omaha.

In September, a young lady was brought into my office by a friend, who said she had fallen upon the pavement the day before, when getting out of the buggy, and had hurt her elbow quite severely, and they would like to have me examine it, and see whether or not there was anything more serious than a sprain.

I found the hand, arm and joint, very much swollen.

I then examined the joint as carefully and thoroughly as I could, giving the patient a good deal of pain, and had about come to the conclusion that there was no fracture of any kind.

I said to the friends, I believe there is no fracture, and that it is merely a bruise and sprain, but I cannot be certain without putting her under chloroform and making an examination. They consented to have the examination made in this manner, and I had Dr. J. M. Aikin administer the chloroform. When she was thoroughly relaxed, I took hold of the arm, and with the greatest ease found a fracture of the olecranon process; and so told the friends, demonstrating to them by having one of them put his hand over the fracture while I pro-
duced crepitus. I proceeded to dress the arm, and it did nicely.

The only point of interest here is this. I had carefully examined the arm, and was quite sure (though not certain) that there was no fracture, because the swelling and pain had produced a separation of the fragments, and a rigidity of the muscles, which precluded the possibility of making an accurate diagnosis until these obstacles had been overcome. Some good anaesthetic was the best and quickest method of surmounting them. Here, I again learned the lesson of making a careful and critical examination before forming a positive opinion, and the value of an anaesthetic, yea, its absolute necessity, in many cases of injury, as an aid to diagnosis.

Early in November, 1890, was called to see Frank M——, aged five years, who, some weeks before, had fallen upon the porch and hurt his elbow. The doctor who was called in that evening, so the parents said, thought there had been only a sprain, and that soon the boy would be all right; but as the swelling went down it was found that the boy could not flex his forearm upon the arm, and different medical men had been called in to see if anything could be done for the boy.

I found that the forearm was rotated inwards, and the hand pronated, while it was impossible for the boy to flex the elbow joint, or fully extend it. There was quite a projection of the lower end of the humerus at its lower, internal and anterior aspect.

There was coldness, and loss of power to flex the index and middle fingers of the hand upon the injured side.

Upon the whole, so great was the deformity that I decided to put the boy under chloroform, and straighten the arm, even if resection were necessary.

Having fully warned the parents of the dangers in the case from the proposed procedure, at their earnest solicitation, a few days later, we put the boy under chloroform; and, after making all reasonable effort to correct the deformity by manipulation, without success, I made an incision down to the humerus, just above the olecranon fossa.

In examining the bone at this point, there seemed to have been a longitudinal fracture extending nearly into the elbow-joint and an epiphysial separation permitting the internal rotatory displacement. I divided the humerus, and brought the parts nearly as possible into their normal relations. Having cleansed the wound, and inserted a drain-age tube with a few stitches to approximate the edges of the wound, I completed the dressing by fixing the forearm well upon the arm and maintaining it there with suitable splints and bandages.

Circulation was promptly restored in the fingers which had been cold so long, but the paralysis of motion remained.

The little fellow did nicely until the wound was about closed, when he was pushed over by some of the children as he was running about the house, which bruised the elbow and set up quite an erysipelatous inflammation with much suppuration. This called for free drainage, which was given, and thorough, frequent cleansing as well. After making a counter incision on the front of the arm, I cleansed the wound with hot bichloride solution, and then filled it with oakum, allowing the oakum to project through, from one opening to the other.

The boy improved in every way; and we were about turning him over to his mother's care, when diphtheria broke out in the family (a younger brother dying from it), attacking him and causing the wound to open up afresh and pour forth a most foul discharge. This
continued for a number of days, when he gradually improved and the wound closed up entirely, about eight weeks from the time the operation was done. The position of the arm, forearm and hand was very good, not, however, so nearly perfect as if these unfortunate accidents had not happened. Upon making passive motion, using electricity and friction, the arm grew rapidly in size and in usefulness, until, when I last saw him, in March, '91, he could flex and extend the arm almost as well as the uninjured one, so that he will have a very useful arm.

The points of interest in this case are:

First—The great amount of inflammation which may occur in and around a joint, after operations upon them, or in their vicinity, without destroying the joint.

Second—The utility of free drainage and thorough cleanliness in suppuration of bone, or in its immediate vicinity.

Third—While there was no diphtheritic membrane formed upon the wound, yet, so badly was the blood charged with poison, that there was breaking down of the newly formed tissue and an entire arrest of new growth.

Fourth—The unforeseen and serious complications which may arise during the process of a surgical case and yet permit a final good result.

Tracheotomy:—Was called about 11 o'clock some nights ago to perform this operation upon a little boy 2 years old, who was dying from croup.

The operation was done at the earnest solicitation of the parents and friends, although it seemed hopeless, without using any anaesthetic, and caused but little pain. There was considerable hemorrhage, but, when the tube was in its place, the breathing became perfectly easy and there was no more loss of blood.

The child promptly rallied, seemed bright and played for a while, but then began to be very restless, nervous and excitable; and, although the breathing seemed free and easy, the boy died about four or five hours after the operation.

Stricture of the urethra and retention of urine:—Was called by Dr. Nichols to see Mr. B., aged 46, who was suffering from retention of urine, caused by a stricture. About one year before, he had suffered in a like manner and said three physicians had worked with him all night and they failed to draw the urine.

On this occasion, Dr. N had made every effort to pass the stricture, but without avail, and asked me to try while he induced anaesthesia.

When the patient was fully under chloroform, I endeavored to pass the catheter but failed. I then passed two filiform bougies filling up the pockets along the canal, and in passing a third one it entered the bladder nicely, but it was grasped so firmly by the stricture that no urine flowed out beside it.

When the man had recovered consciousness the withdrawal of the bougie was followed by a free flow of urine, much to the relief and joy of all concerned.

I have cited the foregoing cases, gentlemen, not because of anything specially striking or remarkable in them, but more to illustrate the variety of surgical cases a common physician may meet with, and because that from each of them I learn some useful lessons which will be helpful to me in dealing with other like or kindred cases.

SINGULTUS AS A COMPLICATION IN SURGICAL AFFECTIONS.

By Dr. A. F. Jonas.

[Surgeon to the Methodist Episcopal and Presbyterian Hospitals, Omaha, Neb.]

In my endeavor to bring something before you of practical importance, it oc-
occurred to me that it might be of interest to discuss, in some of its aspects, a condition of such common occurrence that perhaps none of us have escaped one or more attacks in its milder forms; an affection, commonly so mild, that it is seldom spoken of in a pathological sense, and yet it may be so severe as to occasionally terminate fatally.

Permit me to trespass on your patience for a brief period in relating a train of symptoms which, when observed under certain conditions, and at particular times, fill the mind of the physician with the gravest apprehensions, and usually seal the doom of the sufferer. It is pleasant to relate our successful achievements. How eagerly we make them known, but how reticent when we must acknowledge defeat, when confronted with an obstacle that we cannot surmount. But to make our knowledge and statistics complete, it becomes our duty to record our experiences, regardless of what the ending may have been. With this duty plainly before me, I record the following cases:

**Case 1.**—Mr. M., aged 45; insurance agent. The patient is 5 ft. 4 in. in height, and weighs 220 lbs. Has a very florid complexion, and is of a nervous temperament. I first visited him at the request of Dr. Ross. He complained of pain of a throbbing character, which was most severe in the rectum, beginning at the anal orifice and extending upward and backward to the sacral and lumbar region, occasionally, also, forward to the umbilicus. Temperature 101°; pulse 90. His greatest distress, however, was produced by a violent singultus and frequent vomiting. The diaphragmatic spasms recurring every ten to fifteen seconds.

An inspection of the anal region revealed a redness and swelling posterior and bilaterally to the anus, being very painful to the touch. Two small openings, one on either side of the orifice, discharged, on pressure, an odorless, purulent secretion. A probe passed to the depth of four inches.

Under chloroform narcosis, the openings alluded to were enlarged, an abscess cavity with many pockets, encircling three-fourths of the circumference of the rectum posteriorly, and extending upward into the sacral concavity to the depth of four inches, was discovered. The abscess walls were composed of a 5 mm thick, bluish-black tissue, and firmly adherent. After a copious sublimate irrigation, the gangrenous tissues were removed with a Volkmann spoon. The wound was again flushed and then packed with 10 per cent iodoform gauze. Contrary to our expectations the singultus did not diminish, but increased. The iodoform packing was removed fourteen hours later, thinking that possibly the peripheral pressure produced by the gauze might play a part. A loose packing of sublimate gauze, sufficient for drainage, was substituted, but still no change for the better; the gauze was entirely removed and frequent irrigations made, but still the singultus continued its unabated vigor, except when under control of narcotic. The appearance of the wound improved, and the temperature went down, but the hiccough became augmented with every hour, unless held in check with drugs. The long list of antispasmodics and narcotics and nervines, including faradization, were put to their extremest tests, of which one-half grain doses of morphine were most effective. The greatest relief was derived from an abdominal bandage, drawn as tightly as I could pull it over a gastric pad, producing such deep pressure as to almost fix the diaphragm. This procedure, together with hypodermics of morphia, repeated every three-quarters of an hour, afforded relief. The symptoms always
returned when the effect of morphia wore off. Very little nourishment could be retained, while liberal quantities had been taken and retained until the singultus had appeared. The exhaustion gradually increased and death closed the scene on the fourth day after the operation.

Case 2.—Mrs. May E. G., housewife, aged 18. Had normal confinement six months ago. Was fairly well for four months, then was taken with a severe pain in right knee and thigh. She then underwent treatment by several Christian Scientists and Spiritualists, who had prescribed one to two grains of morphia daily, to quiet pain, until she fell into the hands of Dr. A. B. Somers, on Nov. 28, 1889. On Nov. 30th, Dr. Somers requested me to see the patient with him. We found a delicate, illly nourished, emaciated young woman, appearing much older than her actual age, lying upon a bed that had not been made for several weeks, upon her left side, with the right thigh strongly flexed, adducted, apparently shortened, and toes inverted; the slightest movement causing excruciating pain in the hip joint. The right gluteal fold was obliterated; the groin and upper part of the thigh was oedematous. A coxitis was easily recognized. She had had a similar attack several years before, from which she had apparently recovered.

Extension, according to Volkmann, which was applied under chloroform narcosis was instituted December 3d, 1889, affording immediate and complete relief from pain. She did well until December 5, when a most obstinate and uncontrollable singultus, accompanied by frequent vomiting, set in. There was absolutely no elevation of temperature. A long list of drugs, by mouth and subcutaneously, afforded only temporary relief. The hiccough continued day and night, with an occasional intermission. Food could not be retained on account of the constant diaphragmatic spasm. She gradually became more prostrated and died from exhaustion on Dec. 9th.

Case 3.—John G., aged 25, a colored laborer, referred to by Dr. Lord. At the age of 15, while in a tree, he fell from an upper branch to a lower one, striking upon the perineum, producing an extensive urethral laceration, resulting in much cicatricial contraction which gave him much annoyance. About two years ago he had internal urethrotomy performed, with some temporary improvement, but with a speedy recurrence and an increase of his difficulty in passing urine, which at times came away in drops. He had had several scrotal abscesses, opening spontaneously, increasing the cicatricial difficulty.

About two weeks ago the scrotum again became swollen and painful, gradually increasing, until the organs had attained an enormous size. Urine was voided with much difficulty; finally complete retention ensued. It was at this stage that I was first requested to see the case. Upon our arrival we found that there had been a spontaneous breaking, permitting the escape of a large quantity of pus through a fistula anterior to the anus. The urine was also escaping through this opening. He was free from pain. Temperature 102. He was removed to St. Joseph's hospital, where the fistula was enlarged, and the abscess cavity and its numerous pockets evacuated and irrigated daily, without effecting a reduction in temperature. The temperature continuing high, in spite of the frequent irrigations, it was determined to make an external urethrotomy. The patient was accordingly chloroformed, and it was found that no instrument of whatever size could be
passed beyond the anterior border of the scrotum. A No. 20 Charriere sound was introduced to this point, and an incision made down upon it.

The entire scrotum was composed of such a dense, hard, cicatricial mass that in order to make any progress it became necessary to split the entire scrotum. The urethra was, with the greatest difficulty, followed as far as the membranous portion, where all traces of it were lost. We were obliged to abandon the procedure, and a supra pubic course was determined on.

The bladder was opened above the symphysis pubis without difficulty. A sound was passed through the vesical opening into the urethra, and an incision made upon the point of the instrument from the perineal wound. A continuous passage was thus established. The urethra was closed separately over a catheter extending into the bulbous urethra. A tube was passed through the supra pubic opening down and through the perineal wound, attached to a longer rubber tube whose distal end rested in a vessel, draining away the urine. The supra pubic wound was sutured, except where the tube passed. Large antiseptic pads were applied and held in place by a bandage. On the following days there was much leakage of urine, necessitating frequent changing of bandages.

On the second day a hiccough set in, recurring at first only every two or three minutes, but with such violence that the urine sometimes came from the wound in spurts. The diaphragmatic spasms gradually increased in frequency, in spite of anodynes and narcotics, to seven or eight per minute, completely banishing sleep or the ability to retain food or medicines. The temperature gradually rose to 104, the consequent exhaustion increasing until the 8th day, when death relieved his suffering.

As we review the foregoing cases, the most striking features, and the only ones common to all, are that they all suffered from singultus, and that they all died. With such a termination, the queries uppermost in our minds, are, of what did they die? What was the etiological factor in the production of the train of manifestation that seems to have been the immediate cause of death?

As we enter the discussion of these problems, taking into consideration the vast number of conditions in both health and disease where we meet with singultus, that, on the one hand, is sometimes attributable to a definite origin, exhibiting an apparently distinctly and well defined and easily understood mechanism, while, on the other hand, the great majority of cases arise from no discoverable cause, and all, with a few exceptions, yield to such a multiplicity of remedies as to be most confusing, we find that our theme is a most difficult one, and our discussion must be largely of an interrogatory nature; and, in the absence of sufficient positive knowledge, we are compelled to indulge in much speculation concerning some points, while others must be left open questions.

As before stated, the most prominent feature in our cases was the hiccough of such a character that it seemed the chief cause of death. When we inquire what singultus is, we are told that hicough is one of the specially modified respiratory movements "which consists in a noise made by a sudden and involuntary contraction of the diaphragm, and a simultaneous contraction of the glottis, which arrests the air in the trachea," dependent upon a reflex action. A reflex action is defined to involve, primarily, the stimulus, the cause, and next
the sensitive end organ upon which the stimulus works until it produces a nervous impulse which travels along a nerve or nerve fiber, the afferent, or sensory nerve, inward to the central nervous system—the brain, or spinal cord. In a special portion of this central system (and oftentimes in the spinal cord, which is in great part a special organ for this function) the impulse is worked over to a reflex center, from which a new impulse is forwarded along another nerve fiber, the efferent, or motor nerve, which conducts the impulse to a nerve ending, or end organ, so stimulating the muscular or epithelial tissue with which it is connected, that these execute the visible acts called reflexes.” (Sedgewick.) And when we search for stimuli, we find that they are grouped under the heads of mechanical, thermal, electrical and chemical. Before we proceed further it will be well to examine the cases under consideration, and determine, if we can, if there are sufficient facts common to all the cases which will warrant the assumption that we had to do with a distinctly reflex phenomenon; that this reflex was due to a stimulus, or irritant, located at the seat of lesion; and whether, which is not the least object of the query, —Was singultus the cause of death?

In analyzing our cases, we find that all suffered from a grave surgical affection; that in all, the process was an inflammatory one; that in all, during some period of the affection, there had been an elevation of temperature, indicating a certain degree of septic infection. On the other hand, in each a different organ or part was involved; the duration of the disease was not the same in any two; in no two was the general physical strength the same at the time of the appearance of the singultus. Case 1 had always been a robust man, except that he had been treated for hemorrhoids. Case 3, although having had several perineal abscesses, had been able to earn a livelihood as a day laborer. Case 2 was much enfeebled and had a history of joint tuberculosis. Nor was the cause of the inflammatory process the same. In two there existed suppuration, one due to infection from the rectum, and the other to extensive infiltration of urine; and in one, a tubercular process, none could be detected, although fever existed during some period in all. Yet, at the time of the appearance of the singultus, there was high temperature in one (104°); medium high (102°) in another, and none, possibly slightly subnormal, in another. Neither did the severity of the paroxysms depend on the temperature, nor did the operative procedures exert any influence. In case 3 there was a severe and extensive operation, preceded and followed by a continuously high temperature and singultus. In case 1 the temperature gradually went down, after exposing an unusually large suppurating, gangrenous surface, followed by no effect on the existing singultus; and, in case 2, no operation was done. In the last case only, was there complete relief from pain after surgical procedure.

We are struck by the dissimilarity of the manifestations in each one of our cases. First, the different localities involved in each one, with nerve endings springing from totally different centers; second, a distinctly different morbid process in each case, originating from a different cause, dependent upon totally different microbic influences, and yet an alarming singultus in all. Now when we attempt to apply the theory of reflexes to our cases, where the thoracic spasm, or the effect, is alike in all, and the points of supposed irritants, or cause, so dissimilar, we find ourselves confronted with a problem difficult of solu-
When we undertake to follow the course of an impulse induced by a stimulus in the perirectal space, as in case 1, we find the nerve supply from both the spinal and sympathetic nervous symptoms exceedingly complicated, and so extensive that it becomes a perplexing question which one of the two systems—or whether both—takes the leading part in forwarding the impulses; and it requires a stretch of the imagination to follow such an impulse upward through the afferent track to one of several reflex centres, because the several groups of muscles whose action constitutes a singultus are supplied by nerves originating in different centres with several ganglia in each of their courses. We find that the afferent impulse of the reflex act are conveyed by the gastric branches of the vagus and the phrenic nerve, and the closure of the glottis forwarded by means of the inferior laryngeal nerve. (Foster.)

In case 2, we are confronted by the same perplexity. The stimulus would be searched for in the sensitive terminals of the articular and muscular branches of the sacral plexus, great sciatic, and obturators, and from them follow the same indefinite course as in the preceding. In case 3, the mechanism would be similar to that of the first case.

When we consider that in each case a different region, a different organ, with a totally different function, under different nerve supply was involved, and, if the cause of the effect was actually in each lesion, we begin to wonder how it can be that these dissimilar stimuli; or ptomaines, from dissimilar points should all be transmitted through the same reflex centres. I have seen and operated on almost every variety of rectal disease, including a number of very large abscesses; done quite a number of perineal sections for various purposes; resected a number of hip joints, and treated a large number by extension and fixation; many of these cases had gone through a long period of abscess formation, reducing the patient's strength to the lowest ebb,—but singultus was observed in none except these here detailed.

In view of all this evidence, one is forced to ask himself, were the points of irritation situated in the lesions alluded to, and is the reflex of these afferent impulses from various sources a matter of definite action or chance in producing singultus? It cannot be chance, for all vital phenomena are under the direction of definite and fixed laws, subject only to such variations as are imposed by the influence of environment. If it is not chance, then it must be definite action, the impulse proceeding from a definite point, depending upon a specific stimulus (like tetanus or rabies), traveling along a definite route to a definite center. And, if it is a definite action, we must dismiss the theory that the stimuli inducing the singultus in our cases was located in the lesions described, and we must search for the points of reflex elsewhere.

Clinical observation has shown us that singultus is frequently associated with stomach and peritoneal affections. This fact, together with the peculiar association of the pneumogastric as an afferent nerve, with the respiratory center in the medulla oblongata, throws much light upon our theme; but, when we search for definite points from which reflex actions take place, to always and invariably induce singultus, we are met by greater confusion than ever, when we take into consideration that hiccup has been observed with almost every known abdominal, thoracic and other affections, and most frequently, in apparent perfect health, yielding to a variety of remedies,
both mechanical and medicinal, too numerous to mention.

In this discussion, we are not concerned as to the exact location of these centers. We have attempted to show that the stimuli were not located in the morbid processes most apparent, but we believe that the singultus was merely a complication, a coincidence, dependent upon some other obscure cause. The prolonged severity of the paroxysmal affection can be explained upon the ground that the toxic influence, originating in lesions described, had been such as to so reduce the inhibitory influences of the centers governing the group of muscles involved in the singultus, and that the primary points of reflex were located elsewhere.

That the chief cause of death was exhaustion induced by singultus is so evident as to need no discussion, when we recall the fact that no food could be retained, being rejected almost as soon as taken, depriving the system of all nourishment, in a patient subjected to muscular efforts so violent as not only to rapidly exhaust all strength, but also to deprive him of sleep.

DISCUSSION.

Dr. Lord:

I have but a word, and that is only in the line of suggestion. I do not know that I can add anything of value, but I simply want to say this: In my medical practice, I have never had a case of hiccough, but that I have succeeded in handling it. The frequency of hiccough, I have observed, is due to the excessive use of alcohol and other forms of stimulants, such as strychnia and atropine as tonics, for instance, and the use of morphia to paralyze reflexes. It is simply due to a temporary exhaustion by alcohol that these reflexes are established, and consequently, the remedies act all right in other forms of the disease—from overloaded stomach or from other causes. Powerful stimulant remedies as musk, strychnia and the like, together with large doses of quinine, have always relieved these cases. I take it that these are due to such profound exhaustion that it is only a symptom of approaching dissolution, and does indicate a very grave state of affairs, and I do not believe in that class of cases we are going to find anything to help them. These cases reported by Dr. Jonas, on the face of them, show such profound exhaustion. The system has been so reduced by excessive drain, that it was a case in which there was not very much to be done.

Dr. Stewart:

I had a case in medical practice which has troubled me for some time, and I am glad this discussion came up as to why it continued as it did. I had a case of lobar-pneumonia, where the hiccoughs would continue for twelve hours without anything taking effect, then would stop and be quiet for twelve hours, and the patient was in this condition for ten days, the hiccough never ceasing longer than ten hours at one time. The patient gradually grew better. I gave morphia to quiet him, and under stimulants and milk, and such things, the case gradually got well. I have been unable to find any such cases in the histories I have studied.

Dr. C. Inches:

I have had one or two of these cases in a lifetime, and I never want to have them again. They were surgical cases; and I am inclined to say when the last word is spoken, that the idea of Dr. Lord, that it is a symptom of approaching dissolution, is about right; that your fight is a losing one.

Dr. Jonas:

I do not deny that singultus is a very dangerous manifestation in any condition which has produced exhaustion of the vital forces. I do not deny that it is often an indication that death is approaching; and that it is a very grave symptom in grave surgical lesions. But I do deny that it is always an indication of extreme physical exhaustion, as has been proven by at least one of our cases. In the first case related, the patient with
the rectal trouble was a strong, vigorous man, and had been up to the time when the symptoms appeared, which afterwards proved to be an abscess; and, up to the time the singultus appeared, he ate heartily and enjoyed his meals. The singultus appeared and continued incessantly until death ensued in this case. It is not always an indication of extreme exhaustion. I wished to bring out this matter of reflex. We are too prone to satisfy ourselves by terming many obscure manifestations as reflexes.

Whenever we have a difficulty which we cannot very satisfactorily explain, it is classed under the very general and convenient heads of malaria, hysteria and reflex. We ought not simply to give it a name, for this is not scientific, but to study out for ourselves the structures involved, the connection with other facts in the disease, and, after we have followed the affection from the beginning to the end, give the disease a name, if we can.
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