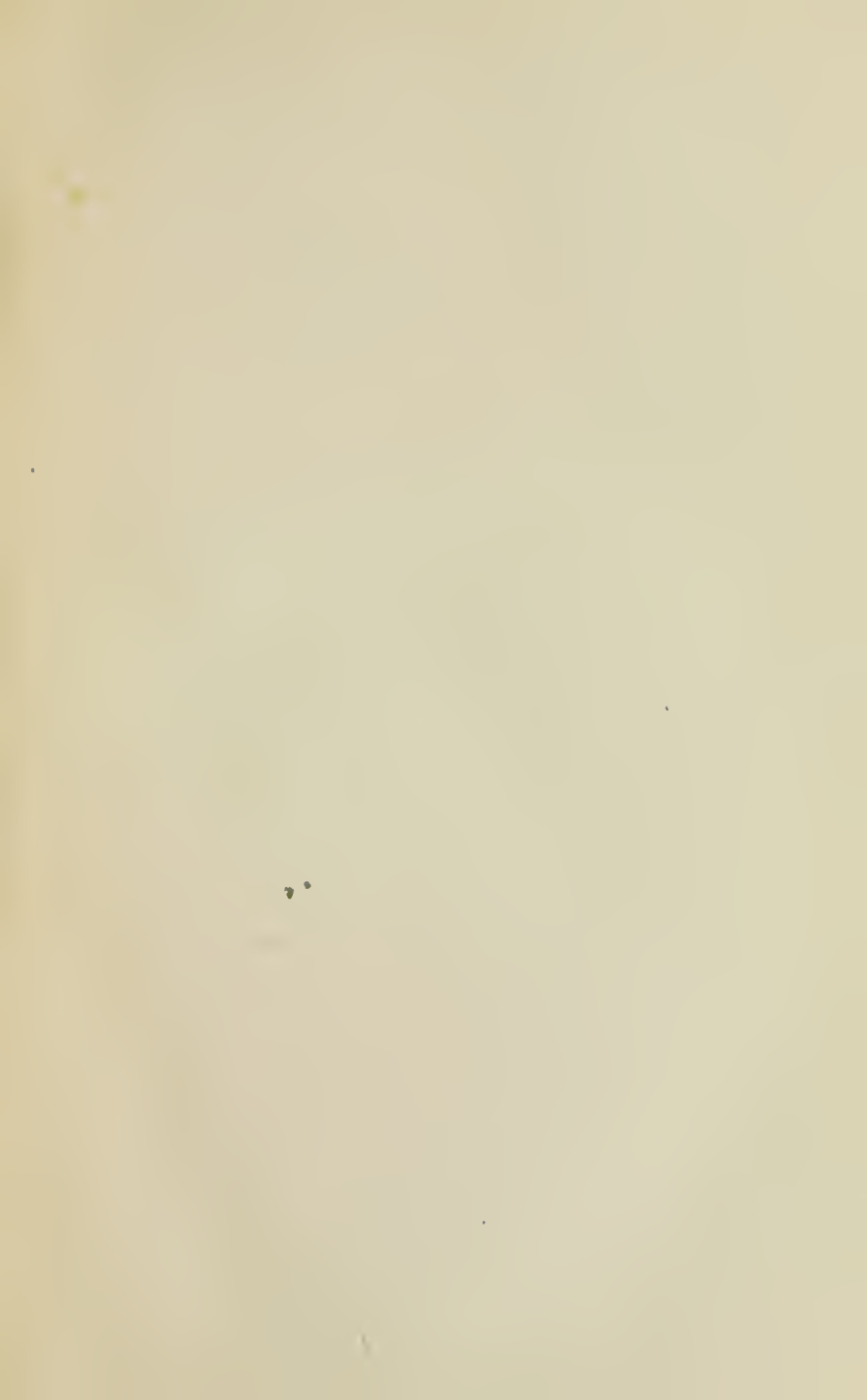


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PROCEEDINGS

OF THE

Connecticut Medical Society,

1900.

ONE HUNDRED AND EIGHTH ANNUAL CONVENTION,
HELD AT NEW HAVEN, MAY 23D AND 24TH.

PUBLISHED BY THE SOCIETY.

C. S. RODMAN, M.D.,

L. B. ALMY, M.D.,

N. E. WORDIN, M.D.,

Publication Committee.

1900

The Connecticut Medical Society does not hold itself responsible for the opinions contained in any article, unless such opinions are endorsed by special vote.

All communications intended for the Connecticut Medical Society must be addressed to N. E. Wordin, M.D., Bridgeport, Conn.

The next Annual Meeting of the Connecticut Medical Society will be held in Hartford, May 22 and 23, 1901.

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OFFICERS OF THE SOCIETY.

1900—1901.

PRESIDENT.

LEONARD B. ALMY, Norwich.

VICE PRESIDENT.

JOHN H. GRANNIS, Old Saybrook.

VICE PRESIDENTS, ex-officio.

WILLIAM T. BACON,

CARL E. MUNGER,

RUSH W. KIMBALL,

LOREN T. DAY,

SELDEN B. OVERLOCK,

JOHN C. KENDALL,

GEORGE N. LAWSON,

FRANK L. SMITH.

TREASURER.

W. W. KNIGHT.

SECRETARY.

N. E. WORDIN.

ASSISTANT SECRETARY.

H. S. MILES.

COMMITTEE ON MATTERS OF PROFESSIONAL INTEREST IN THE STATE.

A. N. ALLING, J. G. STANTON,

G. C. SEGUR.

STANDING COMMITTEES.

Committee to Nominate Physician to the Retreat for the Insane.

E. P. SWASEY, M.D., E. K. LEONARD, M.D.,
JOHN B. KENT, M.D., FRANCIS D. EDGERTON, M.D.,
H. S. FULLER, M.D.

Committee on Legislation.

M. STORRS, M.D., F. BACON, M.D.,
L. S. PADDOCK, M.D., E. F. PARSONS, M.D.,
N. E. WORDIN, M.D.,
E. J. McKNIGHT, M.D., Hartford County.
O. J. D. HUGHES, M.D., New Haven County.
F. N. BRAMAN, M.D., New London County.
J. W. WRIGHT, M.D. Fairfield County.
J. B. KENT, M.D., Windham County.
R. S. GOODWIN, M.D., Litchfield County.
FRANK K. HALLOCK, M.D., Middlesex County.
C. B. NEWTON, M.D., Tolland County.

On Medical Examination.

J. FRANCIS CALEF, M.D., WALTER L. BARBER, M.D.,
MAX MAILHOUSE, M.D., HORACE S. FULLER, M.D.,
JOHN W. WRIGHT, M.D.

On Honorary Members and Degrees.

F. M. WILSON, M.D., M. C. O'CONNOR, M.D.,
OLIVER C. SMITH, M.D.

Committee on Publication.

CHARLES S. RODMAN, M.D., ex-officio.
LEONARD B. ALMY, M.D., ex-officio.
N. E. WORDIN, M.D., ex-officio.

Committee of Arrangements.

H. G. HOWE, M.D., Anniversary Chairman.
P. H. INGALLS, M.D.,
E. K. ROOT, M.D.,
E. C. DICKERMAN, M.D.

PROCEEDINGS

OF THE

Connecticut Medical Society,

ONE HUNDRED AND EIGHTH ANNUAL MEETING.

The President and Fellows of the Connecticut Medical Society met in the Hall of the Young Men's Republican Club, corner of Crown and Temple streets, New Haven, on Wednesday, May 23, 1900, at 2:20 p. m., with an unusually large attendance. The President, Dr. Rodman, called the meeting to order. The Committee on Credentials made its report by calling the roll of regularly appointed delegates.

FELLOWS, *ex-officio*.

President.

CHARLES S. RODMAN.

Vice-President.

LEONARD B. ALMY.

Vice Presidents, ex-officio.

*WILLIAM T. BACON,	*SELDEN B. OVERLOCK,
CARL E. MUNGER,	*JOHN C. KENDALL,
*RUSH W. KIMBALL,	*GEORGE N. LAWSON,
LOREN T. DAY,	*FRANK L. SMITH.

Treasurer.

WILLIAM W. KNIGHT.

Secretary.

N. E. WORDIN.

Committee on Matters of Professional Interest in the State.

O. T. OSBORNE,	*L. W. BACON, JR.,
*J. G. STANTON.	

*Absent.

FELLOWS BY COUNTIES, ELECTED IN 1900.

Hartford County.

Harmon G. Howe, Joseph E. Root,
 • L. A. Davison, Edward G. Fox,
 Ida Gridley-Case.

New Haven County.

Max Mailhouse, Frank H. Wheeler,
 Marvin Smith, Edward W. Smith,
 John F. Barnett.

New London County.

*George R. Harris, *William H. Gray,
 Griswold Bragaw, *E. P. Brewer,
 Julian LaPierre.

Fairfield County.

Frederick M. Wilson, *J. Murray Johnson,
 *Herbert E. Smyth, *J. Reed Topping,
 Edward M. Smith.

Windham County.

Henry Hammond, Omar LaRue,
 †J. Bryden Kent, *William H. Judson,
 *Charles LeClair.

Litchfield County.

*Jerome S. Bissell, *Frank H. Lee,
 Albert L. House, *James H. North,
 Elias Pratt.

Middlesex County.

*J. Francis Calef, George W. Burke,
 Arthur B. Coleburn, F. D. Edgerton,
 John E. Loveland.

Tolland County.

William C. Haven, William L. Higgins,
 *Cyrus B. Newton.

*Absent.

†In place of T. Morton Hills.

The President then read his

ADDRESS TO THE FELLOWS.

FELLOWS OF THE CONNECTICUT MEDICAL SOCIETY,

Gentlemen:—It is my privilege to welcome you to this the 108th annual meeting of our Society and to preside over your deliberations. It is my duty to present for your consideration matter which, in my judgment, may require your attention, thereafter to obey your commands and declare your will.

As Fellows of the Connecticut Medical Society, we are an executive committee to whose care are intrusted the business affairs of the Society. While the efficiency of a smaller committee is often shown, there is little in our history to indicate that our number or the constitutional duty of suggestion imposed upon the presiding officer has seriously lessened the individual responsibility of our members. Rarely have mistakes been made in the attitude of the Connecticut Medical Society toward matters affecting the common weal, toward legislation relating to the welfare of the people or the honor of our profession.

The necrology of the past year and the changes in our membership have been presented and summarized in our Secretary's report. To the Committees of Biographical Sketches we look for outlines of the lives and achievements of those who have left us to join the silent majority. Matters properly brought to your consideration at this time pertain to the care and preservation of our archives and writings, to alterations in our by-laws and organization made necessary by changed conditions, to our position relative to legislation which shall tend to the prevention and extinction of disease and also to all enactments by whosoever proposed which shall affect the standing, usefulness, and influence of our profession, and consequently the welfare of the community.

Eight years ago the directors of the New Haven Free Public Library replied to the committee appointed by our Society "to secure a suitable place for the preservation of the archives of the Society," voting to accept the books and place them on their shelves. The books were a loan to be used for reference in the library.

From a letter received from our Secretary last November, I quote:—"The morning has brought me two old documents which are valuable from a historical point of view. One is Communications of the Medical Society of Connecticut, No. 1, Vol. 1, 1810. The other is the 'License to Practice as a Physician' given to Thomas Morse by the Fellows of the Connecticut Medical Society and signed by Eneas Munson, President. It is dated April 25, 1796. It has upon it the seal of our Society. This puts the origin of the seal within less than four years after the formation of the Society. Dr. Rienzi Robinson sent these relics. Some time ago Dr. Gurdon W. Russell gave me some letters of interest. I have the first record book of the Society and also that of Windham County. It is important that a place be selected for these valuable documents, and if we have a place for them we are likely to get more of them."

On February 11th, of the present year, I visited the New Haven Free Library and ascertained the following facts: Two or three hundred books were received some time after making the above arrangement as fully detailed in the Proceedings of 1892, perhaps as many more were sent last summer, being chiefly exchanges, the Transactions of other State Societies. They are in a storeroom or closet inaccessible to the public. Up to the date of my visit no one had ever called for them. The Library is crowded and will probably not give them shelf room, catalogue or arrange them, so long, at least, as they remain the property of our Society. The books are of little value except to the student of history; to him they may prove invaluable. I recommend that they be given to the Hartford Medical Society on condition that they be catalogued and preserved in the Hunt Memorial Building available for refer-

ence. Under date of April 5, 1900, Dr. Frederick T. Simpson writes, that it is entirely within his authority as librarian to accept the records, exchanges, etc., of this Society.

On March 1st, I received the following communication from the Association of Medical Librarians: "I enclose the little 'handbook' of the Association of Medical Librarians, which will help to show you and your Society that we are making an earnest and systematic effort to encourage the existence of good medical reference libraries throughout the United States, a work that has been too long neglected. We have succeeded in establishing our 'Exchange' whereby we trust we shall be enabled to aid in completing the files and filling the 'wants' of our constituent libraries and of others applying to join our Association.

"One of the methods of doing this will be to act in distributing the Transactions and Reports of the principal medical societies of the United States. We beg that you will ask your Society to vote the gift to our Association of fifty copies of your annual Transactions. We will pay express or freight charges, and in due time will account to your Society as to the disposal of the volumes.

"We purpose giving one copy to each of the constituent libraries of the Association not already having it. If you have a library we shall be glad in time to present to you books equal to, or exceeding in value those you give to us. Although our membership does not yet number fifty, it will undoubtedly soon reach that number.

"However, if you cannot donate so many volumes as we have asked, we shall be grateful for a smaller number. If you have any copies of your Reports and Transactions on hand, of past years, we hope that you will donate these to us, with the condition that they shall be carefully distributed to public medical libraries in need of them.

"In asking your Society to vote upon our request, it would save a great deal of labor in the future if your Secretary should be authorized to make the donation each year, and without a special vote, so long as our Association is engaged in the un-

selfish work for the good of the profession and for the preservation of medical literature.”

Among those associated in this enterprise, in addition to Dr. Geo. M. Gould, the lexicographer and writer, are Drs. J. C. Merrill of the Army Medical Museum and Library at Washington, C. Perry Fisher, librarian College of Physicians, Philadelphia, William Osler of Johns Hopkins, M. D. Mann of Buffalo University, and others equally well known.

I recommend that fifty copies of our Proceedings be given yearly to the Association of Medical Librarians, and that if our books and archives are intrusted to the Hartford Medical Society, its librarian be authorized to make exchanges of duplicate volumes.

As regards the government of this society, I suggest that our by-laws be modified in such a manner that the nominating committee be directed to present the names of two candidates for each of the several offices to be filled. An amendment of similar intent, but more radical, was defeated a year ago. It was presented and acted upon in conjunction with another amendment requiring the nominating committee to meet and make nominations two weeks before the annual meeting of the Society. To this, the difficulty of securing such meeting which is in no way prevented by our constitution, was not the only objection offered. These two amendments, considered not separately, but as one, were in my opinion wisely defeated.

Should this change be made it will be discretionary with the nominating committee, whether they select two candidates for any office from the same or different counties. Should the result be to interrupt sometimes the custom of selecting the highest officers from the several counties in rotation, no injustice will be done. It may rightly happen that a county having twelve times the membership of another may furnish more candidates for official position. To our Fellows will be given a wider field for selection. It is their duty to elect those who will contribute most to the efficiency and success of the Connecticut Medical Society. Such change, if favorably considered, cannot become effective for a year or two. It is

for you to consider whether its ultimate adoption may promote interest in our Society and advance its reputation.

The only medical legislation enacted by the last General Assembly was an act providing for the testing of the eyesight of pupils in the public schools. The law (page 56 Proceedings 1899) has gone into effect. No report has yet been made by the State Board of Education which is charged with its enforcement. Countless instances of its beneficial action can be adduced. On the other hand, there has been in some quarters, criticism, for which there has been a reason. In three rooms of a single school, of 130 pupils tested, ninety-six were reported as defective. They were pupils of the lower grades. Generally, however, discretion has been exercised in the conduct of the examination and only a reasonable percentage of pupils reported as suffering from eye-strain or defective vision.

Doubtless the conclusion will be reached in Connecticut as in Minneapolis, Baltimore, and elsewhere, where functional examination of the eyes of school-children is maintained, namely, that a rigid testing of pupils in the lowest grades with the conventional cards used in ophthalmic practice is unprofitable. The meshes in the net should be large enough to allow the little ones to escape until sufficiently advanced to render recognition of their defects an easy task. Reasonably construed, the law will benefit our army of school-children and prove the best substitute for the ideal, viz., examinations by an expert in ophthalmology. It appears that the discretionary power vested in the State Board of Education is ample, and that additional legislation is unnecessary.

At our last meeting, we as a society, committed ourselves to the advocacy of a state hospital for consumptives. Reasons for the establishment of such an hospital were cogently presented in the report of a Committee on Matters of Professional Interest. Phthisis is more common than any other disease, it is known that it is infectious and that it is curable in a certain proportion. Exclusion of the disease from the wards of our hospitals is becoming general, and this with the approval of non-medical managers and of the public.

I recommend that the Legislative Committee be instructed to present the matter to the next General Assembly and urge that Connecticut take its place in line with Massachusetts and New York, in establishing a state hospital for consumptives.

Modification of the medical practice law should also be advocated at the next and every successive meeting of the General Assembly until reform is secured. The necessity for reciprocity in medical licensing, is everywhere accepted; the difficulties have hitherto been deterrent. The absurdity of requiring a physician who has, it may be, met the highest requirements of his profession, to go before examining boards composed perhaps of his inferiors, and to be examined like a school-boy with questions culled from the latest text-books is obvious, not only to us, but to the laity. Existing provisions must be modified, and it is better that we as a society, draft and advocate the enactment of a just law.

The difficulties in the way will be greatly lessened by substituting for the committees of the medical societies a single board appointed by the Governor of the State. Such boards in many states have charge of the examination and licensing of candidates. The legal rights of the smaller societies have everywhere been conserved by a state board, on which they have representation and serious opposition to a properly drawn bill is improbable. With the growing sentiment in favor of reciprocity in state licensing, with the work done towards its attainment elsewhere, you are familiar through the journals and society reports.

Indicative of the probable coöperation in Connecticut of the different Societies in an effort to secure the establishment of a state board of medical examiners, is the action taken in our sister state a few weeks ago. At the fiftieth meeting of the Rhode Island Homeopathic Society, held January 12, 1900, at Providence, resolutions were adopted without a dissenting vote calling upon the General Assembly of the State of Rhode Island to establish a state board with power to examine all applicants and advocating reciprocity with all states having an equal standard with their own, this to be on a par with the

highest. By formal resolution copies of the vote, the purpose of which has been stated, were forwarded to this Society. The time is therefore favorable for reform. Medical practitioners, irrespective of society affiliations, favor unification of medical practice laws and uniform requirements, reciprocity in medical licenses upon the basis of such unification and State control.

Early in the present year two matters were referred to me, as President of this Society. In the one, my action was obligatory and in conformity to the Medical Practice Act. For the other there was neither law nor precedent. I acted as did the Presidents of the medical societies of many other states, and also upon the advice of our Secretary.

Dr. Lindsley of the State Board of Health notified me on January 10th that Dr. Chas. B. Graves of New London, nominated at our last meeting to the Committee on Medical Examination, declined the appointment, making a vacancy in the Board of Examiners. This notification being on the eve of the meeting of the State Board of Health, an immediate nomination of a candidate who had consented to serve was requested. The further suggestion was offered that some one be selected whose residence made it fairly convenient to reach New Haven, the place for the meetings of the Examining Board. The acceptance of Dr. W. L. Barber having been secured, his name was presented and he was appointed by the State Board of Health to fill the vacancy.

At about the same time the Committee on National Legislation of the American Medical Association, consisting of Drs. H. L. E. Johnson of Washington, William H. Welch of Baltimore, William L. Rodman of Philadelphia, requested the appointment of a delegate representing the Connecticut Medical Society to meet and confer with them in Washington, D. C. This action was in accordance with the resolution adopted by the American Medical Association on June 7, 1899, which is as follows, viz:—

RESOLVED: That the Special Committee on Legislation be authorized to invite, in the name of the American Medical

Association, the Army Medical Service, the Navy Medical Service, the Marine Hospital Service, and each State Society of legally qualified practitioners of medicine, to send one delegate each to a conference to be held at Washington, D.C., at such time as the Committee may determine; such conference to consider the medical and sanitary legislation now pending, and the members to report to their respective societies such action as in their judgment ought to be taken.

Among the important measures to be considered, and concerning which concurrent action in the different states was desired, were the anti-vivisection bill, now pending, and the unification of the various medical practice acts looking toward ultimate reciprocity. I was fortunate in securing the acceptance of Dr. Eliot of New Haven, who, as delegate so appointed, attended the Conference held at Washington at the beginning of the present month, and to whom we may look for a full report of that which was accomplished in the way of organization, and for that which is sought as a result of concerted action hereafter.

I have, however, become so impressed with the importance of representation at such conferences, that I recommend to this Society the annual appointment of a delegate, who shall represent us before the Committee on National Legislation of American Medical Association, and that the actual traveling expenses to an amount not exceeding \$20 per year be paid by this Society.

At our last meeting the official endorsement of the Society was given to a medical directory to be published in New York. The Assistant Secretary was appointed a committee to cooperate in the compilation. The result demonstrated that no officer of this Society can render a cooperation in such work satisfactory to himself and to our members. I recommend that the endorsement of this Society be withdrawn from what appears to be and apparently should be purely a commercial enterprise.

Thanking you for your attention to the various matters to which your attention has been called, I declare the 108th

meeting of the Connecticut Medical Society open for the transaction of business.

The regular committees were then announced as follows :

On Credentials.

N. E. Wordin, Marvin Smith.

On Unfinished Business.

F. D. Edgerton, W. T. Bacon, T. M. Hill.

On County Resolves.

J. La Pierre, E. Pratt, L. T. Day.

To Nominate Essayists on the Progress of Medicine and Surgery.

O. T. Osborne, L. A. Davison, J. C. Kendall.

Auditing.

C. B. Newton, F. N. Braman.

Reception of Delegates and Guests.

A. N. Alling, H. L. Swain, G. Eliot.

The first committee called for was that on Unfinished Business. Dr. Edgerton responded with the statement that when the by-laws were amended and the office of Assistant Secretary was established no provision was made that this officer should be a Fellow, as are the other officers of the Society. Therefore the Committee recommend the adoption of the amendment proposed by the President in his address last year, and that the words Assistant Secretary be added after the word Secretary in Chap. III, Sec. 2, which remedies the defect. The report was accepted.

REPORT OF THE TREASURER.

To the President and Fellows of the Connecticut Medical Society :

As Treasurer, I would respectfully present the following

report of the finances of the Society for the year ended May 23, 1900.

RECEIPTS.

Balance from old account		\$350.34
Cash received from taxes collected by County Clerks :		
Hartford County	\$253.80	
New Haven County	320.40	
Fairfield County	120.60	
New London County	82.40	
Windham County	57.60	
Middlesex County	70.20	
Litchfield County	82.40	
Tolland County	23.40	
	<hr/>	
Total taxes		\$1,010.80
Cash received for the Rush Monument Fund from the County Clerks :		
Windham County	\$ 43.00	
New London County	40.00	
Litchfield County	15.28	
	<hr/>	
Total collected for the Rush Monument Fund		\$98.28
		<hr/>
Total receipts		\$1,459.42

EXPENSES.

Printing Proceedings	\$684.81	
Postage and expressage	86.90	
Printing and stationery	78.01	
Salary of Secretary	150.00	
Expenses of Secretary	4.30	
Salary of Treasurer	25.00	
	<hr/>	
Total expenses		\$1,028.82
Paid Treasurer of Rush Monument Fund		98.28
Cash on hand May 23, 1900		332.32
		<hr/>
Total		\$1,459.42

ARREARS IN TAX OF 1899.

Hartford County	Nothing
New Haven County	\$58.00
Fairfield County	102.00
New London County	28.00
Windham County	24.00
Litchfield County	10.00
Tolland County	Nothing
Middlesex County	Nothing
	<hr/>
Total amount in arrears	\$256.00

For some unknown reason collections have been poor this year and consequently there is a very large amount in arrears and expenses have exceeded receipts by about \$18.00. I am in hopes that renewed diligence on the part of the County Clerks the coming year will repair this deficiency and thereby render unnecessary an increase in the amount of the tax.

The sum paid to the Treasurer of the Rush Monument Fund was the result of the resolution passed two years ago directing the County Clerks to receive contributions to this fund. It will be noticed that only three counties made any contribution for this object, Windham, New London and Litchfield.

Respectfully presented,
 W. W. KNIGHT, Treasurer.

It was referred to the Auditing Committee.

Of the Special Committees, the Medicolegal made no report.

For the Committee on Medical Directory Dr. LaPierre stated that after his appointment by the Society to attend to the matter he wrote to Dr. Wiggin. He received reply that most of the material was already in type. It was sent to him for correction. He compared it with the list in the Proceedings which covers only the membership of the State Society.

He had no means of knowing the physicians outside our own membership. The list was corrected from the Proceedings and on the day the list was returned he received notice that the book was to be issued and they asked for the seal. The matter was referred to the Secretary. The seal was given under agreement that the list of members should be published as revised. The Directory was issued soon after his appointment. They have asked if they could have the seal again. The correspondence has been pleasant. He has been invited to a meeting of the Committee but has been unable to attend. The Report was not acted upon being left for

THE COMMITTEE TO CONSIDER THE RECOMMENDATIONS IN
THE PRESIDENT'S ADDRESS,

which immediately followed.

The following recommendations of the President have been considered by this committee.

(a) The books and documents referred to in the President's address should be given to the Hartford Medical Society and such books and papers as may hereafter come into the possession of the Connecticut Medical Society to be catalogued and preserved in the Hunt Memorial Building, and to be available at all proper times to the members of the Connecticut Medical Society.

(b) As to the gift of fifty volumes of the Proceedings of this Society to the Association of Medical Librarians, we recommend that the President's suggestion to that effect receive due consideration, and that such a vote be passed by this Society with the understanding that books of a similar character and of a number and importance equal to the gift of this Society be given in exchange.

(c) Your Committee is in accord with the suggestion that the by-laws be so modified that the nominating committee be directed to bring in the names of two candidates for each elective office, and this irrespective of county residence.

(d) This Committee believing that patients in the wards of general hospitals should not be subjected to infection from tubercular cases, would urge upon this Society the great desirability of a State Hospital for Consumptives being established and coincide with your President's recommendation to that effect.

(e) The great need of reciprocity in medical examinations is so apparent that there should be no hesitation in this Society using its influence to have such medical license examining laws passed as shall do away with the present condition which makes it possible for physicians able and skillful and allowed to practice in one State, to be debarred from practicing in any other.

(f) The President's recommendation that a delegate be annually appointed to represent the Connecticut Medical Society before the Committee on National Legislation of the American Medical Association, and that his actual traveling expenses not to exceed \$20 be furnished, meets with the approval of this Committee.

(g) This Committee believes that it is for the best interests of this Society that any official endorsement of a medical directory should not be entertained.

CARL E. MUNGER,
JOSEPH E. ROOT,
EDWARD M. SMITH.

On motion of Dr. Edgerton the recommendations were taken up in detail.

First—That the books and papers be given to the Hartford Medical Society. Dr. Edgerton said that the word give was not properly defined. Does it mean given in custody, or that we are to give them absolutely, all our books? He moved that it should read, "given in custody."

Dr. Rodman, Dr. Almy being in the chair, thought the books should be placed where they could be made available. Eight years ago they were given in custody to the New Haven Library. He went to see them. The librarian

said the morning, when the sun was bright was the best time to see them. He found them stowed away up in a closet with one small window and no light, in a dry-goods box. Wherever they might be he hoped they would not be in that kind of custody.

Dr. Eliot.—It doesn't seem probable that the Connecticut Medical Society will ever have a library of its own. It would seem ungracious to tie a string to them if they should be given to the Hartford Medical Society. It might be wise to give the copies of the early volumes to members. It would be the proper thing to give the books outright to the Hartford Society.

Dr. J. E. Root.—The suggestion is a good one. A few books scattered about in dry-goods boxes will be of no profit. What we own we care for. The Hunt Memorial Building is a place where the City, County and State societies meet. There is no other place where so many physicians meet. But they would not give the books so much thought if they were to be carried away in a few years.

Dr. C. A. Lindsley said he had something to do with the depositing of the books some years ago. Mr. Sargent was mayor of the city and interested himself. Yale refused the books because we would not give them and the New Haven Free Public Library agreed to take them and put them on their shelves. When, however, they found out what the books were they took a different view. The books are repetitions of volumes. He agrees with Dr. Edgerton. It is not wise to make an out and out gift provided they will receive them in custody. Some time we may have a library of our own and a place for them. It is best to be on our guard should that time come.

Dr. Rodman.—The custodian, in answer to my question whether the books were not to be catalogued and put on the shelves, said certainly not, as long as they do not belong to the library. If they had belonged to it they could have got onto the shelves. But now they would not be catalogued even if they should be given to the library.

Dr. Edgerton.—The books can not be duplicated and they are valuable. We can't compare the New Haven with the Hartford library. The latter is a part of us, and has

the same interest with us. The books will be properly cared for if put in custody at Hartford. It would be a sorry thing to put them beyond our control. An amendment was made by Dr. Edgerton and adopted that the books be given in custody to the Hartford Medical Society.

Second—That a gift of fifty volumes annually be made to the Association of Medical Librarians. This was adopted on motion made by Dr. Mailhouse.

Third—That the by-laws be modified so that the Nominating Committee shall be directed to present the names of two candidates for each of the several offices to be filled.

Dr. Edgerton.—This is phraseology which seems little, but which means much. For years it has been an unwritten law that each county in order should have its President. If now the nominating committee names two candidates, the continuity is broken and the law is destroyed. Let us know what we are talking about and what we are going to do.

Dr. Osborne suggested that Dr. Munger offer a formal resolution which should in regular order be laid upon the table and be acted upon next year.

The entire matter of the change of by-law was laid upon the table.

Fourth—That the Legislative Committee be instructed to present before the next General Assembly and urge the establishment by the State of a hospital for consumptives.

Dr. Howe moved to lay it on the table on the ground that the State is not yet ready for such action. The motion was lost.

Dr. Mailhouse moved to accept. We ought to begin to agitate at once. Connecticut is behind in medical matters. Our Society is ready and ought to begin to discuss and urge the move.

Dr. Lindsley approves the plan. It is not probable that we shall succeed the first time. The object is one of inestimable value. We ought to do ourselves credit by initiating the move. The resolutions were adopted by the convention a year ago and the President's suggestions are in harmony with them. We ought to do this thing.

Dr. Howe is in full sympathy with the project but thinks

it may not be expedient. He has doubts if it can succeed. The plans should be thoroughly gone over and adjusted.

Dr. Rodman has simply reiterated the voice of the Society of a year ago. The plan may be carried through. The State a year hence is going to make a good financial showing. Possibly the time may not be unfavorable but probably we will have to work at it years before we get it.

The recommendation of the Committee was adopted.

Fifth—This had reference to the Medical Practice Act. A motion was made that it be referred to the Committee on Legislation for consideration.

Dr. Mailhouse said that there is something in the report of the Committee on Examinations bearing on the subject and going even further.

Dr. Osborne thinks the committees ought to work together and moved that it be referred to a joint committee.

Dr. Mailhouse thought it better lie over until the report of the Committee on Medical Examinations and it was consequently laid upon the table.

Sixth—That a delegate be appointed annually to represent this Society before the Committee on National Legislation of the American Medical Association. The consideration of this was laid on the table until after Dr. Eliot should have made his report.

Seventh—That this Society withdraw its endorsement of the medical directory published by the New York State Medical Association. This was adopted.

Dr. Eliot then presented his

REPORT AS DELEGATE BEFORE THE COMMITTEE ON NATIONAL
LEGISLATION OF THE AMERICAN MEDICAL ASSOCIATION
AT WASHINGTON.

Having been appointed by Dr. Rodman, President of the Connecticut Medical Society, a delegate from the Society to a conference called by the Special Committee on National Legislation of the American Medical Association, I was present at the two sessions of the conference, held in Washington, D. C., May 1st and 2nd.

It was recommended that each State Medical Society, in affiliation with the American Medical Association, should

amend its constitution so as to provide for a standing committee of one on national legislation, who shall represent the State Society in an annual conference with the committee on National Legislation of the American Medical Association.

It was stated that probably no action would be taken at the present session of congress on the Antivivisection bill, and that no action was necessary at the present time, but that the profession should be prepared to act whenever the bill is revived.

It was decided to be inexpedient to take any action in regard to the revival of the Publication of the Index Medicus.

The conference endorsed a proposed amendment of "an act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service."

The conference also endorsed and recommended that the State Societies should endorse (1) The bill for the increase of the medical department of the army, and (2) the bill providing for the equalizing of the status of the contract surgeon with that of the surgeon of the regular army; also (3) bills for the investigation of the pollution of water supplies of interstate rivers.

It was voted "that the efforts of the members of this Committee be directed through their several State Societies to securing reciprocity in the various states not now having it."

GUSTAVUS ELIOT,

Delegate from the Connecticut Medical Society.

Dr. Eliot further stated that at the meeting it was proposed that there be formed a permanent Committee on Medical Legislation, consisting of three, one of whom should reside in Baltimore, one in Philadelphia and one in Washington. The desire was expressed that each state should modify its constitution, thus forming a Committee on National Legislation.

Dr. Sternberg was present and spoke in detail on the subjects which were before the conference. The index catalogue of the Surgeon General's library took the place of the Index Medicus, so that there was no need of an appropria-

tion for the latter. An attempt was being made to bring about reciprocal action between the different states in the matter of qualification for the practice of medicine.

Dr. Eliot thought it would be a good thing if our Secretary should send to our Senators and Representatives such proposed bills as were good. The report was accepted and the doctor thanked for his attendance.

Dr. Edgerton moved that Drs. Turner and Burke of Middlesex County, have their taxes abated. This was granted.

A bill for twenty-five dollars, being the expenses of Dr. Eliot as Delegate to Washington, was ordered paid.

THE COMMITTEE ON COUNTY RESOLVES,

Dr. LaPierre, Chairman, reported that Hartford County had recommended that Dr. P. D. Bunce and Litchfield County that Dr. S. H. Wadhams, be exempted from taxes. This was approved.

Resolutions which had been adopted by the New Haven County Association were also presented.

Resolutions adopted at the annual meeting of the New Haven County Medical Association and respectfully forwarded to the Connecticut Medical Society.

Whereas: At a recent trial in the Superior Court, Civil Side, of the State of Connecticut, a physician, in good standing in this community, was compelled to answer, against his protest, a question relating to knowledge obtained by him in a professional and strictly confidential communication from his patient; the decision of the court being properly based upon the common law rule at present governing such cases in the State of Connecticut; and

Whereas: Said common law declares that, while the confidential communications of a client to an attorney shall be considered as privileged, and shall not be disclosed as testimony in said courts, the confidential communications of a patient to a physician, or of a patient to a priest or other clergyman, shall not be deemed privileged, and must be divulged in said courts as testimony; and

Whereas: The State of New York, seeking to correct this apparent unjust discrimination, some years ago passed

a statute overruling the common law rule, which statute has since that time been adopted, practically without change, by seventeen other American States and Territories—leaving twenty-two States and Territories still under said common law rule, Connecticut being conspicuous in this latter column; and

Whereas: The Code of Civil Procedure of the State of New York, Section 834, provides that “A person duly authorized to practice physic or surgery shall not be allowed to disclose any information which he acquired in attending a patient in a professional capacity, and which was necessary to enable him to act in that capacity;” the same code providing (Section 833) for a similar procedure in the case of clergymen; and

Whereas: “Privileged communications may be defined to relate to that class of evidence which, on grounds of public policy, courts decline to receive, for the reason that its admission would entail greater mischief than its rejection, because of some collateral evil to third persons, or to society in general” (Taylor, Med. Juris., p. 40); and

Whereas: The discrimination against physicians and clergymen regarding confidential disclosures under the common law rule is contrary to the principle of the above law of privileged communications, against the best interests of public policy and of society in general, and, in the opinion of the New Haven County Medical Association, the said rule of common law should be overruled by the enactment of a statute similar to that of New York and the other seventeen states now enforcing said statute,

Now, therefore, be it

Resolved, That the New Haven County Medical Association, at its regular meeting, held April 19, 1900, herewith approves and recommends the adoption of a statute similar to that of New York (Section 834, Code of Civil Procedure, above quoted), and directs that a copy of these resolutions be forwarded to the Connecticut Medical Society, requesting the adoption of the same at its next regular meeting, to be held May 23, 1900.

JOSEPH H. TOWNSEND, Clerk.

Approved and recommended to the Connecticut State Medical Society for adoption this 23d day of May, 1900.

JULIAN LAPIERRE,
LOREN T. DAY,

Committee on County Resolves.

They were approved and adopted by vote of the Society.

Dr. Eliot remarked that it was a matter of importance. It was discussed before the New Haven County and City Societies. A physician should be protected in the courts the same as the other professions. On motion of Dr. Eliot, the question was referred to the Medicolegal Committee to secure such action as will protect the physician from revealing in courts of law the confidences of his patients.

Dr. Osborne, chairman of the Committee to Nominate Essayists on the Progress of Medicine and Surgery reported. For Medicine, A. R. Defendorf and C. J. Bartlett. For Surgery, C. A. Taft, and D. A. Jones. The report was accepted.

REPORT OF THE COMMITTEE ON PUBLICATION.

With the last meeting began the working of the Committee on Business and Publication as newly constituted by amendment to the By-Laws. The President, Vice President and Secretary met in Hartford and planned the program, selecting such topics and writers as seemed advisable and were acceptable to the chairman of the Committee on Matters of Professional Interest in the State, who met with them.

The constitution of the Committee and the time of their service made it possible for them to determine in advance what papers should appear in the Proceedings. Many of them were in hand and in type before the meeting was held and as a consequence the Proceedings were ready for issue within the first week in July—about six weeks from the time of holding the meeting. Seven hundred and seventy-five copies of the book were printed.

In the business of this meeting it would be necessary to deviate somewhat from the program as printed.

N. E. WORDIN, Secretary.

The report was accepted and adopted.

The Standing Committees were then called.

For the Committee to Nominate Physician to the Retreat for the Insane Dr. Kent reported that no business had been done.

The Committee on Legislation made the same report.

REPORT OF THE COMMITTEE ON MEDICAL EXAMINATIONS.

New Haven, May 23, 1900.

To the President, Fellows and Members of the Connecticut Medical Society:

Your Committee on Medical Examinations presents herewith its seventh annual report, for the year ending this day. We have held three sessions and have examined fifty-five candidates for certificates in general practice, and three candidates for certificates in midwifery. Of the former, forty-nine or ninety per cent. have been passed, three, or about five per cent. rejected, and three, or about five per cent. remain conditioned in one or two branches.

These candidates (not including the midwives) represented twenty-six colleges located in the states of New Hampshire, Vermont, Massachusetts, Connecticut, New York, Pennsylvania, Maryland, Georgia, Tennessee, Missouri, Canada and Sweden. The examinations were all held in the City Hall, New Haven, on the second Tuesdays of July, November and March. The fixed date for examination, as also the fixed place, are matters of great convenience and aid to both the examiners and the candidates. The questions asked were universally considered by those examined as fair, while demanding a proper theoretical and practical knowledge of medicine. In connection with a proper consideration of the advantages and results of our examination, it may hereafter be found not amiss to gather statistics as to the nature of the preliminary education of those applying for license. Of those examined in March last, but two of the nine had a bachelor's degree—both of these passed. It may be stated in passing, however, that the evidences of better preliminary education in the papers

handed in, have been very marked in those examined this year, and are also shown by the smaller percentage of rejections. It is to be hoped that as time goes on the proportion of medical graduates holding bachelor's (or similar degrees) will be in the large majority.

Now that the Association of American Medical Colleges has adopted a four years' course and it has come to stay, would it not be well to make the effort to have incorporated into our law a provision not only that no one shall appear for examination unless he have a diploma, but also that such diploma shall be from a college having a course of no less than four years, each year covering nine months of instruction? This would not only add to the value of our law, but would give to the medical colleges such moral support as would encourage them to maintain higher standards.

The question of reciprocity between State Examining Boards is one that is now being more or less discussed. In fact, we have recently received a communication from the State Board of Medical Examiners of Virginia asking us to state upon what terms, if at all, we would be willing to exchange certificates, they having been given discretionary power by their state legislature to accept certificates from other state boards in lieu of examination. The law in Virginia was also amended so that non-graduates cannot receive a certificate until they graduate from some recognized medical college.

The question as to whether our committee will accept in lieu of examination a license from one of our neighboring states has frequently been presented. It is a very important question, but one which we are not yet prepared to consider. Our state law does not permit of it, it makes it obligatory upon us to examine every one. It is a matter for discussion as to whether the law should not be amended so as to give to the examining committee the discretionary power to accept the licenses of such states as have standards sufficiently high. This brings us to another matter of as much importance and at the same time preliminary to reciprocity, and that is the question of a single state board.

Before reciprocity can be considered it will become neces-

sary to have all the work of examining done by a single board, or all will be confusion. Such a board should be appointed by the Governor and should be held responsible to the State. As preliminary to reciprocity in state licensing your committee last winter took an important step. After consultation with the secretary of the Massachusetts Board of Registration in Medicine, we invited the examining boards of all the New England States to a meeting at which this and kindred subjects might be discussed. The meeting took place on February 1, in the City Hall in Boston and resulted in the formation of the New England Confederation of State Medical Examining and Licensing Boards. Representatives of the six New England States were present, among them five from Connecticut, of whom four were members of your committee and one a member of the Homeopathic Examining Board. Altogether twenty-three men were present. Among the questions discussed and upon which a fair interchange of views took place were the subjects of the one board system, fees for examination, number of questions asked, written or partly oral examinations, rating and the matter of conditions.

It was the unanimous verdict of the representatives of those states having but a single board that the results of the one board system were extremely favorable to such system, and that there has been no clash between the members representing the various schools of practice. There is but one board in each of the states of Maine, Massachusetts and Rhode Island, while in New Hampshire they have three boards working somewhat in unison. The February number of the monthly Bulletin of the Rhode Island State Board of Health contains in full the report of the proceedings. It might be stated in parenthesis that our Committee was honored by the election of its secretary as president of the conference. It was decided to hold semi-annual meetings and it is to be hoped that out of these conferences shall come such unanimity among the New England boards as will point the way for better and more uniform methods throughout the whole extent of the Union. In part as a result of this conference and in part from our own experi-

ences in the past and a study of the rules of boards and laws in other states, we do now suggest that the committee on legislation be instructed to secure legislation in accord with the following suggestions:

Recommendations for the Connecticut Medical Society:

First.—A single state board, appointed by the Governor, after recommendation by the three state societies.

Second.—A stated amount for the examination fee.

Third.—Stated times for the examinations.

Fourth.—Ability to issue certificates and conduct examinations independent of the State Board of Health.

Fifth.—Ability to hold reciprocal relations in the matter of granting certificates, with other state boards.

Sixth.—The withdrawal of license after conviction in criminal courts.

Seventh.—The admission to practice, without examination, of all persons who have successfully passed the United States Army and Navy Board.

Eighth.—The admission to examination of those only who can present certificates of graduation from legally incorporated medical institutions.

We have also made some changes in our methods so as to make them conform more nearly to those of the majority of the other boards in New England; the principal changes being in that we require a general average of seventy-five per cent. with no choice of questions, ten questions being asked in every branch, and we will do away with all conditions.

On pages 34 and 35 is a scheme representing the work done, in connection with the names of the institutions from which our candidates have graduated and also a list of the persons to whom we have granted certificates.

At the last meeting of the society Dr. Charles B. Graves, of New London, was elected a member of this Committee to succeed Dr. L. B. Almy, whose term was to expire December 31, 1899. When the time for reorganization arrived it was learned that the appointee refused to accept and there resulted considerable confusion and delay in getting matters to rights and filling the vacancy. Finally

Dr. W. L. Barber, of Waterbury, was appointed by your president and the committee was enabled to go on with its work. This year the term of Dr. J. Francis Calef expires and we would like to suggest that when his successor is elected the question of his acceptance be determined at once.

Respectfully Submitted,

MAX MAILHOUSE, Secretary.

NAME OF COLLEGE.	Number Examined	Number Passed	Number Rejected	Number Standing Conditioned at date of this report
1. Albany Medical College,	3	2		I
2. Baltimore Medical College, . . .	1	1		
3. Cornell University,	1	1		
4. Dartmouth Medical College, . . .	1	1		
5. Harvard Medical College,	1	1		
6. Jefferson Medical College,	1		I	
7. Johns Hopkins Medical College, . .	1	1		
8. Laval University, Canada,	1			I
9. Long Island College Hospital, . . .	3	2		I
10. McGill University, Canada,	1	1		
11. Medico Chirurgical College of Penn.,	3	3		
12. College of Physicians and Surgeons, Boston,	1	1		
13. Coll. of Phys. and Surgs. N. Y., . .	4	4		
14. Tufts Medical School,	1	1		
15. University of Buffalo,	1	1		
16. " " Georgia,	1		I	
17. " " Lund, Sweden,	1	1		
18. " " New York,	1	1		
19. " " New York and Bellevue,	2	2		
20. University of Pennsylvania,	1	1		
21. " " Vermont,	10	9		
22. Vanderbilt University, Tenn., . . .	1	1		
23. Wash'ton University, St. Louis, . . .	1	1		
24. Women's Med. Coll. of N. Y. Infirmary,	2	2		
25. Womens' Med. Coll. of Penn.,	2	2		
26. Yale Medical School,	8	8		
27. No Diploma	1	1		
28. Totals,	55	49	3	3
29. Per cent.		90	5	5

	MIDWIVES.	Number Examined	Number Passed
30. Columbia School of Midwifery, New York,		2	2
31. General Lying in Hospital, London, England,		1	1
		—	—
32. Total,		3	3

REMARKS.

1. The one conditioned was also conditioned in March, 1899. Diploma dated 1880.
5. Conditioned in 1898 and passed in July, 1899. Diploma dated 1897.
6. Diploma dated 1899. Examined but once.
8. Diploma dated 1892.
9. The one standing conditioned was rejected in March, 1899. Diploma dated 1896. One who passed was conditioned in July, 1899, and passed in November, 1899. Diploma dated 1899.
10. Was conditioned in March, 1899. Diploma dated 1898.
12. Was conditioned in March, 1899. Diploma dated 1898.
14. Rejected in July, 1898. Diploma dated 1898.
16. Diploma dated 1899. Examined but once.
17. Conditioned in July, 1899. Diploma dated 1891.
19. One of these was conditioned in July, 1899. Diploma dated 1899.
21. Of those passed four were conditioned in July, 1899. Diplomas of three dated 1899 and of one 1895. The one rejected diploma dated 1899 examined but once.
25. One of these was rejected in 1898. Diploma dated 1898.
27. Was conditioned in 1899. Is in class of 1900 of a Medical College.

NAMES OF THOSE EXAMINED AND PASSED:

July 11-12, 1899:

Alcorn, T. G., P. and S., Boston, '98.

Barton, W. H., Harvard, '97.

Burnham, J. L., Yale, '99.

Burroughs, Kate, Women's Medical College of Pennsylvania, '98.

Cobb, A. E., Yale, '98.

De Lissar, G. M., Medical Department Washington University of St. Louis, '97.

Girouard, J. A., Baltimore Medical College, '99.

Jewett, Mary B., Women's Medical College of New York Infirmary, '95.

Kellogg, K. E., P. and S., New York, '98.

Kiernan, W. H., McGill, '97.

King, H. F., Albany Medical College, '99.

Lee, H. M., P. and S., New York, '99.

Lodge, P. C., University of Vermont, '99.

McDermott, T., Yale, '98.

Merritt, V. S., Medico Chirurgical College of Pennsylvania, '97.

Nettleton, J. L. F., Long Island College Hospital, '98.

Newton, F. B., University of Vermont, '99.

O'Connell, T. G., Yale, '99.

Reidy, D. D., Medico Chirurgical College of Pennsylvania, '99.

Ryan, P. J., University of Buffalo, '99.

Sloan, T. G., P. and S., New York, '99.

Stephenson, F. J., University of Vermont, '99.

Von Tobel, A. E., Yale, '99.

Wainwright, J. M., P. and S., New York, '99.

Young, W. E., Vanderbilt University, '99.

November 14-15, 1899.

Avery, Amos, Long Island Hospital, '99.

Cohane, J. J., Yale, '98.

- Conklin, J. H., University of Vermont, '99.
- De Hart, Clara M., Women's Medical College of New York Infirmary, '94.
- English, R. M., Yale, '98.
- Guinan, J. C., University of New York and Bellevue, '99.
- Heery, F. P., Yale, '98.
- Laden, M. R., New York University, '98.
- McKenzie, James B., University of Vermont, '95.
- Meagher, W. F., University of Vermont, '99.
- Moore, H. H., University of Vermont, '99.
- North, Carrie, Tufts, '98.
- Owens, W. T., University of Vermont, '99.
- Quin, V. E., New York University and Bellevue, '99.
- Steiner, W. R., Johns Hopkins, '98.
- Tygesson, Alfred, University of Lund, Sweden, '91.
- March 13-14, 1900.
- Freligh, C. A., University of Vermont, '99.
- Gandy, R. R., University of Pennsylvania, '99.
- Henkle, E. A., Cornell, '99.
- Lally, T. J., Albany Medical College, '99.
- Monahan, D. D., Dartmouth, 1900.
- Scanlon, Michael, Medico Chirurgical College of Pennsylvania, '99.
- Teele, Julia E., Women's Medical College of Pennsylvania, '88.
- Thurber, H. T., not yet graduated.
- Midwives, July 11-12, 1899.
- Emile Zange, Columbia School of Midwifery, New York.
- November 14-15, 1899.
- Frieda Hellig, Columbia School of Midwifery, New York.
- March 13-14, 1900.
- Sarah Wheale, General Lying-in-Hospital, London, England.

STATE EXAMINING COMMITTEE REPRESENTING THE
CONNECTICUT MEDICAL SOCIETY.

H. S. FULLER, M. D., Hartford, President.

MAX MAILHOUSE, M. D., New Haven, Secretary.

J. FRANCIS CALEF, M. D., Middletown.

J. W. WRIGHT, M. D., Bridgeport.

WALTER L. BARBER, M. D., Waterbury.

RULES FOR EXAMINATION.

1. Examinations will be held on the second Tuesday of March, July and November, at the City Hall, New Haven, beginning at 9:30 A. M., and lasting two days, closing at 4:30 P. M. of the second day.

2. Examinations will be conducted in writing in the English language.

3. Examinations for general practice consist of ten questions in each of the following branches:

1. Anatomy.
2. Surgery.
3. Materia Medica, including therapeutics.
4. Practice, including pathology and diagnosis.
5. Obstetrics, including gynecology.
6. Physiology.
7. Medical Chemistry and hygiene.

4. In order to be admitted to practice, the applicant must obtain a total average of 75 per cent. provided that in no branch shall the average percentage be less than 60, except in Practice, Obstetrics and Surgery, in which branches the minimum is placed at 65 per cent.

5. Applicants to practice midwifery will be examined in obstetrics only, and must obtain an average of 75 per cent.

6. Examination fee, \$10.00, payable in advance. In addition to such fee the candidate shall, if successful, pay 10 cents, as required by revenue law, for revenue stamps. This sum to be sent to the secretary of the Examining Committee, upon receipt by the candidate of the duplicate certificates.

7. Candidates once rejected must pay full fee on another trial.

8. Graduates of Medical Colleges are requested to present their diplomas, for inspection, to the secretary of the committee at the opening of the session. Those having Bachelor's Degrees in Arts or Sciences will please so specify in their application.

EXTRACT OF LAWS OF 1897.

No person, after the passage of this act, shall obtain or receive a certificate of registration until he has passed a satisfactory examination before one of the Examining Committees, etc., etc.

CONCERNING REGISTRATION.

(a) No person, be he a graduate of whatever medical college, or licensed by or in whatever State, can be admitted to practice in this State, before and until he has passed an examination by one of the Committees in this State.

(b) Upon passing his or her examination and receiving duplicate copies of his certificates, he must file these duplicates with the Secretary of the State Board of Health (Dr. C. A. Lindsley, 15 Elm Street, New Haven), together with the duplicate statements subscribed and sworn to by him upon blanks furnished by said Board of Health, giving his name, age, and place of birth, and present residence, stating whether he is a graduate of any medical college or not, and if so, of what college, and the date of such graduation, etc.

Upon the receipt of such statements, the State Board of Health shall issue, upon the receipt of two dollars, to the person filing the same, a certificate of registration. In addition to said fee of two dollars, he must pay ten cents, as required by federal law, for revenue stamps.

Sec. 3. Upon the receipt of any duplicate statements as hereinbefore provided, the State Board of Health shall transmit one of said duplicate statements, together with a duplicate of the certificate of registration in each case, to the Town Clerk of the town wherein the person so filing said statement resides; and in case such person does not

reside in the State of Connecticut, then the State Board of Health shall transmit said statement and certificate to the Town Clerk of the town in this State nearest to the place of residence of such person; and said Town Clerk shall record the same in books to be provided for that purpose by the State Board of Health, and shall then return the same to the person who filed the same with the Board of Health; and said Town Clerk shall receive for such recording a fee of twenty-five cents, to be paid by the State Board of Health out of the amount so paid to it as aforesaid.

RULES FOR CONDUCTING EXAMINATIONS.

First. Help of every kind must be removed from the reach and sight of the candidate. Any candidate detected trying to give or obtain aid shall be instantly dismissed from the room, and his or her paper for the entire work canceled.

Second. Questions must be given out and answers collected punctually at the time specified for that section.

Third. If the candidate withdraws himself or herself without permission, from the sight of the examiner, his or her examination shall be closed.

Fourth. All examinations shall be in writing. Pens, blotters, paper and ink will be supplied by the Secretary.

Fifth. The examinations shall continue two days, the sessions of the first day being from nine-thirty to eleven, eleven to one, two to four, four to six, respectively; the sessions of the second day being the same, but closing at four-thirty instead of six o'clock.

No one can practice in this State while waiting for an examination.

Anatomy.

Answer any eight of the questions on these papers, but no more, and check (V) each question answered.

1. Describe the structure and physical properties of bone.
2. What are the varieties of muscular tissue and where found?

3. Classify the varieties of vertebrae and describe the method of distinguishing each variety.
4. What are the ligaments of the hip-joint?
5. Describe the attachments of the sterno-cleido-mastoideus muscle and its value as a landmark.
6. What are the branches of the external carotid artery?
7. What are the veins making up the Portal system?
8. What is the origin of the brachial plexus of nerves?
9. Give a brief description of the large intestine.
10. What are the coverings of an indirect or oblique inguinal hernia?

Physiology.

1. Name and define the changes a muscle undergoes when it contracts.
2. Describe an animal cell and name its characteristics.
3. State the chief proximate principles that compose the body.
4. What is the origin, the composition and the function of the bile?
5. Describe the digestion of a meal of bread and milk.
6. Explain the cause of a dicrotic pulse ; Cheyne-Stokes respiration, yawning.
7. Give the nervous mechanism of vomiting.
8. Define metabolism.
9. Name the ductless glands and state their use.
10. Enumerate and give the usual time of the eruption of the permanent teeth.

Chemistry and Hygiene.

1. Give the chemical formulae of Water, and Sulphuric Acid.
2. (A) What change of temperature takes place when water and sulphuric acid are mixed? (B) What, when water and chloride of Ammonium?
3. How is the specific gravity of a body heavier than water obtained?

4. What are the symptoms of slow arsenical poisoning?
5. Where does iodine occur in nature and how is it prepared?
6. Give a list of the diseases which should be reported to the health officer.
7. Diagnosis of Small-Pox.
8. Diagnosis of Yellow Fever.
9. How may typhoid fever be communicated from man to man?
10. What examination would you make of a patient recovered from scarlet fever before permitting him to mingle with other children?

Materia Medica and Therapeutics.

1. What are the physiological actions of Gelsemium?
2. Compare the physiological actions of Opium and Cannabis Indica.
3. What are the actions of Liquor Ammonii Acetatis and Ammonium Chloride?
4. How would you treat a case of Chloral poisoning?
5. Give the composition and action of Compound Jalap powder.
6. Give the indications for and mode of applying the hot pack.
7. Treatment of vomiting.
8. What are the therapeutic actions of Corrosive Sublimate?
9. Indications for the use of electricity?
10. How would you treat a case of Ringworm?

Practice, Pathology and Diagnosis.

1. What are the causes and symptoms of Tonsillitis?
2. Give the varieties and course of cirrhosis of the liver.
3. What are the causes and symptoms of facial paralysis (Bell's palsy)?
4. Give the morphology and pathogenic properties of the Typhoid bacillus.

5. What are the varieties and significance of tube-casts in the urine?
6. Describe a tubercle.
7. In what areas in health do you find bronchial breathing, bronchio vesicular and vesicular breathing?
8. Differentiate diagnosis of pyelitis and cystitis.
9. Differentiate cardiac hypertrophy from dilatation.
10. Give the local and general symptoms of rachitis.

Obstetrics.

1. Diagnosis and treatment of Tubal Pregnancy.
2. Signs and symptoms of normal pregnancy at fourth month.
3. Describe the average size and general appearance of the fetus at the fourth month of pregnancy.
4. Symptoms and treatment of miscarriage at the fourth month.
5. Give some reasons for the great frequency of cephalic presentations at full term.
6. Name the varieties of head presentations in order of their frequency.
7. Symptoms and dangers to mother and child from gonorrhoeal infection at time of impregnation or during the first weeks of pregnancy.
8. Etiology of Tetanus Neonatorum.
9. Name three varieties of lacerations about the pelvic floor and describe briefly the operation (if any) required by each.
10. Causes and treatment of inversion of the uterus.

Surgery.

1. Describe the pathological condition in surgical inflammation.
2. Describe the process of repair after a simple incised wound.
3. Give the causes and varieties of gangrene.
4. Describe the technique of a circular skin flap amputation of the middle third of the fore-arm.

5. Give the causes and clinical history of phlebitis.
6. Discuss the surgical methods of relief for calculus in the bladder.
7. What are the varieties of fracture?
8. How do you determine a luxation of the shoulder-joint and the method of reduction?
9. What is an epithelioma?
10. What are the varieties of cysts?

Midwifery.

1. Do you believe in puerperal infection? What methods do you employ to prevent it?
2. How would you diagnose a face from a breech presentation?
3. Why are patients kept in bed after child-birth?
4. How long would you wait, and what symptoms would determine you to request instrumental aid?
5. Define the stages of labor, their duration and your management in each.
6. What conditions would cause hemorrhage during labor, what are the dangers—how would you treat it?
7. Describe Crede's method of expulsion of placenta.
8. With what form of instrument, and in what manner would you catheterise a patient?
9. What would you do if the eyes of an infant under your charge became inflamed or swollen within two weeks after its birth?
10. Describe the posterior fontanelle—and in what position do you find it?
11. How would you manage a breech presentation?
12. How would you arrest lactation?
13. In what cases does it become necessary to rupture the membranes—and what means would you employ?

Dr. George W. Grover, representing the Medicolegal Society, cited a case which occurred in New York four years ago, and which forcibly illustrated the value of reci-

procuity in requirements for practice, and the need of making discrimination at times. A physician of London, a man of world-wide reputation in the specialty of nerve diseases, which he has adopted, desired to spend four or five months in this country and to practice medicine during his stay. He asked if he could come, and he was told yes. It seemed ridiculous that an expert in mental pathology, a man of the attainments of Forbes Winslow, for he it was, should be required to pass an examination, but an appeal being made to the Board of Regents of the State, they replied that they didn't see any other way of complying with the law. The law required an examination. Winslow was indignant. He said: "If you had come to London, my word would have been sufficient. My endorsement would have been all that was necessary, and I would have given it." He found it was not so here, and he went back.

Dr. Bragaw moved that the resolutions of the committee on examinations be adopted. This was agreed to, with the understanding that the specific recommendations of the report be referred as the chairman had suggested.

Dr. Rodman.—One matter has been side-tracked and should be disposed of. I refer to the sending of a delegate annually to represent us, with other states, before the committee on national legislation and in harmony with the American Medical Association. It will be extremely difficult to get a good man to leave his business and go. I suggest that this matter be disposed of, and move that that portion of the report of the committee to consider the president's address be taken from the table. This was adopted. The further action was taken that we send such delegate annually, at an expense not to exceed twenty dollars. The matter was finally disposed of by leaving in the hands of the nominating committee, the naming of such delegate.

THE COMMITTEE ON HONORARY MEMBERS

named Dr. Matthew D. Mann, of Buffalo, for the action of the society next year. Dr. Mann was formerly a member

of this Society, is at present professor of obstetrics and gynecology at the Buffalo Medical College, and the author of the American system of gynecology. Dr. J. W. S. Gouley, proposed last year, was thereupon duly elected an honorary member.

A question arose as to the eligibility of Dr. Seneca D. Powell, also proposed last year. But when statements were made that being licensed and practicing in Connecticut does not secure a residence in the state and that New London County had declined to elect Dr. Powell an active member, because he was not eligible, he was duly elected an honorary member.

THE REPORT OF THE NOMINATING COMMITTEE

was then made by Dr. H. G. Howe, who named for

President.

Leonard B. Almy, Norwich.

Vice President.

John H. Grannis, Old Saybrook.

Treasurer.

W. W. Knight, Hartford.

Assistant Secretary.

H. S. Miles, Bridgeport.

Committee on Matters of Professional Interest in the State.

A. N. Alling, J. G. Stanton, G. C. Segur.

Committee to Nominate Physician to the Retreat for the Insane.

E. D. Swasey; E. K. Leonard.

Committee on Honorary Degrees.

F. M. Wilson, M. C. O'Connor, O. C. Smith.

Anniversary Chairman.

H. G. Howe.

Committee of Arrangements.

P. H. Ingalls, E. K. Root, E. C. Dickerman.

Dissertator.

W. K. Tingley.

Alternate Dissertator.

F. E. Morrell.

Medical Examination.

J. F. Calef.

Delegates to American Medical Association, 1901.

W. C. Haven,	J. E. Bailey,
E. H. Welch,	W. H. Judson,
C. H. Bill,	R. W. Kimball,
Max Mailhouse,	E. K. Root.

Delegates to the Maine Medical Society.

P. H. Ingalls,	B. E. Henrahan.
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Delegates to the New Hampshire Medical Society.

Henry Hammond,	T. Morton Hills.
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Delegate to the Vermont State Medical Society.

J. W. Wright.

Delegates to the Massachusetts Medical Society.

H. G. Howe,	M. V. B. Dunham.
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Delegates to the Rhode Island Medical Society.

S. B. Overlock,	C. F. Ferrin.
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Delegates to the New Jersey Medical Society.

G. L. Porter,	J. B. Kent.
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Delegates to the New York State Medical Association.

M. C. Hazen,	W. L. Higgins,
W. M. S. Curtis,	C. A. Tuttle.

Committee on National Legislation of the American Medical Association.

C. S. Rodman.

The Secretary was instructed to cast a favorable ballot for the nominees of the Committee, and they were elected.

Dr. Braman reported that the Auditing Committee had examined the accounts of the Treasurer and found them correct. The Treasurer's report was accepted.

Dr. Howe moved that the Secretary be authorized to appoint such delegates to the International Congress as desired to go. This was adopted and Dr. J. E. Root, of Hartford, was appointed.

It was voted that a tax of two dollars be laid upon each member for the current year and that the Publication Committee issue an edition of eight hundred volumes.

Dr. Eliot offered an amendment to the By-Laws. That hereafter the Committee on Nominations bring in the names of two candidates for Vice-President.

The one hundred and eighth annual meeting of the President and Fellows thereupon adjourned at 4.45 p. m.

THE ANNUAL CONVENTION.

WEDNESDAY, MAY 23, 1900.

The annual Convention was called to order immediately after the adjournment of the meeting of the President and Fellows. The first item was the

SECRETARY'S REPORT.

The Secretary has to report this year more activity than usual in interstate and international medical matters. Reciprocity between the Examining Boards of the various States, the repeated efforts to overcome the influence of the Anti-vivisectionists, the pure food and drug law, the arrangements made for the participation of Americans in the International Medical Congress at Paris, have all occupied more or less, the attention and time of the Secretary. The subject of reciprocity was spoken of by our Presidents in their addresses to the Fellows of the last two years. Announcement of the Thirteenth International Congress is made upon the program of this meeting. Our Society has been represented before the Committee of Congress against the Anti-vivisection Act and in favor of the Pure Food and Drug Bill.

While the influence of the Society has thus been felt beyond the State, the changes within its membership have been slight. Our present membership is six hundred and sixty-seven, a net gain of only seven. This is a very small increase.

The changes by counties are as follows :

Hartford, 1899,		148	
Died,	2		
	—	2	
		146	
New members,	9		
	—	9	
		155, a net gain of 7	

New Haven, 1899,		195
Died,	4	
Removed,	2	
Dropped,	2	
	—	8
		<hr/>
		187
New members,	11	
Reinstated,	1	
	—	12
		<hr/>
		199, a net gain of 4

New London, 1899,		51
Died,	1	
Removed,	3	
Resigned,	1	
	—	5
		<hr/>
		46
New members,	2	
		48, a net loss of 3

Fairfield, 1899,		122
Died,	1	
Removed,	4	
Dropped,	1	
	—	6
		<hr/>
		116
New members,	2	
		2
		<hr/>
		118, a net loss of 4

Windham, 1899,		34
Removed,	2	
Dropped,	1	
	—	3
		<u>31</u>
New members,	2	
Reinstated,	1	
	—	3
		<u>34, no change.</u>
Litchfield, 1899,		51
New members,	3	
	—	3
		<u>54, a net gain of 3</u>
Middlesex, 1899,		41
Removed,	2	
	—	2
		<u>39</u>
New members,	4	
	—	4
		<u>43, a net gain of 2</u>
Tolland, 1899,		17
Removed,	1	
Dropped,	1	
		2
		<u>15</u>
Removed,	1	
	—	1
		<u>16, a net loss of 1</u>

One encouraging feature of this report is that only three counties find themselves with diminished numbers this year. Windham, one of the smallest, remains the same. The others have gained in aggregate. Fairfield seems to have had the heaviest loss but it is because some of the losses of the previous year had not been reported. Four members have been dropped, eight have died, one has resigned. The new members are thirty-one, while in addition are some who have been reinstated either by payment of back dues or by return after absence from the State. The new graduates, with their present residence, place and date of graduation, are as follows:

- Paul Plummer, University of Vermont, 1894, Collinsville.
 William Stewart Block, P. and S., N. Y., 1896, Ph. B.
 Brown, 1893, Hartford.
 Charles Augustus Goodrich, B. S., Mass. Agricultural College, 1893, P. and S., N. Y., 1896, Hartford.
 Walter Nelson Thayer, Jr., Univ. N. Y., 1897, Wethersfield.
 Thomas Burnham Enders, P. and S., N. Y., 1891, Hartford.
 Arthur Stone Brackett, Jefferson, 1895, Bristol.
 John Bagg Griggs, Yale, 1897, Farmington.
 Alfred Merriman Rowley, Univ. Vt., 1897, Hartford.
 Michael J. Kelly, Baltimore Med. College, 1897, Warehouse Point.
 Nicola Mariani, Univ. Naples, 1893, New Haven.
 Larmon Winthrop Abbot, Yale, 1896, Waterbury.
 Samuel Mowbray Hammond, Ph. B., Yale, 1893, Yale, 1896, New Haven.
 Ernest Dwight Chipman, Yale, 1897, Waterbury.
 George Isaac Hemingway, Univ. Vt., 1897, New Haven.
 Bernard Eliot Henrahan, Jefferson, 1897, New Haven.
 Charles Andrew Monagan, B. S., Trinity, 1893, Univ. Penn., 1898, Waterbury.
 Henry Gray Anderson, P. and S., N. Y., 1889, Waterbury.
 Louis Howard Wilmot, Univ. N. Y., 1891, Ansonia.
 James Stephen Maher, Ph. B., Yale, 1892, Yale, 1896, New Haven.
 John Lewis Burnham, Yale, 1899, East Lyme.

Patrick Joseph Cassidy, B. A., Yale, 1894, Johns Hopkins, 1898, New London.

Percy Duncan Littlejohn, Yale, 1897, New Haven.

Francis Irving Nettleton, Ph. B., 1894. Yale, 1897, Shelton.

W. H. Kiernan, Trinity Medical College, Toronto, 1897, Danbury.

James B. Shannon, P. and S., N. Y., 1895, Danielson.

Alphonse Fontaine, Victoria, Canada, 1889, Moosup.

Albert Edward Cobb, Yale, 1895, Falls Village.

Arthur Milon Pratt, Bellevue, 1892, West Cornwall.

Caroline North, Tuft's, 1898, Goshen.

John Henry Mountain, D. D. S., Jefferson, 1896, Middletown.

William Fitzgerald, Univ. Vt., 1895, Middletown.

Charles Bellamy Young, P. and S., N. Y., 1894, Middletown.

Clara Madana DeHart, Woman's Med. Coll., N. Y. Infirmary, 1894, Cromwell.

To the student of medical education the statistics of these colleges are interesting. Certain institutions seem to be selected until fewer separate colleges are represented by the young men entering our Society every year. Yale leads, as usual, but by a very close margin, eight of her graduates being among the number. The College of Physicians and Surgeons, New York, is a very close second, having six. The University of Vermont is the third with four graduates, Jefferson three, the University of New York two, while eight colleges, three of them outside the United States, have but one each. We notice, too, the coming among us of those who are of what used to be called the gentler sex increasing quite largely the women practitioners of the State, nine in number.

Three of the Honorary Members have died, gathered in after many years of faithful service. Dr. Samuel Hayes Pennington, of Newark, N. J., died in March last, aged ninety-four, and Dr. Paul A. Stackpole, of Dover, N. H., aged eighty-five. Samuel Hayes Pennington was born in Newark in 1806. He entered Princeton College in the junior class graduating in 1825, and at the time of his death was

Princeton's oldest graduate. His relations with his Alma Mater were very close. In 1828, Princeton gave him the degree of A. M. In 1858, he was made a Trustee of the College, and soon afterwards of the Theological Seminary. In 1895, the college conferred on him an L.L.D. He received his degree of medicine from the medical faculty of Rutgers in 1825. He was much interested in educational matters, received many positions of honor and trust and was an honor to any society which might elect him a member. He was elected an Honorary Member of this Society in 1864, having been present the previous year as a delegate from the Medical Society of New Jersey.

Landon Carter Gray was one of the more recent of our Honorary Members having been elected to that position in 1896. He was a graduate of Bellevue Hospital Medical College, 1873, but had previously been a student of Columbia College and the University of Heidelberg.

He early turned his attention to the study of diseases of the nervous system and speedily earned for himself an enviable reputation in that line of practice. He was made Professor of Neurology at the Long Island College Hospital Medical School and, moving to New York from Brooklyn, became one of the founders of the New York Polyclinic. He was chosen to honorary positions in many societies, was the author of a work on nervous and mental diseases and a frequent contributor to periodical literature in that specialty.

Among the active members there have been eight deaths, one of them and the oldest in membership being a former President of this Society.

Benjamin Newton Comings was born in the State of New Hampshire in November, 1816. He graduated from Dartmouth College in 1842. He began practice in Troy, N. Y., thence moving to Rockville in this State. Being a man prepossessing in appearance and a vigorous and intelligent talker, he was invited to lecture before the State Normal School, New Britain, upon physiology. An acquaintance thus formed terminated in a residence which continued until the end of all his earthly labors. Interested in education he was made chairman of the School Board. Entering

the service of his country he was appointed Surgeon of the Thirteenth Regiment, Conn. Volunteers, and became an active participant in the sanitary reformation of New Orleans. His interest in sanitary matters thus shown, he subsequently was made Chairman of the Board of Health of New Britain for twelve years. His practice extended over more than fifty years, during which time he received many honors in his profession as a physician and in civil affairs as a citizen. In 1873 he presented to this Society a report of the Committee on Inebriate Asylums in which he treats particularly of inebriety in reference to life insurance. In 1885 his address as President of our Society had for its subject, nervousness and among its causes he spoke of overpressure in the public schools. As President of the State Medical Society he was called upon to make the address at the opening of the Bridgeport Hospital, and acquitted himself well on that occasion.

William M. Burchard was born in Bozrah, Connecticut. He, too, was a veteran of the Civil War. At the age of eighteen he enlisted as a private in the Sixteenth Regiment and served nearly the required three years, the close of the war rendering further duty unnecessary. Graduating in medicine at the Georgetown Medical College he went West and settled in St. Cloud, Minnesota. But after a little more than a year he returned to his native state, settling in Montville, where he practiced continually for nearly thirty years. He was a successful physician and a genial companion, and is much mourned by the community for whom he had cared so long and faithfully.

Dr. James Campbell, born in Manchester, and reared on a farm, acquired thereby some of those manly traits which were of such service to him in his professional career. A common school education, supplemented by the required training at the medical department of the University of Vermont was his preparation for life. He has always practiced in Hartford. In 1885 he organized the Board of Health of that city and was its President from that time until his death. In 1886 he was chosen by the Yale Corporation to fill the chair of obstetrics. He not only labored for the best interests of the medical school but gave a sum of money

the interest of which should purchase yearly a gold medal to be given to that graduate of the school who secured the highest rank in the examination of the course, thus doing much to stimulate study and procure a better fitness for the profession. He was popular with the students and was faithful in the performance of all his duties. He will be very much missed in the city which was his home.

Frederick Olin White passed his examination at the Yale Medical School in 1873, at which time he presented a thesis on Skin Diseases. He joined this Society in 1876, and has always practiced in New Haven.

If anything can be gathered from a name we would expect one bearing the name of Thomas Jefferson to be interested in civic affairs. And so we find Dr. T. J. O'Sullivan, a graduate of Bellevue, in 1876, eventually settling in what was then the town of Birmingham, but now a portion of the city of Derby in this State. Having joined our Society in 1880 his influence soon began to be felt in the community and he was chosen to fill the national office of postmaster and the elective one of mayor of his city.

Walter H. Holmes, a graduate of Harvard, 1879, and a physician of Waterbury, should have been mentioned last year as among the dead, but his name was not reported in time.

The list is completed with the name of Edward Thomas Cornwall, a graduate of the College of Physicians and Surgeons, New York, 1881, and who joined this Society from Meriden, but subsequently moved to Cheshire.

In accordance with the new working of the Business Committee, an arrangement which came into existence last year, we are able to present ten papers which have not appeared in any County Report, nor been read before any County Meeting, having been expressly prepared for this occasion. This should awaken interest and procure a good attendance.

The Resolutions adopted by the Convention last year as an outgrowth of the Report of the Committee on Matters of Professional Interest in the State have been favorably acted upon by some of the County Associations with the idea that

this Society will make a move before the Legislature at its next session, to secure State support for those among the masses who are afflicted with tuberculosis. A change to the By-Laws proposed last year will come up for action at this time, to amend Chapter III., Section 2, by adding the words "Assistant Secretary" after the word "Secretary," so that it shall read "The President, Vice-Presidents, Treasurer, Secretary, Assistant Secretary," etc., the object being to make the Assistant Secretary, who is an Officer of the Society, also a Fellow. No provision was made for this when the office of Assistant Secretary was created at the revision of the By-Laws in 1892.

In closing, the Secretary wishes to testify to the interest and activity of the President of the Society who has many times gone over matters looking to an improved condition of the organization, suggested changes, and done personally much labor for the good of the meeting here to-day.

One great need for the speedy publication of the Proceedings is that the writers should early—before the meeting—place their papers in the hands of the Committee of Publication. Only in this way can the Proceedings be published within a reasonable time.

N. E. WORDIN, Secretary.

Delegates from other societies were called for. The only one to respond was Dr. George W. Grover, who stated that visiting friends in this city he had taken advantage of the meeting and had sent for his credentials from the Medico-legal Society of which he was a member. He hoped the papers would come before the meeting closed. He thanked the Society for their courtesy to him; it was a pleasure to be with them.

Delegates to other societies were called upon for their reports.

Dr. Donaldson was not able to go to Massachusetts, but appointed a substitute.

Drs. Hammond and Judson attended the Rhode Island meeting.

Your delegates beg leave to say they attended the meeting of the Rhode Island Medical Society, June 7th, 1899,

and extended the congratulations of the Connecticut Society and were invited to participate in the meeting. The distinctive feature of the Rhode Island Society is that they have a one day session with dinner served in the middle of the day and but two papers read, making a short interesting session which allows the members to reach home the same day.

Dr. William A. Gorton, President of the Society, was taken sick, and died during his unexpired term of office, and prepared an ante-mortem message to be read at the annual meeting showing a great and generous mind to the last.

Dr. Flood read a paper favoring emasculating weak-minded children, which was discussed and criticized by Dr. Fuller. The general census of opinion was with Dr. Fuller.

Adjourned to banquet hall where seats of honor and great courtesy were shown us. A noticeable feature was the large number of young men. The average age of the party seated at dinner was not over 38 years. Number present at dinner between one hundred and fifty and one hundred and seventy-five. All of the after dinner remarks were bright and interesting. All of which is respectfully submitted.

HENRY L. HAMMOND,
WM. H. JUDSON.

Dr. Hazen gave quite a full account of the meeting of the New York State Medical Association, October 24, 26, 27, 1899.

I attended the meeting of the New York Medical Association and it is perhaps unnecessary to say found it most interesting and instructive. Among the many papers of interest one of the earliest was that by Dr. Hillis on "Alcohol as a General Stimulant and Heart Tonic: Its use to the Animal Economy in Health and Disease."

It was an extravagant argument commending use of alcohol as a beverage and its value in disease. Whiskey was recommended as a good thing and the recognized evils resulting from its common use were due to drinking it when it was too young. He discarded the conclusions of Richardson and quoted the recent experiments of Atwater,

proving to his mind that alcohol is a food. He said "Alcohol in the banquet hall, in the beer garden and at the domestic hearth makes hundreds merry, for every ten it makes miserable, and for every one it destroys." This frank admission of its indictment on the "statute books of society" as the cause of four-fifths of the insanity, two-thirds of the crime and such a large amount of poverty and distress were damaging to his conclusions as to its beneficial effects.

He joined issue with temperance reformers who he said were mostly clergymen who knew too little and professional lecturers who knew too much of the effects of alcohol.

In the lively discussion which followed only few agreed with Dr. Hillis.

Certain advertising whiskey firms misquoted from Dr. Hillis' address and utilized it in advertising their goods. For this reason Dr. Hillis brought suit in the New York Supreme Court for misrepresentation and unlawful use of his name, laying his damages at ten thousand dollars.

The night session of the first day was given to prominent lawyers who discussed Medical Expert Testimony. This discussion was interesting but a great difference of opinion seemed to exist among them as to the proper method of securing testimony which would subserve the ends of justice.

The afternoon of the second day was devoted to the consideration of Typhoid Fever. Papers were read by Drs. Biggs, Park and Osler, tending to show our advanced knowledge of this important disease. Later on Dr. Thompson gave statistical accounts of the disease and its treatment for ten years at Roosevelt Hospital and Dr. Fitz of its treatment at the Massachusetts General Hospital for the last fifty years. The death-rate was the same at these institutions as fifty years ago.

Your delegates were treated with becoming courtesy.

MINER C. HAZEN, Delegate.

Dr. Bulkeley followed for the American Medical Association. He went to the meeting with Connecticut credentials—he did not take those from a New York Society. He attended the caucus of the Connecticut delegation. Dr.

Crothers was a member of the nominating delegation from this State. Is a Connecticut man and gradually coming back to his first love. There were few men from this State present. Changes have been made in the business methods of the convention so that now there is much less confusion than in former years. All business of any kind which is offered is immediately referred to the Business Committee. The next morning it is proposed in proper form on the floor. It expedites very materially the carrying out of details. More time has been spent here this afternoon in business matters, important though they are, than will be spent in all the sessions at Atlantic City with the fifteen hundred members who will be assembled there. Has been chairman of the Business Committee for fifteen years and during that time the Committee has not been overturned once—because it has thoroughly prepared the work beforehand.

The Association has overgrown itself. There have been as many as five hundred and thirty-six papers on the program. It has been cut down so that the limit now is thirty for each section for the afternoon session of the meetings during three days.

Dr. Mailhouse being first on the program presented a patient with a very unusual form of cerebellar ataxia.

This was followed by the paper announced, Acquired Syphilitic Disease within the Cranium.

Dr. F. M. Wilson followed with Five Hundred and Seventy-nine Cases of Infection of the Temporal Bone, with Brief Comment. After some discussion on these papers the meeting adjourned at six o'clock.

THURSDAY, MAY 24.

The meeting was called to order at 10:20. The first paper of the day was by Dr. Segur, The Electrical Treatment of Uterine Fibroids.

Announcement was here made that the Southern New England Telephone Company had placed at the service of those attending this meeting, the instruments in the building and at their central office on Court Street, free of charge. This was greeted with applause and a vote of thanks was

tendered to the company for their considerate kindness. Dr. Hubbard presented and read a paper on A Study of Diabetes—Its Nature, Cause and Cure, followed by Dr. Swain on Bronchial Asthma in its Relation to Nasal Disease. Dr. C. A. Lindsley took the place generally occupied by the Dissertator and presented a forcible paper entitled A Few Facts About Milk.

The time having arrived and passed for the Presidents' address, Dr. Rodman read his entitled, Water Supply and Disposal.

Adjournment immediately followed.

THE AFTERNOON SESSION

began at 2:10 with the Dissertation which had been carefully and elaborately prepared by Prof. J. S. Ely on the subject of Diabetic Coma.

After this Dr. Wiggin was called upon as a delegate from the New York State Medical Association. It gives him pleasure to give greeting once more. He takes this opportunity to return thanks for the honor received last year at your hands, of being elected an Honorary Member of the Society. The Association which he represents has of late been taking on an activity which is going to be of benefit to the entire profession of New York. We obtained a charter from the Legislature at its last session and are now reorganizing under that charter. After studying many state societies we find that yours is the best adapted to bring all into close, harmonious relations. Every member of a County, is also member of a State Society governed by a body of Fellows.

We will have, however, a larger proportion of Fellows than you, one to ten. A number of counties in New York State have already organized their associations. Our annual meeting will be held in New York on the 23d, 24th and 25th of October next. We would be delighted to see at that time as many as can come.

The Report of the Committee on Matters of Professional Interest in the State was presented by Dr. O. T. Osborne. It had for its subject Exophthalmic Goiter.

Dr. Powell, in rising to read his paper on Carbolic Acid, returned thanks to the Society for his election as Honorary Member and promised an endeavor so to conduct himself as not to do any discredit.

Reports on the Progress of Medicine followed by Dr. Nadler and on the Progress of Surgery by Dr. Hotchkiss. Dr. Alton was the last reader of the afternoon, his paper ably advocating State Sanatoria for Tuberculous Patients. It was vigorously discussed by Dr. Pratt and others and the following resolution was adopted :

Resolved, That this convention make the following recommendation to the Committee on Legislation: That said Committee select a sub-committee consisting of one member from each county association who shall have charge of a bill for the establishment of a Sanatorium for consumptives in this State to be presented to the next Legislature.

The following papers having been called for without response, were read by title and referred to the Committee on Publication, with those which had been read before the convention:

Suppurative Inflammation of the Middle Ear, J. A. Meek, Stamford.

Soaps, R. A. McDonnell, New Haven.

American Intensity as Shown in the Diet, F. K. Hallock, Cromwell.

A Case of Traumatic Insanity, W. E. Fisher, Middletown.

Poetry of Dr. Peters, 1782, C. A. Sears, Portland.

The Diagnosis of Neurasthenia, G. Eliot, New Haven.

The History and Treatment of a Unique Injury to the Face, M. M. Johnson, Hartford.

Pylorotomy with Removal of one-half of the Stomach, C. E. Taft, Hartford.

A Successful Case of Gastro Enterostomy for Stricture of Pyloms and Dilated Stomach, C. E. Taft, Hartford.

A Case of Dynamic Ileus, L. W. Bacon, Jr., New Haven.

Nervous and Defective Children; Their Care and Training, E. A. Down, Hartford.

Medical Shock or Heart Failure, O. T. Osborne, New Haven.

Dementia Precox, H. S. Noble, Middletown.

Hysterectomy, P. H. Ingalls, Hartford.

Puerperal Sepsis, Jay S. Stone, New Britain.

Protection of the Perineum in Labor, E. F. Parsons, Thompsonville.

An Unusual Case of Post-partum Hemorrhage, Ida Gridley-Case, Collinsville.

The Accoucheur's Armamentarium, J. E. Loveland, Middletown.

Acute Peritonitis, Etiology, W. L. Barber, Waterbury.

Diagnosis, W. H. Carmalt, New Haven.

Treatment, T. H. Russell, New Haven.

The Value of Inspection and Palpation in the Diagnosis of Intra-Thoracic Lesions, C. D. Phelps, New Haven.

Diagnosis and Treatment of Two Distinct Forms of Pneumonia, J. F. Calef, Middletown.

Diagnosis and Treatment of Chronic Indigestion, W. G. Murphy, East Hartford.

Eczema, Etiology, H. Fleischner, New Haven.

Diagnosis, R. A. McDonnell, New Haven.

Treatment, T. M. Bull, Naugatuck.

Some Suggestions as to Sanitation, J. W. Seaver, New Haven.

A Case for Diagnosis, H. Strosser, New Britain.

At 5 p. m. the convention and with it the annual meeting adjourned.

N. E. WORDIN, Secretary.

PRESIDENT'S ADDRESS.

PRESIDENT'S ADDRESS.

WATER SUPPLY AND DISPOSAL.

In a century in which steam and electricity have banished the limitations of space and time, with quickened competition in every phase of human life, with marvelous changes in thought and action, the practice of our profession has changed as has all else. The charge of commercialism, due to the adoption of modern business methods will rest lightly if the best thought, the result of the most patient investigation, is freely given to our fellow men. This they have a right to expect, so long as they concede to us our present position, and an increasing measure of legal protection.

At the beginning of the Christian Era, Imperial Rome supplied its million of inhabitants with pure water, not less than fifty gallons per capita per diem. Dr. Fedeli (1) quotes Dionysius of Halicarnassus to effect, that the three works which especially manifest the power and magnificence of the Romans, are the great roads, the sewers, and the aqueducts. Of the nine aqueducts bringing water from forty to sixty miles, the first three were constructed in the year of Rome 441, and successive years. The Romans also constructed aqueducts in France, Spain and other countries which they ruled. After the conquests of the barbarians, the Roman aqueducts fell into decay. Under the influence of religion or superstition for more than 1,000 years, filth was glorified as the token of sanctification. Bathing was unknown. Streets and water supplies were the dumping places for excreta and garbage. From such violation of sanitary law, horrible pestilences spread over Europe. One of them, the black death, appearing in the 14th century, is stated to have had forty millions of victims. Until nearly the end

1. Transactions, College of Physicians of Philadelphia, 1890.

of the last century, human excreta in Spain were disposed of by throwing from the windows of the houses in the night. Edward Morse, in "Latrines of the East," (2) describes conditions in parts of China, Korea and Russia as little better at the present time. The water supplies are saturated with filth. Water is always boiled for domestic use. The fatality of neglect has taught this much of sanitation. But the contamination is so great that Morse further explains: "Among the teeming millions in China, there is every reason to believe that a struggle for existence has gone on for centuries, killing off those who could not stand the microbes and bacilli of certain kinds, and, as a result, the survivors are proof against conditions that would instantly depopulate one of our cities."

One hundred years ago, Noah Webster, (3) prolific writer, compiler of the dictionary which makes his name immortal, and author of the spelling book of which as many copies have been sold as there are people in the United States, published in Hartford and in London, A Brief History (two volumes, 700 pages) of Epidemic and Pestilential Diseases. The work is interesting, showing not the views of the most advanced physicians and scientists as regards preventable diseases, but as reflecting the opinion held even by educated people in civilized lands a century ago.

The author's attention was first directed to the subject by his personal observations, made in a journey in 1789 from Hartford to Boston and again in 1790 from Hartford to Albany, of the progressiveness of the catarrh commonly called "influenza." Of the yellow fever which prevailed during the next five years in Philadelphia, New York, New Haven and other cities, he observed: "In Autumn, 1793, however, the pestilential state of the air arrived to its crisis in Philadelphia, where the mortality occasioned by the yellow fever spread destruction and dismay from August to November. The fatality of the disease spread consternation through the United States and excited apprehensions in Europe."

2. Reprinted from *American Architect*, March 18, 1893.

3. Hudson & Goodwin, Hartford, 1779.

Suspecting the theory of infection to be unfounded he soon became convinced of the fallacy of the vulgar opinion respecting the origin of the yellow fever in the United States from imported sources. . . That the reports of persons taken ill in consequence of intercourse with vessels from the West Indies or with diseased seamen, infected cotton or clothing, or the like causes, were mere idle tales, raised by the ignorant or interested and wholly unsupported by evidence. On the other hand, the evidence of the origination of the disease in New York, Baltimore, Norfolk, Newburyport, Boston and Charlestown appeared to be clear and satisfactory." He quotes with approval the views of Diemberbroeck, an eminent Dutch physician of the 17th century who assigned the plague to three causes—"First, the just anger of Heaven provoked by exhalations from the sinks of our sins and abominable deeds; secondly, a most malignant, poisonous, and, to human nature, deadly pestilent germ (*feminarium*), like a subtle fermentum or leaven, sent from Heaven in a very small quantity, diffusing itself through the air like a subtle gas and rendering it impure. The third cause is infection." To prove that the latent qualities of the air is the principal cause of pestilence, the cause *sine qua non* several hundred pages are devoted to records of comets, earthquakes, volcanic eruptions and the coincident epidemics from the earliest recorded times. Discussing the billious fever (yellow fever) in New Haven in 1794, he notes that the oysters on the coast as shown in a letter of President Stiles to his son-in-law, Rev. Mr. Holmes of Cambridge, were diseased, poor and dropsical. This is a striking proof of the derangement of the elements. Further evidence of the fact was furnished by the multitudes of caterpillars which overran the city of New Haven in the summer of 1794. In such numbers were these insects, that they almost covered the trees, fences, and houses to the tops of chimneys. "Had these phenomena been understood, the people of New Haven would have had no occasion to appoint a committee to examine into the causes of the fever. It was hardly possible, in the nature of things, that the human race should escape the calamity of epidemic diseases under the operation of causes so general and so pow-

erful. If further evidence was necessary, we have it in the bad state of the water of the wells of New Haven, during the prevalence of these diseases, in which, one of the physicians of the city has informed me, were 'animalcules visible to the naked eye.'"

At the beginning of the 19th century, Jenner was still denounced by physicians and clergy. Not until 1815, was the discharge of sewage permitted into the water drains of London, and only in 1847, was it made compulsory. In 1622, the famous and learned Robert Gallis, Esq., (4) defined a sewer to be "A fresh water trench compassed in on both sides with a bank, a small current or little river." Two hundred years elapsed before a sewer meant a conduit for sewage. Development of sanitary engineering, the prevention, in our country and in other civilized lands, of epidemics of cholera, yellow fever, small pox and similar scourges, have marked the progress of the world during the past fifty years. Results are indicated by the mortality in the city of London. Two hundred years ago it was 80 per thousand, reduced to 50 for the 18th century, 25 at the middle of the 19th, and now is less than 20 per thousand. The mortality of the United States is a little less than that of London; nearly one-third is from diseases known to be preventable. When death from all such causes is as infrequent as from small pox, mortality will be reduced to 12 per thousand or less, and this implies a further extension in the average duration of human life. Only in the century now ending, and only civilized and enlightened people have learned that disease and death are not the punishments of an angry Deity; that comets, earthquakes, and volcanic eruptions are not the manifestations of a Divine displeasure, but that our existence is a struggle with omni-present causes of sickness and decay.

The patient work of the biologist and the chemist, the discoveries of men like Jenner, Lister, and Pasteur, exact methods of investigation, have dispelled superstition. In its place has developed that department of science which we call sanitary. The physician cannot be an engineer,—

4. London, 1622.

the art of economic construction is no part of his work, but he of all men studies the causes of disease and can best tell how to avoid them, and the means by which the duration of human life can be increased. This century year marks the completion of a work costing the city of Chicago more than thirty millions of dollars,—a work connecting the Great Lakes and the Gulf and solving the problem of sewage disposal, but undertaken and executed for the improvement of the city's polluted water supply. (5) It marks the commencement of filtration plants for the supply of pure water to Philadelphia, also of typhoid fame. (6) This enterprise involving an expense of fourteen million dollars, has been approved by an enormous majority of the citizens. It marks an agitation which can have but one ending for the purification of the water-supplies of New York, (7) Pittsburg, St. Louis, and other of our large cities. In Europe twenty million people are furnished by their municipalities with pure filtered water, and the death rate from water borne diseases, in former years enormous, has been almost obliterated in many cities of the continent.

In Connecticut, the past year, one of minimum rainfall with consequent exhaustion or depletion of water stored for public supplies, brought most of our towns to famine, or compelled the use of water notoriously unfit for domestic purposes. At the capital, citizens were supplied with river water,—the diluted sewage of Springfield, Holyoke, Northampton and other towns. Litigation and judicial prohibition have brought the question of sewage disposal into streams which are not used for water supply, conspicuously to the public attention. The time is therefore favorable, as never before, to the consideration of the necessity of pure water supplies and of safe and economical disposal of these waters after the pollution of domestic life and the arts.

As regards such disposal where dilution in river or ocean

5. Professor Jordan in *Review of Reviews*, January, 1900.

6. Report to Mayor Ashbridge on the extension and improvement of the water supply of the city of Philadelphia, September, 1899.

7. Dr. C. F. Roberts, sanitary superintendent to Board of Health, New York papers, December 15, 1899.

is impracticable,—no better means have been devised than by well constructed, suitably located, and properly ventilated cess-pools. Unfortunately for the reputation of the cess-pool, the family well has not always been abandoned upon its construction. When by means of ground water a stray pathogenic germ reaches the well or spring and gives rise to typhoid or other disease the inference is commonly drawn that the soil has become surcharged with filth and that deodorized sewage and excreta have crept into the family water supply. (8) The fact is over-looked that the water may be and usually is free from organic impurity and that an increased per cent of nitrates is only a proof of the complete reduction to the inorganic world of the complex constituents of animal waste under the ceaseless action of anaerobic bacteria. Elaborate and expensive methods of sewage disposal, the world over, are being discarded for what is practically a reversion on a large scale to the oft-times maligned cess-pool.

Plans for disposal have been, in the past, dominated by the belief that the complex organic constituents of animal excreta are valuable and are to be returned to plant life before reduction or complete restoration to the inorganic world. This has not led to the discontinuance of sewerage into water-courses, but where, for other reason such disposal has become objectionable, a sewage farm has usually been the alternative. Slowly has experience demonstrated that the sludge or insoluble portion is valueless, and that until this is buried or burned, there is no disposal; furthermore, that clear, undecomposed sewage cannot be used profitably for purposes of irrigation. In seasons of drought, in suitable stages of plant life, a limited quantity can be used. Only occasionally can growing crops take such a dose. It is not in accordance with nature's operations that the unoxidized excreta of a large town be transformed into vegetable life upon a few acres of land. The farmer learned long ago that his farm is not enriched by a stratum of fresh excrement, but by the application of manure which is well

8. Sewage Disposal in Connecticut, Report of the Sewage Commission, 1899, p. 16.

rotted, i. e., that in which chemical decomposition has occurred, a reduction of complex organic matter to simpler forms. Sand or intermittent filtration with burial or incineration of the sludge, will doubtless continue to be practiced where suitable land is abundant and of little value for other purposes, and especially where this method is already in operation, but we shall hear less in the future of sewage farms. The principle will be recognized that effete organic substances are to be reduced as quickly as possible to their inorganic elements before entering anew into complex living bodies, and that in the operation of nature there is nothing lost, whether it be food for fishes, or the gaseous products of the crematory.

A year ago, Prof L. P. Kinnicutt, writing upon sewage purification, stated that there were three methods,—chemical precipitation, broad irrigation, intermittent filtration. (9) To-day, broad irrigation and chemical precipitation are to be stricken from the list as regards cities which have not already adopted them. On the one hand, there is an ever increasing demand for more land; on the other, there is an ever increasing sludge heap with an unsatisfactory effluent. Manchester in England is not now alone in converting its plants for chemical precipitation into septic tanks or "contact filters." In Connecticut litigation, judicial decisions and legislative commission, have directed public attention, not to the improvement and purification of our water supplies upon which the public health depends, but to the pollution of streams not potable, and which during the century have contributed largely to the growth of our manufactories and the development of our commerce. Far less attention is given to the purity of our water supplies, than to the rights of riparian owners, generally those whose properties would be valueless but for their proximity to growing communities whose existence means contamination of the river.

The topography of Connecticut is of valleys through which streams flow southward to tide water. The rugged slopes, steeper towards the west, afford abundant opportu-

9. Sewage Purification, *Engineering News*, May 11, 1899.

ity for the gathering, purification and storage of water supplies. The rapidity with which the rain-fall reaches the stream, transforms rivulets into raging torrents or noble rivers. This occasions enormous pollution of silt, organic matter and animal refuse from the surface of town streets and country farms. Removal of all human denizens would not prevent pollution. While seeking to exclude sewage from such streams, changing conditions under which rocky hillsides unsuitable for agriculture, teem with busy, prosperous people, it should be remembered that sewage flowing without obstruction gives rise to no bad odors or noxious gases, and that no malevolent bacteria emanate therefrom. The air of the closed sewer is free from pathogenic germs and the open sewer need not imperil health. (10) Nuisance, arises from matters in suspension which are retarded in their journey to the sea, perhaps lodge upon the banks, putrefy and furnish a noisome sustenance to insect carriers.

The problem of disposal is more pressing in the Naugatuck Valley than elsewhere in Connecticut, inasmuch as the courts have enjoined the city of Waterbury which now discharges its crude sewage directly into the Naugatuck River. The valley is so narrow that it has been well described as only wide enough for a river and a railroad. At many points the rocky hills rise abruptly from the stream to a height of several hundred feet. No where is land available for sewage farms on an extensive scale. At Beacon Falls, eight miles below, there is a sandy tract suitable for sand filtration and the acquisition of this has been suggested by an eminent engineer. (11) It is, however, barely sufficient for present requirement and incapable of enlargement. Beacon Falls is becoming a prosperous manufacturing village and will not willingly take its place with Dunellen in New Jersey whose proximity to the sewage disposal plant of Plainfield has caused it to be dubbed "Dunellen by the Sewer."

10. Sewer Air; Mistaken ideas regarding it. Professor L. P. Kinnicutt, *Engineering Magazine*, August, 1899.

11. Rudolph Herring; Report of Sewage Disposal of City of Waterbury.

Under the methods of disposal, until recently in vogue, there are but two plans which will provide amply for present needs and for coming years, if the population continues to increase. One is discharge into the waters of Long Island Sound, the other is sand filtration in the broad valley of the Farmington to the eastward. The first involves a sewer thirty miles in length, so expensive in construction as to be at present impracticable. The second involves tunnelling directly under the hills for six miles. The difference in the elevation of the two valleys, (12) about 150 feet, renders the latter project possible, but the cost of such work, even with modern facilities for tunnelling, may be also prohibitory. A sewage disposal, far less expensive, will doubtless be adopted in our Connecticut valleys.

Various experimental works, successfully operating during the last year, has revolutionized the methods hitherto in vogue. They depend upon recognition of the fact that disposal means the prompt return of complex organic substances to their inorganic elements before re-entering the vegetable world. Rudolph Herring, in 1898, quoted from a French periodical, (13) a description of the Mouras Automatic Scavenger, a mysterious contrivance in use twenty years. It consists of a vault, hermetically closed, which rapidly transforms all excrementious matter into a homogenous fluid which is almost devoid of smell. The principle on which Mouras bases the action of this machine, is that the animal dejecta contain within themselves all the germs of fermentation necessary to liquefy them and to render them useful in their return to the soil. Herring further says, from the description of this interesting contrivance it will be seen that the process of anaerobic decomposition was practically applied many years ago. It does not seem to have been suggested, however, as a method to be

12. Data furnished by N. Y., N. H. & H. R. R. Co. Elevation of tracks from dock at Bridgeport, at station in Waterbury, 270 feet; at Cheshire, 150 feet; at Plantsville, 122 feet; and at Plainville 132 feet. See also Topographical Atlas of Connecticut. (U. S. Geological Survey).

13. *Cosmos les Mondes*, December, 1881, and January, 1882.

adopted on a larger scale, until it was introduced at Exeter, England, in 1896, by Mr. Donald Cameron, City Engineer. A year before at Sutton, Mr. Dibdin introduced the so-called bacterial or "contact filter." The latter is, briefly, a tank filled with coke or similar substance into which sewage is turned and retained at pleasure. Here the processes of liquefaction and oxidation alternate.

At the December meeting of the American Chemical Society in New Haven, Professor Kinnicutt reporting the result of his recent observations in England, described the successful operation of the septic tank and the bacterial or contact filters in sewage purification. The septic or liquefying process a putrefaction or resolution of complex organic compounds into simpler forms, is attended by remarkable freedom from sludge, the bete noire of all other processes of purification. A thick scum forms upon the septic tank, composed, almost wholly, of bacteria; exclusion of the atmosphere by covering the tank has been shown to be needless, unless to protect from frost. The practical liquefaction of all solid matter is in the line of our past experience with cess-pools, which may fill if their walls or surroundings are impervious, but otherwise very slowly from an accumulation of solid material. Impressed with this although of course unaware of my dependence upon Pasteur's anaerobic bacteria, some twenty-five years ago I constructed two cess-pools the one with nearly impervious side walls and connected them by a syphon of four-inch iron pipe. When the first, which received the sewage was filled the syphon came into play, discharging about two-thirds of its contents into the second, the operation of which last was therefore intermittent with periods of rest. The first was, as we now know, much more than a settling basin and served the purpose of the septic or liquefying tank of to-day. The apparatus worked automatically without occasion for cleaning or removal of sludge for many years and indeed until ultimately abandoned on account of the construction of a public sewer.

The process, apparatus, and appliances of the septic tank system have been patented in this, as in other countries. It is not, however, probable that the principle of anaerobic

reduction, as exemplified in the Mouras Scavenger or the common cess-pool, is patentable.

Among the claims of the patentees are: "The process of liquefying the solid matter contained in sewage, which consists in secluding a pool of sewage having a non-disturbing inflow and outflow from light, air and agitation until a thick scum is formed on the surface thereof and a mass of micro-organisms has been developed of a character and quantity sufficient to liquefy the solid matter of the flowing sewage, the inflow serving to sustain the micro-organisms, and then subjecting said pool under the cover of said scum and under a non-disturbing inflow and outflow to the liquefying action of the so-cultivated micro-organisms until the solid matter contained in the flowing sewage is dissolved." (14).

From Mr. Cameron, and through his agent in this country, I received, in April of this year, the following information:

"I take pleasure in informing you that the largest septic tanks of the 80 installations now at work in Great Britain are for a population of ten thousand, and are situated at Barrhead, near Glasgow. The installation for the whole city of Exeter, with a population of 47,000 is in course of construction, as also are those for Morcambe, 60,000; West Bridgeford, 10,000; Marlborough, 3,000; Andover, 6,000; Cromer, 10,000, etc. The largest place for which the system is definitely adopted is Walthamstow, population 100,000, construction on which will shortly be commenced, as will also, works for Wells, 10,000; Taunton, 25,000; Sherborne, 7,000; Yeovil, 14,000, etc. With regard to the city of Manchester the system has not yet been absolutely adopted, although the experimental installation which has been at work there for the past twelve months has been producing remarkable results, bringing the complex sewage of that city up to the Mersey & Irwell standard of purity with a single filtration. Naturally such large cities take a long time to settle these matters, as the

14. U. S. Patent Reports, Process and Apparatus for Treating Sewage, No. 63, 634423-4-5-6-7-8, October 3, 1899. Other patents 646927-8-9 were issued April 3, 1900.

expenditure involved will be quite heavy. At Leeds our installation is producing excellent results.

Relative to sewage purification in the so-called "contact filters," tanks filled with coke or similar material, in which it is retained for a few hours, I received a few days ago from Mr. Dibdin, who designed the works at Sutton, England, the following data:

"The rate of purification per acre—by which we assume you mean the quantity of sewage that can be satisfactorily purified on an acre of bacteria beds—is about 700,000 gallons per day for one treatment, or 350,000 gallons per day if two treatments, i. e. if double beds be necessary supposing the beds to be 4 ft. deep.

"The largest city in this country which has adopted this system is that of Manchester, the population of that town being about one million."

In an experimental way, very interesting observations upon the bacterial treatment of crude sewage, have been made during the past two years at the outfall of some of the London sewers under the direction of Prof. Frank Clowes, chief chemist to the London County Council. From reports sent me by Professor Clowes, it appears that by increasing the depth of the coke beds to 13 feet, a much greater purification per acre, has been attained. At the same time, the efficiency of the coke beds has been reduced at the rate of about one per cent a week, and the necessity for previous sedimentation demonstrated, in order to remove cellulose and grit which bacteria will not destroy. (15). A comparison of these reports indicates very clearly the status of modern sewage purification. To secure an effluent highly purified, Mr. Cameron intimates that one filtration is sufficient after septic decomposition. To prevent clogging of the filters, Professor Clowes admits the necessity of sedimentation, implying, as this doubtless does, the work of anaerobic bacteria. No better exposition of the principles which underlie a scientific purification of sewage

15. Reports to London City Council on the Bacterial Treatment of Crude Sewage. P. S. King & Son, Westminster, S. W.

has appeared than that recently written by Daniel Pidgeon, an English Civil Engineer. I can only quote the closing words:

“While differing upon matters of detail, scientists all agree that future plans for disposal of sewage must consist,—first, in artificial hastening the natural process of putrefaction, and afterwards, in oxidizing—for the purpose of rendering inoffensive, and possibly valuable,—the products of such putrefaction, the functions, respectively, of Pasteur’s anaerobes and aerobes.” (16).

I recently visited the disposal works in Meriden, Danbury, and elsewhere in the State, besides those in Plainfield, N. J., Worcester, Mass., etc. Although the plant at Plainfield was constructed after that at Meriden, and no doubt with equal engineering skill, the two differ widely. At Meriden I was indebted to the courtesy of Judge Davis, Mr. King, Mr. Clark, city engineer, and other representatives of the city government, who accompanied me on a visit of inspection. Fourteen beds were found in perfect condition, clean as a sandy beach; of these, only two were in use at the time, with the sewage leaching away so rapidly that but a portion of either bed was covered. The effluent was as clear as a mountain spring. At Plainfield, I was similarly entertained by Dr. E. W. Hedges, the corresponding secretary of the New Jersey Medical Society. Accompanied by Mr. Gavett, the city engineer, we visited the disposal plant, where we found seventeen beds covered so deeply as to constitute veritable lagoons. The beds were overtaxed after a very moderate rainfall, the effluent was not free from odor, although quite as clear as the stream into which it discharges. The city of Plainfield is defending suit brought by parties living near the filtration plant, which is looked upon as a nuisance by the people in the neighboring village of Dunellen. This part of New Jersey is underlaid with clay or hard pan, and ground water percolates into the sewers while the sand obtainable is too fine for filtration. At Danbury, the conditions are better than

16. *The Journal of the Royal Agricultural Society*, of England, No. 38, June 30, 1899.

at Plainfield, although at night and during rainfall, no attempt at purification is made, except by sedimentation.

At Worcester, where I was indebted to Prof. Kinnicutt, chemical precipitation is practiced upon about 18,000,000 gallons of sewage per day. This removes matters in suspension, little of that in solution; the effluent is discolored, offensive, and undergoes secondary decomposition with further precipitation of organic substances after discharge into the Blackstone river. Oxidation is retarded, not hastened, by the treatment. Very expensive machinery is constantly at work pressing the sludge into cakes. This is carried away upon an elevated electric railway to places in which it accumulates in enormous quantity, a worthless product. Chemical precipitation is a failure, and its ultimate abandonment by the city of Worcester appears inevitable.

The method of sewage disposal, which will probably be ordinarily adopted where purification is required before discharge into water courses, is by means of liquefaction and reduction of organic constituents in the so-called septic tank or cess-pool, with subsequent dilution, or if a further purification is required, before discharge into potable streams, this will be attained by bacterial or contact filters. Such disposal contrasted with land irrigation has been fitly compared in speed and efficiency to the modern express train and the old stage coach of the previous century. Sand filtration, no doubt, will continue to be used in localities where nature had provided a convenient desert of little value for other purposes. No town in our state; few in our country, are so fortunate in this regard as Meriden, where suitable sand deposits of considerable depth make such disposal easy. On the other hand, Champaign, Ill., reduces the sewage by the septic tank discharging its effluent into a water course which is practically dry during the summer.

Except so far as sewage contaminates waters used for domestic purposes, the method of its disposal is of minor importance as regards the public health. In no way can the health of our state be so promoted as by improvement in the character of our water supplies. Few of our towns are supplied with water uncontaminated with slit, and uni-

formly free from discoloration. Provided with water at rates profitable to municipalities or corporations, our citizens, nevertheless, have the option of drinking that which contains organic and mineral substances visibly in solution and suspension, or of purchasing for the table, spring or distilled water from other sources. The consumption of such water, natural or artificial, plain or carbonated, everywhere increases with the wealth and refinement of a community, although it is well known that the danger of imbibing zymotic germs is not wholly avoided. After seeing the mud dislodged from our surface pipes on opening of the hydrants, or reversal of the current, or that which settles in tubs and utensils, or after noting the vile odor often developed on heating, one is sometimes willing to court danger in the possibly typhoid bearing, but clear water, of the open bucket. Our health boards have more control over the purity of the pepper sold at the shops, or the quality of the syrup dispensed at the soda fountains, than over our public water supplies. The death rate from typhoid fever, one only of the water borne diseases, is our best index to the character of the water supply of any community. During 1899, there were in our state 222 deaths returned as from typhoid or typho-malarial fever and 105 from malarial fever. The last is not a filth disease, does not have to be reported and is sometimes mistaken for typhoid. It is safe to assume that there were upwards of 250 deaths from typhoid in Connecticut and that from 1,000 to 2,000 persons contracted water borne diseases. It is well understood that mild typhoid may run its course without recognition and without confinement to the house.

Unfiltered surface waters are always unsafe for the water supply of a town; no drainage area inhabited by domestic animals is secure against contamination by the colon-bacillus, one so like that of typhoid that some bacteriologists regard them as different forms of the same species. Prof. Lankester of Oxford University, believes that the colon-bacillus may develop into the typhoid germ. (17) Surely

17. The Purification of Public Water Supplies. John W. Hill, New York and London, 1898, p. 15.

the increased prevalence and fatality of typhoid throughout our whole country during the past year, and the depleted water supplies, with consequent concentration of impurities, have been no mere coincidence. Rudolph Hering, than whom no sanitary engineer in this country is more distinguished, writes as follows :

“We cannot prevent rain from washing the streets, the fields, the forests, and discharging this cleansing medium into the streams. . . . There must go with it parts of the intestinal discharges of animals, birds, and insects, and parts of the manure with which the fields are covered We are therefore obliged to seek safety in another direction, namely, in the filtration or purification of all water supplies, immediately before the water is used. How clearly this conclusion is recognized, we can see in some cases in Europe, where, although the water comes from uninhabited mountain districts and is apparently pure, provisions are made for its filtration before it is furnished to the inhabitants for domestic use. . . . There are cases where it will better satisfy the interests of the community to give up the river to the reception of sewage. . . . When sewage must enter a stream subsequently used for a water supply, it better answers the demands of sanitation and economy to thoroughly purify the water supply and allow the sewage to enter the stream by which it is well diluted, than to purify the sewage, and further down the river, allow its raw material to be supplied for domestic use.” (18).

For the future only one conclusion can be reached. While sand filtration of sewage, before discharge into the ocean through a stream, non potable and already contaminated by the surface waters of populous districts, may be sometimes the most available method of a purification required to prevent a nuisance, a like filtration of all public water supplies is required by sanitary law. To perfect the one and to neglect the other, to convert sewage shortly before it reaches tidal waters into a liquid, clear it may be as

crystal and to give our citizens for their consumption a fluid tinctured with decaying vegetation and flavored with the dejecta of birds and animals is as irrational as would be the antiseptic methods of surgery did they consist solely in the disinfection of cast off dressings before consigning them to the crematory.

Upon these subjects, countless volumes are written. But so rapidly is our knowledge increased by experiment and experience that the volumes of yesterday must be supplemented or displaced by the observations and reports of to-day. Within the limits accorded to me, I have been able to make only detached statements and citations. If I can arouse an interest in the performance of duty which we owe the state and the community, my purpose will be accomplished.

DISSERTATION.

DIABETIC COMA.

DIABETIC COMA.

JOHN S. ELY, M. D.,

NEW HAVEN.

Perhaps none of the constitutional diseases has received more careful study during the past decade than diabetes mellitus, nor has any, unless it be perhaps myxoedema, received more elucidation. I need offer no apology, then, for asking your attention for the few moments at my disposal to some considerations relative to one of the aspects of that disease.

In 1874 Kussmaul drew attention to the fact that many cases of diabetes terminate in coma. The occurrence of a state of unconsciousness shortly before death had been described as much as twenty years earlier by Marsh in Ireland and by Von Dusch in Germany, but these observers apparently failed to recognize in the coma an integral part of the disease. This relationship seems however to have been appreciated by Kussmaul, who observed coma as a terminal symptom in three cases of diabetes in the same year. His description, and the fact that he proposed for the condition the name "diabetic coma" make it clear that he considered it a distinctive type of coma, different in several particulars from those which had been previously described. Subsequent studies by Ebstein, Frerichs, Stadelmann, Külz, Minkowski and others have confirmed this view and coma has now come to be recognized as one of the most frequent terminal conditions in diabetes mellitus.

It must not be considered, however, that all states of unconsciousness occurring in the course of diabetes are necessarily true diabetic coma. Tuberculosis is a frequent concomitant of diabetes and not a few cases of the combined diseases terminate as the immediate result of invasion of the meninges of the brain by the tuberculous process. In such cases the comatose condition is an expression of the tuber-

culous meningitis rather than of the diabetes. True uraemia, also, is not infrequent as the result of complication of the kidneys and coma has terminated the clinical picture in a not inconsiderable number of cases in which autopsy has shown the presence of lesions in the brain (tumor, sclerosis, abscess, haemorrhage, etc.), or in the liver (cirrhosis) or of general septic or pyaemic conditions. In all these cases, however, the coma has presented the characteristic picture of the coma of the complicating disease, not the distinctive picture of diabetic coma.

What is, then, the clinical picture of the true diabetic coma?

In his original communication much stress is laid by Kussmaul upon a peculiar type of dyspnoea as one of the most constant characteristics of the coma of diabetes. In his graphic description of the condition he says: "Nothing indicates that the air has to overcome the slightest hindrance in either its entrance or its exit from the lungs. The thorax expands freely in all directions. Complete expirations follow equally complete inspirations. There is no congestion of the vessels of the neck, no cyanosis. This deep breathing is also as a rule somewhat more rapid than normal. The contrast of the general weakness with the force of the respiratory movements is one of the most striking peculiarities of the picture." So marked is this peculiar dyspnoea as a feature of the coma that Riess has suggested the name dyspnoeic coma as an appropriate substitute for the earlier designation of Kussmaul.

As a rule for several days before the appearance of this dyspnoea there is a noticeable change in the mental condition of the patient. He becomes restless and perverse, or, on the other hand, a distinct sluggishness of psychic activities and even drowsiness may be manifest. This is not infrequently accompanied by perversion or failure of the appetite. Food which had been taken with avidity is no longer eaten and there may develop a strong craving for sweets and other forms of carbohydrate food which had been interdicted. Dull headache is also frequently present at this time and the bowels may tend to constipation. At the same time changes are apt to occur in the urinary secretion.

The quantity voided in the twenty-four hours usually diminishes to some extent, its specific gravity may fall, its content of sugar decreases and its content of acetone, diacetic acid and ammonia increases, often very materially. I believe the early recognition of these premonitory symptoms to be of the greatest importance as indication both of impending coma and for vigorous therapeutic measures.

As time goes on the mental hebetude above referred to increases, the characteristic dyspnoea develops and within a short time after the development of this symptom the patient sinks into profound unconsciousness. He lies now relaxed upon the back, breathing deeply. From time to time slight twitchings of the eyelids or of the muscles of the face or extremities may be apparent. The eyes are half closed and the pupils are usually dilated. The pulse is somewhat accelerated from the first and later becomes small and rapid. The temperature, which at first may be slightly elevated, sinks with the progress of the coma to a point considerably below the normal. The aromatic odor of acetone is very readily detectable in the expired air. With failure of the circulation a gradually increasing cyanosis develops and within from twenty-four to forty-eight hours after the onset of coma death occurs from exhaustion, the heart and respiration failing together. It should further be noted that during the continuance of coma but little urine is excreted and that its content of sugar may be very small. Its reaction is strongly acid. Acetone, diacetic acid and ammonia are present in large quantity and albumin and casts may be abundant.

Autopsy reveals no lesion to account either for the coma or for the peculiar dyspnoea which accompanied it.

It has been my fortune during the past few months to have opportunity to observe four cases of typical diabetic coma. Two of these were seen in consultation—one with Dr. Carmalt, the other with Dr. Verdi. The others were patients in the New Haven Hospital.

I shall not weary you with the details of these cases. In all the typical picture of diabetic coma was presented. Deep breathing, apathy deepening into profound unconsciousness, subnormal temperature, and glycosuria were char-

acteristic of all, and, in three, examinations of the urine disclosed also the presence of aceton and diacetic acid as well as a largely increased quantity of ammonia. Three of the patients were women past middle life who were known to have had glycosuria for several years. The fourth was a young man, twenty-eight years of age, whose symptoms had first become manifest about nine months before his death—a rapid and severe case, attended with great emaciation and pronounced polyuria and glycosuria. In two of the cases suppuration of the hand and in one case a fall entailing fracture of a rib prepared the way for the development of coma. In the fourth case (the man) no such predisposing factor was apparent, the coma developing idiosyncratically. In all the cases death resulted within twenty-four hours after the establishment of complete unconsciousness in consequence of rather rapidly developing heart failure. A careful autopsy in one of the cases failed to disclose any lesion to which the coma could be attributed.

No one who has had occasion to witness the striking clinical picture of this peculiar dyspnoeic coma and has realized the futility of his efforts to cope with it can fail to be interested in any light which may be thrown upon its pathology, especially if therefrom a method of treatment may be adduced which can offer even meagre hope of its alleviation.

The most widely accepted theory at present as to the pathogenesis of diabetic coma supposes it to be an expression of an acid intoxication due to the presence in the body of β -oxybutyric acid in large quantity. It will be impossible for me to here present the details of the development of this theory beyond the mere statement that it was first suggested by Hallervorden in 1880 as the result of his discovery that ammonia is excreted in large excess in diabetes, and that it was more forcibly urged by Stadelmann in 1883, who found a very decided excess of bases in the urine of a diabetic and succeeded in obtaining crotonic acid from it by distillation. The following year it was shown by Minkowski that crotonic acid does not exist preformed in the urine but that the urine does contain a closely related substance— β -oxybutyric acid—readily convertible by heat into crotonic acid. At almost the same time it was discovered

by Külz that the fermented urine of diabetics possesses a decided laevo-rotatory power supposed by him to be due to the presence of a laevo-rotary acid—probably oxybutyric. Since then there has been repeated confirmation of these discoveries and many additional facts have contributed to the establishment of the acid intoxication theory on very firm foundation. As this theory suggested the treatment employed in two of the cases which have been referred to I may be permitted to briefly summarize the facts upon which it is based.

It must be clear, *a priori*, that if an abnormal acid be generated in the body in any considerable amount we should find evidence of its presence in a number of resultant conditions. Its presence in the blood might be expected to lessen the normal alkalinity of that fluid and as a result to diminish its power to absorb and transport carbon dioxide, and we might reasonably expect symptomatic manifestations of retention of carbon dioxide in the tissues. He might further expect to find evidence of excretion of the abnormal acid by the kidneys either as a salt of the acid itself or in the form of some well authenticated derivative or derivatives, and if these derivatives should chance to be also acids we should expect an increased excretion of basic substances commensurate to the amount of acid present, since free acid is never found in the urine. If the acid lent itself to detection by chemical means we might expect demonstration of its presence in the blood, in the tissues and in the urine. Again, it would be reasonable to expect a certain similarity between the effects produced by experimental administration of the suspected acid to animals and the manifestations attributed to its presence in man. And, finally, much weight would be contributed to the theory if a source for the suspected acid could be shown and if treatment based upon the theory should prove to be beneficial. I may say that in every one of these particulars the theory of acid intoxication in diabetic coma has found substantiation.

Diminution in the alkalinity of the blood in diabetes has been demonstrated by Minkowski, by Kraus, by Von Jaksch and by Magnus-Levy. The results obtained by the

last of these observers are of particular interest. He determined the alkalinity of the blood in seven cases, of which three were severe and terminated in coma. In the milder cases no material diminution of alkalinity was observed and the same was true of the more severe cases prior to the onset of coma. With the development of this symptom, however, the alkalinity decreased to less than fifty per cent. of its former degree, and this notwithstanding the administration of large doses of sodium bicarbonate in two of the cases. It is also of interest in this connection that Amento has recently reported a decided diminution in the alkalinity of the blood in experimental pancreatic diabetes.

Decreased carbon dioxide content of the blood has also been shown to exist in diabetes and to be particularly in evidence during the typical coma. Thus Minkowski in one of his cases determined the content of carbon dioxide in the arterial blood three weeks before the onset of coma to be seventeen per cent., while during coma it was only three and three-tenths per cent., the normal content of arterial blood being somewhat more than thirty per cent. Similar observations have been published by Kraus, who in thirteen cases found the carbon dioxide of the blood never higher than twenty per cent. and in four cases as low as ten per cent. As early as 1877, long before the observations above recorded were made, Walter had drawn attention to the fact that in experimental acid intoxication in rabbits and dogs a notable feature was diminution in the quantity of carbon dioxide in the blood, and he attributed this to the diminished alkalinity of the blood in these cases.

The results of urinalysis in diabetes and in diabetic coma are also confirmatory of the acid intoxication theory. Reference has already been made to the finding of a considerably increased amount of ammonia by Hallervorden in the urine of diabetes. This observation has now been so often repeated that it may be said with truth that no fact relative to the pathology of diabetes is more firmly established than the increased ammonia excretion by the kidneys. In one case, reported by Stadelmann, a twenty-four hours excretion of more than twelve grams of ammonia was observed. This, however, was extraordinary, but a daily ex-

cretion of from three to six grains or more has been shown to be not unusual. A somewhat increased excretion of calcium and magnesium has also been demonstrated, but this is relatively insignificant. Ammonia is increased, however, with such constancy just prior to the onset of coma that its quantitative estimation has been advocated by Stadelmann as affording the most reliable prognostic indication of impending coma.

The earlier observations of Stadelmann relative to the excess of bases over acids in the urine of diabetics have also been confirmed. Magnus-Levy in his study of six cases of diabetic coma has repeatedly determined the relation of these bodies with the result that in all cases the bases were found to be in decided excess of the inorganic acids. In my fourth case, that of the young man, two such determinations were kindly made for me by Dr. C. A. Herter of New York. The results of these examinations are given in the accompanying table, the first analysis being of urine passed about six weeks before the onset of coma, the second of the urine of March 21, twelve days prior to coma. In both analyses the bases are greatly in excess of the acids, the excess being represented by more than five grams of sodium.

TABLE REPRESENTING RESULTS OF DETERMINATIONS OF
ACIDS AND BASES IN THE URINE OF CASE IV.

Analysis No. I.

Bases.		Acids.	
K ₂ O	2.5540	SO ₃ (preformed)	.6857
Na ₂ O	2.4530	“ (combined)	.1253
CaO	.8035	P ₂ O ₅ (bibasic)	.8521
MgO	.1973	“ (monobasic)	.1756
NH ₃	3.1130	Cl	1.5110
		Uric acid	.0270
	<hr/>		<hr/>
	9.1208		3.3768

Excess of Bases=5.744

Analysis No. II.

Bases.		Acids.	
K ₂ O	2.0630	SO ₃ (preformed)	.6918
Na ₂ O	3.1460	“ (combined)	.0743
CaO	.7364	P ₂ O ₅ (bibasic)	.7932
MgO	.1295	“ (monobasic)	.1759
NH ₃	2.8930	Cl	1.9650
		Uric acid	.0182
	<hr/>		<hr/>
	8.9679		3.7184

Excess of Bases=5.2495

The only way in which this large excess of bases can be explained, the urine being strongly acid, is by supposing the excess of bases to be excreted in combination with some acid not determined in the analysis. As all the important known acids of the urine in health have been determined it is reasonable to suppose this acid to be some abnormal organic body not usually present in the urine, and it is certainly most impressive that nearly two thirds of the bases excreted in the urine should be carried out by this acid.

When we investigate the evidence as to the nature of the organic acid so largely excreted in the urine of diabetics we find that it points almost unmistakably to β -oxybutyric acid as the principal acid present in such cases. I have already alluded to the detection of crotonic acid by Stadelmann in the distillate from diabetic urine and to the observations of Minkowski and of Külz which led them to the belief that crotonic acid is not preformed in the urine but that an antecedent oxybutyric acid is present instead, readily yielding crotonic acid on distillation. It will be remembered also that Külz discovered his oxybutyric acid to be possessed of definite laevo-rotatory power, the index of which he determined. Since that time a method has been devised for the extraction of the acid from the urine, so that we are now in possession of three different methods, all sufficiently reliable, for the detection of β -oxybutyric acid, viz.: the detection of crotonic acid in the distillate from the urine, the determination of laevo-rotation of polarized light by the

fermented urine and the separation of the acid itself by extraction. By one or other of these methods the presence of β -oxybutyric acid in the urine of diabetics has now been determined in a very considerable number of cases and by many different observers. Without attempting any exhaustive search through the voluminous literature of the subject I have been able to find mention of thirty-seven cases of this sort. In my own fourth case crotonic acid was obtained in large quantity from the urine of March 21, by Dr. Herter. As to the constancy of β -oxybutyric acid in the urine of diabetics I may quote the statement of Sandmeyer, based upon an unparalleled experience during eight years as assistant to K \ddot{u} lz, that in no case in which the Gerhardt ferric chloride reaction was strongly positive (indicating the presence of diacetic acid) did the tests for β -oxybutyric acid result negatively. In this connection it is also of interest that β -oxybutyric acid has been found in the urine of animals suffering from experimental pancreatic diabetes and from phloridzin diabetes.

As to the occurrence in the urine of diabetics of probable derivatives of β -oxybutyric acid the evidence is quite as convincing. Aceton and diacetic acid have already been referred to as almost constant ingredients of the urine in diabetic coma, and the belief is now almost universal that these substances are derivatives of β -oxybutyric acid. Aceton was discovered in the urine in diabetes as early as 1857 (Petters) and its subsequent detection in the blood served as basis for the theory that diabetic coma was an expression of aceton intoxication. It has been necessary to abandon this theory, however, as aceton has been definitely shown to be devoid of toxic properties of any sort. Nevertheless the possibility was not excluded that, though not in itself poisonous aceton might be closely related to some antecedent toxic substance present in the body in those conditions in which aceton is found in the urine, the decomposition of which gives rise to the aceton. Furthermore, in 1865 Gerhardt drew attention to a peculiar reaction of the urine of diabetics to ferric chloride, whereby a burgundy red color is developed. This reaction has since been shown to be due to the presence of diacetic acid. Now diacetic acid is closely

related to aceton and it has also been shown recently to be readily derivable from β -oxybutyric acid by simple process of oxidation. The present belief is therefore, that the aceton and diacetic acid in the urine of diabetics are derivatives of β -oxybutyric acid. Indeed, the administration of β -oxybutyric acid has been shown to be followed by excretion of diacetic acid and aceton in the urine (Minkowski—dogs with experimental pancreatic diabetes; Araki—dogs with carbonic oxide poisoning). In this light the great and rapid increase in aceton and diacetic acid excretion just prior to the onset of coma in diabetes becomes of much significance as indicative of the high degree of acid intoxication.

If the theory as to the relationship of aceton and diacetic acid to β -oxybutyric acid and of this last acid to diabetic coma be correct it would be reasonable to expect evidence of its presence in the blood and tissues of diabetics. Apparently but few attempts have been made in this direction. In 1887 Huguenencq obtained crotonic acid by distillation from the blood of a diabetic during life, but I am not aware of any confirmation of this observation. In the tissues after death β -oxybutyric acid has been found by Magnus-Levy to be present in very considerable quantity. It was extracted by him from the blood in three of his cases, from the muscle in two cases and in one case from the liver, spleen and brain, and these observations permit him to estimate the total quantity of the acid in the body at the time of death to be between one hundred and two hundred grams. The proof, then, of the relationship of β -oxybutyric acid to acid intoxication in diabetes in so far as it depends upon the detection of that acid and of its derivatives in the urine, blood and tissues of persons suffering from that disease may be said to be very convincing.

It may be questioned, however, whether the symptoms of diabetic coma, that phase of the disease of special interest at the moment, receive satisfactory explanation from the theory of acid intoxication and whether the effects of experimental acid intoxication in animals bear sufficient similarity to the manifestations of that condition in man to be confirmatory of our theory.

If any one feature of diabetic coma can be regarded as

constant and characteristic it is the remarkable dyspnoea, a dyspnoea unassociated with lesion of the lungs. It is also to be noted that in the great majority of cases this dyspnoea is the initial symptom, gradually increases in intensity and continues without abatement until exhaustion supervenes. I cannot but see in this dyspnoea a manifestation of the diminished carbon dioxide carrying power of the blood. So far as the cells regulating the respiratory act are concerned I cannot see that there is any material difference whether excess of carbon dioxide in and about them is the result of abnormality of the pulmonary respiration or of the transport of carbon dioxide from the tissues. In other words I am impressed by the analogy both as regards pathology and symptomatology between diabetic coma and asphyxia. In both conditions there is failure of the blood to remove carbon dioxide from the tissues. In both prominent symptoms are dyspnoea, muscular twitchings or convulsions, coma, dilatation of the pupils, fall of body temperature and ultimately respiratory and cardiac failure and death. I have already referred to the determinations of the carbon dioxide content of the blood by Minkowski showing a fall from 17 per cent., itself scarcely more than half the normal content, to 3.3 per cent. with the onset of coma, and I cannot but feel that this diminished power of the blood to transport carbon dioxide from the tissues must be in great part responsible for the peculiar symptoms so frequently terminating the picture of diabetes. Furthermore, an almost precisely similar group of symptoms is occasioned in animals by the administration of acids in considerable quantity, and, as has been said before, the blood of these experiment animals has been found to be markedly deficient in carbon dioxide.

My object in thus laying before you an outline of the argument favoring the theory of acid intoxication in diabetic coma is to show the foundation for a method of treatment employed in two of my cases. The purpose of this treatment is the introduction into the blood as speedily as possible of an amount of alkali sufficient to restore the normal alkalinity of that fluid, and thereby to permit the withdrawal of carbon dioxide from the tissues. In both the

cases in which I have been able to observe the effect of this treatment but little benefit has resulted. In each case about three pints of normal salt solution containing one per cent. of sodium bicarbonate were introduced into a vein of the arm, blood being freely drawn at the same time from the distal end of the vein. In both cases there was temporary improvement in the pulse and some slight improvement in the mental condition, but this was very transitory and the patient almost immediately relapsed into a state of profound unconsciousness. It could not be said that the course of the coma was in any way influenced by the treatment.

The results which have followed similar therapeutic efforts by others have for the most part been little more encouraging. In a considerable number some slight improvement has followed the administration of alkali either by mouth or by infusion, but as a rule the cases have progressed to death.

The tendency of these disappointing results of treatment is to unsettle belief in the acid intoxication theory as regards diabetic coma and we would be inclined to reject it were it not for a few cases in which the effect of the alkaline treatment has been most gratifying. I cannot resist quoting two or three of them briefly for the sake of the lesson which they teach.

The first of these cases was reported by Minkowski in 1888. The patient, a girl eleven years old, had suffered from the severe type of diabetes for a year and a half. On May 8, 1886, she was put on strict meat diet. The next morning she was apathetic, complained of pains in the back, the breathing was deep, the pulse small, soft and moderately frequent, and the temperature sank to 95.7 degrees F. The urine showed 2.4 per cent. of sugar, a strong ferric chloride reaction, much aceton and β -oxybutyric acid. Towards noon coma set in. After unsuccessful attempts to infuse 3 per cent. solution of sodium bicarbonate subcutaneously, sodium bicarbonate was administered by mouth, about two grams at a time every fifteen minutes. By the following morning she had received about 100 grams of the salt with the result that the coma had passed away. The respiration was still somewhat deep and the urine continued to be acid.

The administration of the alkali was continued. The following day, May 11, the respiration and temperature were normal and the reaction of the urine was alkaline. The patient had then received about 200 grams of sodium bicarbonate. She remained under observation till the middle of July without return of coma.

Another case, even more convincing, is reported by Naunyn. In this typical coma in a boy eight years old was dispelled on three different occasions by the administration of large doses of sodium bicarbonate. In the intervals between the attacks the same alkali was given in considerable doses with a view to preventing recurrence of the coma, and it is of great interest that return of the coma was in each instance preceded by a period of abstinence from the remedy. Death took place in a fourth attack of coma. A similar case is reported by Magnus-Levy in which the patient survived one mild and two severe attacks of coma with the aid of sodium bicarbonate.

In all these cases the alkali was administered in large doses frequently repeated. As contrast to them and yet showing the beneficial effect of the treatment I must mention a case recently reported by Herzog. The patient, a man, 28 years of age, was admitted to the hospital in coma. He was immediately given a subcutaneous infusion of a litre of normal salt solution and 600 cubic centimeters of five per cent. solution of sodium bicarbonate were introduced into the rectum. At 5 P. M. a second hypodermoclysis was performed, a litre of three per cent. solution of sodium bicarbonate being this time injected. Before treatment the patient had been wholly unconscious and all reflexes were abolished. By 9 P. M. consciousness had begun to return and he was able to swallow two tumblers of milk. At 3 A. M. the knee jerks returned and another glass of milk was swallowed. At 4 A. M. he seemed greatly improved and himself helped as he drank another glass of milk. At 6 A. M. he went suddenly into a state of collapse and died. In this case 60 grams of sodium bicarbonate were administered and there was no repetition of the treatment after 5 P. M.

There are other cases of recovery from diabetic coma attributed to the administration of alkalies, but I will not

wearily you with their recital. The cases which I have quoted seem to me to clearly indicate the reason for the failure which has so frequently attended the treatment. As in Herzog's case, the necessity has not been appreciated for very large doses and for frequent repetition of the alkali. Until Magnus-Levy's recent communication we had no basis for an opinion as to the amount of acid in the body in diabetic coma, and we could have no conception of the amount of alkali which might be necessary for its neutralization. Magnus-Levy estimates that as much as 200 grams of β -oxybutyric acid may be present in the blood and tissues at the time of death. To neutralize such an amount of the acid 160 grams, or about 5 ounces of sodium bicarbonate are required. But it should also be remembered that the acid is constantly being formed in the body and that it is consequently necessary that the administration of alkali should be continued with the purpose of neutralizing that which may be subsequently generated. This fact has, I think, been lost sight of. The majority of those who have employed the treatment have been content with a single administration of alkali and usually the dose has been very inadequate. I myself must plead guilty to this accusation for in my cases only about 15 grams of the bicarbonate were employed, an amount the inadequacy of which is now very apparent.

But if the acid intoxication theory is correct it would seem reasonable to hope that by proper administration of alkalies in diabetes the liability to coma might be entirely removed or very materially postponed. Naunyn is very decidedly of this opinion. It is his practice to prescribe sodium bicarbonate in from ten to fifteen gram doses per diem in all cases of diabetes in which ammonia is increased in the urine and the Gerhardt ferric chloride reaction is positive, and he believes that in many of his cases the danger of coma has been greatly lessened or wholly averted by this means. My own belief is that even these doses are too small as it has been shown that the daily excretion of β -oxybutyric acid may be as high as 100 to 150 grams. The amount excreted must represent approximately the quantity of the acid formed in the body, and an amount of alkali sufficient to neutralize this would seem to be indicated.

I am duly impressed by the difficulties which attend the administration of large doses of alkali for any considerable time. Digestion in the stomach is apt to be impaired, the appetite may fail and as in my fourth case the patient may rebel against the treatment. Furthermore, it would seem not unlikely that intestinal putrefaction may be facilitated by the alkaline treatment, and it is not difficult to conceive this as an important factor in the general break-down of the patient. For this reason I believe it to be of the utmost importance in these cases to carefully scrutinize the condition of the digestion and of the bowels. In one of my patients very decided improvement on several different occasions followed the administration of ounce doses of castor oil.

Finally, I would warn against too precipitate withdrawal of carbohydrates from patients suffering from diabetes. In a number of cases this has been speedily followed by the development of coma, probably because of the readiness with which proteid food yields acids in the course of its decomposition. To avoid this the alkaline treatment should be instituted prior to the reduction of carbohydrates and these should then be gradually withdrawn.

REPORT
OF THE COMMITTEE ON MATTERS OF
PROFESSIONAL INTEREST
IN THE STATE.

- I. GRAVES' THYROID DISEASE.
- II. DIPHTHERIA AND PUBLIC SCHOOLS.
- III. NITROUS OXIDE ANESTHESIA AT BRIDGEPORT HOSPITAL.
- IV. A CASE OF DEGENERATION OF THE CHORIONIC VILLI.

REPORT OF THE COMMITTEE

ON MATTERS OF PROFESSIONAL INTEREST IN THE STATE.

The Committee on Matters of Professional Interest in the State, Drs. O. T. Osborne, J. G. Stanton, and L. W. Bacon, Jr., recommend the following matters as of interest to members of the State Society.

The Report of the chairman of the Committee on Exophthalmic Goiter is based upon the study of the clinical histories of forty cases of this disease, including seven of his own which he has had under observation during the last two years. A large number of the members have never had a case, and the only members who report having operated for this disease, are Dr. L. W. Bacon, Jr., of New Haven, and Dr. C. J. Fox, of Willimantic.

GRAVES' THYROID DISEASE.

O. T. OSBORNE, M. D.,

NEW HAVEN.

I.

Synonyms.—Graves' disease; Basedow's disease; Exophthalmic Goiter; Glotzaugenkrankheit; Cachexie exophthalmique; Tachycardia strumosa exophthalmica.

Definition.—This disease is characterized by more or less enlargement of the thyroid gland, generally with exophthalmos, with more or less tachycardia, and with the associated symptoms of increased thyroid secretion.

History.—In 1835, Graves, of Dublin, first described this disease, and in 1840, Basedow, in Germany, again described it. From this time this disease has been known by the names of these writers or under the name of Exophthalmic Goiter. I believe that it is always a disadvantage to medical nomenclature to use a writer's or investigator's name to denote a disease or symptom, but it has this undoubted advantage, in that it does not declare for any specific pathology or etiology for the condition. On the other hand I believe that the much used term, exophthalmic goiter, is a positive misnomer.

In the first place we can have the symptoms of increased secretion of the thyroid gland without any apparent enlargement of the thyroid. Secondly, we can have an enlarged thyroid with symptoms of hyper-secretion without any exophthalmos, and thirdly, we can have exophthalmos without an enlarged thyroid and without symptoms of its hypersecretion. Therefore, I suggest the name of Graves' thyroid disease as one both distinctive and descriptive.

Frequency.—There seems to be a widely varying opinion as to the frequency of this disease, the majority of reporters believing that the disease is rare, while a large minority believe that it is very rare, and a small minority state that the disease is frequent. (1)

I have come to the conclusion that as far as the majority of practitioners is concerned, the disease is rare, but that physicians in large centers of population will naturally see

a good many cases of a disease that is so hard to cure and is so troublesome in its symptoms. Consequently, these practitioners see enough cases of Graves' disease to believe that it is frequent. Very rare I believe it is not.

Etiology.—There is no question of the great preponderance of this disease in the female as compared with the male, one writer even going so far as to state that "subjects of this disease are almost without exception women." (2). Dana (3) states that eighty per cent. of the cases are in women, and Oppenheimer (4), that the ratio of women to men is twelve to one.

This thyroid disease probably never occurs in infancy, and is very rare in early childhood and old age. It is pre-eminently a disease of young adult life, and from the reports based upon the observations of forty observers, the vast majority of cases occur between the ages of twenty-five and thirty-five, and nearly all cases between the ages of twenty and forty.

Consequently in studying into the etiology of a disease which occurs with such great preponderance in women and during the most active period of their sexual life, we can but wonder what insidious relationship exists between the ovaries or the uterus and the thyroid gland. This question is answered by Freund (5), who says that the thyroid gland is always congested and swollen during pregnancy and during menstruation. He also says that when there is continued or severe irritation of the uterus there will become a permanent enlargement of the thyroid. This accounts for the greater frequency of this disease in women than in men, as a gland which so frequently physiologically hyper-secretes could easily be stimulated or irritated to more or less lasting increased activity.

The weight of opinion seems to be that this disease is not hereditary, although some reporters (6) have noted hereditary tendencies. I have noted several cases which will bear out the opinion of Dr. Charles Dana (7), who believes that Graves' disease is not hereditary, except in certain families where there is a tendency to goiter.

It seems to be both an individual and a family disease; individual in that there may be but one case in a family and

that it is not hereditary, but family in that its most frequent cause, intense emotion, is undoubtedly most liable to occur in neurotic families. Thus several members of such a family may show different symptoms of increased thyroid secretion with but one of them perhaps developing an actual Graves' disease, and in fact neurotic means, as we use it, emotional, excitable and mentally active.

Twenty of the forty observers reporting on the question, place violent emotion as the most frequent predisposing cause. Heart lesions are placed as the next most frequent cause, and ordinary goiter and prolonged coughs are thought by several to be frequent causes of exophthalmic goiter.

We cannot better understand the etiology and symptoms of this disease than by studying the condition of thyroid extirpation and the symptoms of thyroid feeding.

Physiology of the Thyroid Gland.—That the thyroid gland furnishes an internal secretion necessary to the health of the organism is proved by the fact that absence of this gland or its lack of development in infancy produces the condition of cretinism, and by the fact that atrophy of this gland causes the condition of myxedema, and finally by the fact that complete thyroidectomy causes operative myxedema and death.

Cretinism is a condition of impaired body and mental development, with gross, heavy features, edematous condition of the skin, and harsh epidermis, while myxedema causes mental hebetude, thickening of the dermal tissues, and mucous edemas, especially of the face and hands. Operative myxedema, or cachexia thyreopriva, shows the ordinary symptoms of myxedema, but much more intense, with tremors, convulsions, decreased cutaneous sensibility, dried skin and falling out of the hair. All of these three conditions, namely cretinism, myxedema and operative myxedema, are cured and the symptoms kept in abeyance by thyroid feeding.

If thyroid extract or substance is fed to the normal individual in small doses it causes no evident symptoms. In good sized doses, or in small doses long continued, it causes loss of weight, palpitation, dizziness, sweating,

tremors, signs of cardiac weakness and general debility, with nervousness and perhaps insomnia; in other words, the very symptoms which occur in Graves' thyroid disease, which symptoms I believe are caused by hypersecretion of the thyroid. Also during the exacerbation of a Graves' disease, the symptoms are all aggravated by feeding thyroid substance.

The active secretion of the thyroid gland seems to be the colloid material, which is a proteid substance containing phosphorus and iodine, the latter of which was discovered by Bauman, in 1895. This gland is probably the only organ of the body that normally contains iodine, and the average adult thyroid contains about .004 grams of this element. The gastric juice does not impair the action of the thyroid substance, though it undoubtedly breaks it up into several new combinations.

Physiologists have found a substance in this gland which causes dilatation of the blood-vessels and a lowering of the blood-pressure, and the gland seems to have the function of regulating the heart and the vasomotor system, and it has been found that in absence of thyroid secretion the regulation of the loss of temperature is impaired, in other words, a vasomotor ataxia is present. It is quite possible that the thyroid and the suprarenal glands have the thermostatic power of regulating the temperature.

The thyroid also seems to have a great deal to do with the regulation of the development of connective tissue, for the less this secretion, apparently the greater the connective tissue development.

Examination of the excretions of obese individuals during the feeding of thyroids, has shown that the metabolism of the body is increased as proved by an increased nitrogen, sodium chloride and phosphorus loss. Thyroid substance also acts as a diuretic, perhaps because it tends to increase the formation of urea, which is diuretic.

It is interesting to note that one observer, Bettmann (8), has noted that thyroid feeding can produce an alimentary glycosuria, and we know that glycosuria is a frequent complication of Graves' disease or hyper-secretion of the thyroid.

To sum up the physiological action of the thyroid: this secretion seems necessary for the proper equanimity of the central nervous system, and perhaps nutrition and development of it; to the proper quantity of mucin that shall appear in the tissues, principally the connective tissues; to the proper organization of phosphorus for the assimilation into bone salts; and by its vasodilator power to properly regulate the peripheral circulation, thus regulating the heat loss and the normal insensible perspiration of the skin, which if disturbed, shows on the one hand in the drying of the skin, in myxedema, and on the other hand in the increased sweating in Graves' thyroid disease. Also this gland seems to have some power of regulating the rapidity of the cardiac contractions. It is probably easily excited to hyper-secretion temporarily by emotion, and we know it to be normally enlarged and hyper-secreting during menstruation and pregnancy.

Symptomatology.—To study the symptoms of this disease, I would divide the course into periods.

1. The pre-thyroid period.
2. Incipient symptoms.
3. The symptoms during exacerbation.
4. Defervescence or, in cases that do not get well, the complications that cause death.

First as to the foregoing condition of the patient. According to my belief as to the etiology of this disease, I cannot agree with one-third of those reporting cases who have stated that the onset was rapid. Neither can I believe that there were no symptoms before "the violent emotion" which precipitated the active symptoms. I believe that there is a long period of irritability of this gland as shown by neurotic symptoms, possibly a goiter which is irritating the rest of the gland, possibly some uterine disease or inflammation, or irritation, if the case is a woman. I believe there have been repeated emotional disturbances, perhaps as far as symptoms go, well tolerated, but all of which conditions have given a chronic stimulation to the thyroid gland until the active symptoms, exophthalmic goiter, are present. Two thirds of the cases reports of which have been sent to me,

have shown just this slow development and did not even apparently begin rapidly. The other third began their active symptoms rapidly; but I have not a doubt but that the gland had been hyper-secreting for a long time before. The apparent rapid onset in these cases due to some violent emotion is the last stimulant to a gland that has been so many times irritated as to finally lose its power of cessation of hyper-activity, has lost its regulator, so to speak.

In order to diagnose these premonitory symptoms or signs of increased thyroid secretion, we must, of course, turn to the physiological action of thyroid secretion; namely, its tendency to produce palpitation, sleeplessness, headaches not assignable to any special cause, hot flashes, tendency to perspire readily due to dilatation of the peripheral blood-vessels, nervous irritability and excitability, and if with these conditions we have continued uterine disturbances, we can state that this woman is in danger of developing Graves' thyroid disease. Doubtless many cases are being treated for functional disturbances in which we have a mildly increased thyroid secretion, not enough, perhaps, to give exophthalmos or an enlarged gland.

Second. What are the initial symptoms of an actual developing Graves' disease? I find by my reports that the first symptoms of well-marked cases were just the symptoms to which we have referred; namely, palpitation, enlargement of the thyroid and nervous irritability; and these are the symptoms which the patients themselves have noted as the first objective signs of their disease.

This simply means that in the patient who comes complaining of severe palpitation, nervous excitability and irritability, we should examine the condition of the thyroid and for diagnostic purposes feed her for a week on thyroid extract. If she is worse, our diagnosis of pending exophthalmic goiter seems to me to be probable.

Third. The symptoms of an established case of Graves' disease. Classically, we know the three symptoms to be exophthalmos, enlarged thyroid and palpitation of the heart. Any one of the three legs of this tripod may be absent, but they generally are all present. The exophthalmos is generally of both eyes, but rarely one eye may be affected, and

that is generally the right. It is generally constantly present, may be occasionally present, is rarely altogether absent, in the majority of cases is mild in degree, but frequently is excessive. This forward projection of the eyeball is probably due to the over-filled blood-vessels in the back of the orbit.

The so-called von Graefe's symptom is the inability of the upper eyelid to follow the eye when the patient looks down, due to the bulging forward of the eyeball.

Stellwag's sign is the widening of the palpebral fissures, due to retraction of the upper lid, combined with infrequent winking. There may be a retraction of the lower lid and rarely ptosis or weakness of the ocular muscles and therefore inability to converge the eyes, Möbius sign.

The thyroid gland may be enlarged as a whole, but generally only half of it is enlarged and that on the right side. It varies in size from time to time, but is rarely large enough to cause symptoms from pressure. There may be developed a cystic degeneration and the appearance of a regular goiter, but the rest of the gland is hypertrophied and hyper-secreting.

Palpitation is almost constantly of frequent occurrence, and in nearly half the cases is severe. In the rare cases in which palpitation is mild in degree, it is probably in the later stage of the disease, that is stage of recovery. The rapidity of the pulse in fully developed cases varies, but averages one hundred and twenty beats to the minute in the majority of reported cases. It may be irregular, is rarely intermittent, but is often a fair pulse. Actual valvular disease as shown by the physical signs seems to be rare, but a large number of cases show hypertrophy of the heart, and not a few dilatation.

The next most constant symptom is tremor, rapid and involuntary, and most frequent in the hands and arms.

General headache, insomnia, and mental depression are almost constant symptoms. Hysteria is present in about one third of the reported cases, and melancholia is certainly not infrequent.

Signs of vaso-motor ataxia are constantly present, such as vertigo, hot flashes, sweating, cold sensations, sudden

paleness, local hyperemias, and in some few cases, recurrent epistaxis.

Pain, besides the headache, is most frequently referred to the eyes, next most frequently to the neck, and often to the ears.

Dyspnea is of frequent occurrence, and generally occurs with palpitation, both of which may be due to any nervous excitation.

Cough is often present, probably largely due to circulatory disturbances.

The other associated symptoms of this disease can be referred to the nervous condition of the patient or to the etiological cause of the disease, namely hyper-secretion of the thyroid.

It is interesting to note that in a large number of cases in women there are menstrual disturbances and generally increased loss of blood.

With the frequent palpitation, headache and sleeplessness we could but expect the digestive disturbances such as loss of appetite and consequent constipation, or in some cases a diarrhea and perhaps vomiting.

Most cases during the exacerbation, and I am inclined to think almost all cases, will show a loss of weight, and if the urine was carefully examined we would probably find a daily increased loss of nitrogen. As to how much muscular weakness there will be, depends upon the rapidity of the loss of weight, the frequency of the palpitation and the condition of the nutrition, and some patients complain bitterly of the weakness of their legs, even falling down.

The diminished electrical resistance of the skin which seems to be quite a constant symptom when tested, may be due to two causes, namely to the fact that the blood-vessels of the skin are more dilated than normally and therefore the skin shows less resistance, or that it may be due to the increased excitability of the central nervous system. Malnutrition of the skin may be shown by the falling out of the hair, and there may be bronzing of different parts of the body, or there may be vitiligo.

Sometimes polyuria is present, and a glycosuria or an albuminuria may be. If there is polyuria or much sweating,

thirst will be much complained of. Added to the above, we may have all kinds of eye, ear and heart symptoms.

Fourth. Defervescence or complications. The duration may be from two to ten years or more.

If the case does not do well and is to end in death, the complications that will bring this end about are, perhaps, one of the most frequent, diabetes, next actual cardiac disease and possibly a condition of progressive muscular debility or neurasthenia. The frequency of diabetes in this disease of an internal secreting gland is interesting in that other glands furnishing an internal secretion, when they become diseased often cause diabetes. This is certainly true of the pancreas, and this gland furnishes an internal secretion, and is certainly true of acromegaly with disordered pituitary secretion, unless here too it is the thyroid that is in trouble.

Cases that have lasted more than five years do not seem to tend to recovery. Cardiac weakness and insufficiency with edemas, passive congestions and albuminurias may occur even to causing death.

The severe nervous complications of melancholia or mania, chorea, etc., are rare, although hysteria is a more or less constant symptom.

Cases that get well, perhaps, generally do so in two or three years, perhaps sooner, with a gradual amelioration of all the symptoms. It is difficult to estimate the number of cases that will die and the number of cases that will get well, but a considerable majority will recover. Probably not more than ten per cent. die of this disease per se, the rest dying of complications. Cases that get well etiologically, do so from the gradual diminution of the secretion of the thyroid. This might naturally occur at the menopause in women.

Pathology.—Time will not permit me to discuss or to mention arguments for and against the various theories which have been offered as to the pathology of exophthalmic goiter. I refer to the cardiac theory, to the sympathetic disease theory, and to the vasomotor neurasthenia or ataxic condition as a cause, which latter I consider a result of the disease.

Briefly, I believe the symptoms to be caused by a hyper-secretion of the thyroid gland. This hyper-secretion carries with it of course all of the physiological actions of this product, two of which we understand, but how many more there are, we do not know. These two elements of this secretion will cause most of the symptoms present in Graves' thyroid disease.

First we have the vaso-dilator substance which we know dilates the peripheral blood-vessels and probably the abdominal vessels, in the former case causing the hot flashes and the sweating, and by filling the blood-vessels of the skin is at least part of the cause of the diminished electrical resistance, although as above stated, another cause may be the excitation of the central nervous system. That this dilated condition of the peripheral blood-vessels is not continuous, which would be a condition of paralysis, is shown by the sudden coldness of the surface and chilly sensations, in other words an ataxic condition of the vaso-motor center. This irregular opening and shutting of the blood-vessels is at least one cause of the cerebral irritation giving insomnia and headache, both of which if neglected may lead not only to hysteria, but even melancholia or more serious cerebral disturbances.

Whether due to the diminished peripheral resistance, due to the vaso-dilation, or, perhaps, to some unknown irritation which this hyper-secretion causes to the cardiac nervous mechanism, or a partial paralysis of the inhibitory mechanism, the heart begins to go very rapidly, and tachycardia is a frequent symptom. According to Dana, the rapid heart is probably due to impairment of the inhibitory fibers of the spinal accessory nerve.

That there is thickening of some of the blood-vessels, seems to be proved and perhaps is as difficult to account for as the thickening of the blood-vessels in acromegaly.

Where the thyroid gland has been found to have its connective tissue increased, I believe the patient has undoubtedly died of an intercurrent disease and that the real thyroid condition was curing itself. When we consider the number of cases that get well under most any treatment, we can only infer that the hyper-secretion becomes gradually di-

minished and that the gland itself becomes worn out, and I believe it is perfectly possible to have connective tissue form in the gland and the degeneration of the parenchyma go so far as to give diminished secretion and putting on of weight and possibly a partial myxedema.

No heart can go at a great rate for any length of time without having its muscular tissue become weakened, and then any exertion or any extra work thrown upon it will cause a dilatation and the consequent results and symptoms of incompetency; namely, mal-digestion of all kinds, passive hyperemia of the liver and passive hyperemia of the kidneys with perhaps albuminuria.

Another increased element in this hyper-secretion is that containing iodine. One function of this substance is to increase the nitrogenous, sodium chloride, and phosphoric acid waste.

The body loses weight in an active case of exophthalmic goiter, and we are very liable to have with the increased urea output a diuretic action and polyuria. Whether from this increased nitrogenous metabolism, or from some other cause we may have such dietetic and glandular disturbances as diabetes as a frequent complication, and whether these elements which we have described can account for the intense cerebral excitation which occurs, is of course a question. Whether or not there is another element in this thyroid secretion which may be utilized by the system when in normal amount, but when in excessive amount produces a toxic blood-state, as held by Möbius, I am not ready to state, although there are a good many believers in the theory that something from the thyroid in this condition irritates the central nervous system.

The histology (g) of the gland itself in exophthalmic goiter, and I say histology instead of pathology because the typical gland in exophthalmic goiter is an hypertrophy or a condition denoting hyper-activity similar to the developing thyroid or a mammary gland during lactation. That there have been pathological (g) findings in thyroid glands in these cases does not militate against the theory of normal hypertrophy, because it has been shown that a diseased gland, as colloid degeneration or an injury to some portion

of it, or a goiter can cause the rest of the gland to hyper-secrete.

Right here I would like to offer some thoughts which occur to me as worthy of discussion.

In the first place about eighty per cent. of all cases of exophthalmic goiter occur in women, and between the ages of twenty and forty, while about eighty per cent. of all cases of myxedema also occur in women, but between the ages of forty and fifty. The exophthalmic goiter, due to hyper-secretion occurs during the active child-bearing period when the thyroid normally periodically hyper-secretes. The myxedema due to the absence of thyroid secretion occurs at the time of the menopause. Next it is but a short step to infer that the hot flashes, nervousness, palpitation and cerebral disturbances occurring at the menopause or during that period are due to disturbed thyroid function. A primary hyper-secretion before the thyroid atrophies would cause the profuse hemorrhages. As the thyroid atrophies normally after middle life, is its modified function possibly a determining cause of the menopause? Also is its diminished secretion not one of the causes of the putting on of weight in women after the menopause? Also as suggested by Bell (10) that carcinoma of the uterus is a sign of epithelial degeneration, hence his treatment with thyroid feeding, is the diminished thyroid secretion the cause of the frequency of cancer after middle life, especially of the uterus after the menopause? Also would we find that cancers occurring in young people are in cases where the thyroid is under-secreting?

Diagnosis.—A well-marked case of Graves' thyroid disease is easy of diagnosis, and cannot well be confounded with any other disease. The three cardinal symptoms of enlargement of the thyroid, exophthalmos, and tachycardia occurring synchronously and with the fourth important symptom of tremor, give the diagnosis almost at a glance. But believing as I do that this disease is due to hyper-secretion of the thyroid gland, calls for a diagnosis of hyper-secretion of this gland before the radical symptoms have developed.

Hence as above stated under the premonitory signs and

early clinical history, headaches, sleeplessness, hot flashes, unexplainable sweating, nervousness, tremors, and irregular cardiac action, all or any of them might have increased thyroid secretion as a cause.

Of course any tumor, whether a simple goiter or other growth, could press on the vagus or sympathetic and cause some of the symptoms of exophthalmic goiter. These conditions are generally easily diagnosed.

Prognosis.—As to the probable duration of a given case, it is practically impossible to make any estimate. The family tendency to neuroses or the previous neurotic symptoms of a case, and the rapidity of onset of apparent symptoms may cause a fair estimate as to prognosis of recovery. It is better where there is no family tendency to neuroses, where the patient was previously nervously well, and where the onset was apparently rather rapid. Well developed cases may get well in from one to five years. Theoretically the older the case is in which it develops, the sooner we may expect it to get well. The percentage of cases that entirely recover is variously estimated; perhaps from twenty to thirty per cent. can be expected to get well, although some of these are certainly liable to relapses. Perhaps it is not unfair to state that seventy-five per cent. of all cases can be helped and rendered more comfortable, this depending of course upon the length of time the symptoms have been present when the case comes under observation. In all probability was every case treated to the best of our ability in the beginning of the case, the majority of cases would get well. By the time a case comes under observation there is likely to be a permanently impaired heart or an almost irreparable neurotic or neurasthenic condition with possibly metabolic disorders, as diabetes. Perhaps from ten to twenty per cent. of cases will die from complications directly attributable to this disease. Burr says that the disease is more fatal in men than in women.

Pregnancy occurring in women in this disease seems to cause an amelioration of the symptoms, probably due to the fact that this condition requires and uses up a certain amount of extra thyroid secretion. Also during menstruation the symptoms are better.

Persistent tachycardia cannot but sooner or later cause weakness of the cardiac muscle and dilatation. Also a life necessitating hard work or labor with this disease present can but tend to hasten this cardiac weakness, and then all of the symptoms of cardiac dilatation occur.

Progressive loss of weight, showing the nitrogenous waste that is going on, can but sooner or later produce from neurasthenia to permanent invalidism. Diabetes is a serious complication.

Treatment.—In the first place can this disease, or does this disease, cure itself? I believe that it does. Hence the cause of so many different treatments lauded as giving good results. Also as this disease tends to show temporary improvements, in estimating the value of any special treatment, we must take into consideration this fact.

If we believe that this disease is caused by a hyper-secretion of the thyroid gland, we must also believe that cases recover by the diminution of the amount of this secretion, possibly by atrophy of, or connective tissue formation in, the gland. Anything that would take up or utilize this secretion, as pregnancy, would improve the case; and as this gland naturally atrophies in old age, age would certainly be a natural cure.

I believe that in suspected cases or before the complete development of the case, if we suspicion a hyper-secretion of the thyroid, the feeding of thyroid gland should increase the symptoms. With our diagnosis thus made we would know how to treat the case. If the symptoms are thoroughly developed, the indications for treatment are:

1. To reduce or stop, if possible, this hyper-secretion of the thyroid gland.
2. To prevent complications.
3. To strengthen and build up the system already worn out or debilitated.

In the first place anything that will tend to increase the outflow or output of this secretion or stimulate the gland to further secretion can do nothing but harm. This is often seen by applying electricity locally, or by considerable manipulation of the gland, or by the taking of alcohol, or by any-

thing that tends to further dilate the blood-vessels or to further stimulate the heart, or to further irritate the gland.

Anything that quiets the circulatory system without putting more blood at a greater tension into the head, will do good. This does not mean that every case of cardiac palpitation in exophthalmic goiter should have digitalis or some equivalent, because I believe that in the cases without dilatation or without real cardiac weakness these drugs will often cause more headache and more cerebral trouble than before. With cardiac dilatation digitalis, or its equivalent, always does good, but strophanthus often acts more satisfactorily.

It can readily be seen that with this treatment we are symptomatically treating the case, that is, combating the rapid heart and the dilated condition of the vessels without eradicating the cause of this condition. Our strongest adjuvant in bringing about this quiet heart-action and the diminished irritation and excitability and therefore hyper-secretion of the thyroid, is absolute rest in bed, mental as well as physical rest, for anything that excites this easily excitable heart will add to the unpleasant symptoms.

Now, as to any possible treatment to actually prevent this gland from hyper-secreting. We naturally turn first to organic extracts. I do not believe the thyroid extract can do anything but harm except in cases where the active stage of exophthalmic goiter is passed and a stage of diminished secretion and possibly mild myxedema is present, and I have a case now on hand that is thriving on thyroid extract, whereas all my other cases are made worse by it. She has some palpitation of the heart, no headache, enlarged thyroid, growing stout, sleeps well, but is muscularly very weak. Hence I believe if there is any value in the use of thyroid extract in the treatment of exophthalmic goiter, it is at a time when the gland is beginning to have connective tissue or colloid degeneration sufficient to impair its secretory functions.

Recently Lanz, (12) of Berne, has experimented with the serum of animals deprived of their thyroids, which serum consequently, he says, contains the toxic substances capable of neutralizing thyroïdal hyper-secretion. On this the-

ory he gave to three patients the milk from goats deprived of their thyroid glands with, he says, good results.

Theoretically, the suprarenal extract or substance should be good treatment for exophthalmic goiter where the vasodilating stuff of the thyroid is increased, suprarenal being a vaso-contractor. But Moore (13) and Purinton seem to have proved that by the stomach this vaso-contracting element of the suprarenal is not absorbed; hence if this treatment does any good in hyper-secretion of the thyroid, it is some other element in the substance and not the vaso-contracting element. Hence I cannot but believe that clinicians who have had good success with suprarenal treatment in Graves' disease, happened to give this substance at a time when the symptoms were ameliorating. Personally, I have seen absolutely no results from the use of suprarenal extract in this disease.

The thymus gland treatment of exophthalmic goiter is beginning to have a large backing, and in several of my cases I believe that the whole condition has been improved by thymus gland treatment, one or two tablets a day. Perhaps one of the first in this country to recommend thymus treatment in this disease, was Dr. S. Solis-Cohen (14). He reported that he had treated twelve cases of exophthalmic goiter with thymus gland.

Whether this gland slows up or diminishes, or combats the secretion of the thyroid, we do not know. It certainly does not contain iodine.

Other drugs which will diminish the secretion of this gland, but unfortunately at the same time upset the secretion of other glands, are morphine, codeia, belladonna, and hyoscyamus or the alkaloids of the latter. Good results have undoubtedly been seen from any of these four drugs and are undoubtedly due to the diminished secretion. Theoretically, were we to use these drugs for this object, morphine or codeia would be most indicated as not only diminishing the secretion, but quieting the heart. Belladonna especially and hyoscyamus somewhat, must excite the heart while they are stopping the secretion of the thyroid, and the uncomfortableness from pushing belladonna or hyoscyamus

cannot recommend them as good treatment. Morphine will produce more or less of a habit, and except to tide over a certain period of exacerbation, is not perhaps often justifiable. Codeia will cause less general disturbance, but is less effective.

The immense amount of restlessness, cerebral irritation, excitation and hyperemia may compel the administration of bromides. They always will do some good, whether by preventing the hyperemia of the brain, or whether by combating the irritation of the nervous system caused by the toxic substances formed in such large amount by the thyroid we do not know. It is purely symptomatic treatment, and, if pushed to any great extent, can cause nothing but debility.

The iodide treatment has many advocates. It probably does little, if any good in small doses, and in large doses could but increase the waste of the tissues, and if it did any specific good, must do it by causing atrophy of the gland, but at the same time must cause atrophy of other glands.

Good results have been reported from sodium phosphate, and theoretically this would be compensatory treatment considering the large loss of sodium chloride and P_2O_5 caused by the hyper-secretion of the thyroid.

Electricity can only be a part of a general tonic treatment. General faradization can but do good if it does not increase the nervous excitability. Central galvanization of the sympathetic system possibly might do good, and faradization over the gland might possibly ultimately cause a better tone and contraction of the gland, but the stimulant action of the galvanic current locally with the negative pole active would be contra-indicated, and with the positive pole active for the purpose of diminishing the blood-supply to the gland, would be problematical.

As to operative treatment, I find but few believers in surgical interference with this gland for the ordinary symptoms of exophthalmic goiter. There can be no question of the advisability of removing a portion of the gland if there are pressure symptoms. Theoretically, if we find a cystic growth or colloid degeneration, or some enlargement of some portion of the gland, and such have been proved to

be able to so irritate as to cause hyper-secretion of the rest of the gland, it would be good treatment to remove that pathological portion. Dr. M. Allen Starr (15) suggests that some of the deaths after operation are caused by the handling of the gland causing an increased absorption of the secretion, thus poisoning the system.

Dana (16) says that he believes cases that cannot rest or have proper treatment for one or two years, had better have surgical interference considered; otherwise he believes it unjustifiable. Operation, however, may not completely cure.

To sum up then, the best treatment in my opinion, is rest, thymus extract in small doses, strophanthus, and bromides if must be, and not to expect permanent good results for from one to two years, and then relapses may occur. The condition will always be temporarily better during menstruation and during pregnancy, and probably becomes permanently cured at the menopause. Complications, as cardiac dilatation, should be treated concomitantly with the goiter. If diabetes occurs, perhaps codeia is one of the best treatments for both conditions. All uterine disturbances should be treated.

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DIPHTHERIA AND PUBLIC SCHOOLS.

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II.

The influence of school attendance on the diffusion of diphtheria is a subject of peculiar interest to us, especially at the present season, for during the past six months Hartford, as well as towns in the vicinity, have been visited by the first serious epidemic of diphtheria since 1883. In fact, this increase in the number of cases of diphtheria reported, as well as the number of deaths from this disease, is noticeable, not only in Connecticut, but in nearly all the larger cities of the Eastern States. Boston shows a large increase in the number of cases reported and a marked increase in the number of deaths. The annual report for the city of Cambridge, just issued, shows that for the months from August to December 31, 1899, there were a total of 403 cases of diphtheria, against a total of 81 cases in 1898, for the same months; 125 for 1897; and 132 for 1896.

Scranton, Pa., is still suffering from a severe epidemic of this disease. Several of the public and parochial schools have been closed for several weeks, the issue of books from the public library has been suspended, and numberless houses are in a state of quarantine.

From these cities, whose statistics I have had access to, reports agree that the disease commenced as early as last June or July, was not considered particularly serious until the middle of September, when the number of cases increased so rapidly that it assumed the form of an epidemic.

Reports from the surrounding towns in Connecticut sent to the State Board of Health, and various items in the daily press, all bear evidence of the same condition of affairs. It has, therefore, seemed that it might be of interest to

our society to discuss briefly what relation, if any, the public schools bear to the spread of this disease, and what means can be taken to limit as far as possible this tendency of the disease to spread among scholars.

Diphtheria is essentially a disease of childhood. The greater proportion of cases occur during the ages of childhood, and all investigations made, both in this country and in England bear out the opinion that the disease is most prevalent among those attending schools.

In the article on diphtheria in "Allbut's System of Medicine," written by W. P. Herringham, is a most interesting résumé of the investigations of Mr. W. H. Powers, made during the prevalence of an epidemic of diphtheria in several English counties.

"It was found practicable to divide the 928 children of one village into age groups, then to ascertain within each group the relative amount of diphtheria among those who attended school and among those who did not. Under three years of age school attendance was not found to have materially influenced the number of attacks. But in the age period three to twelve years, the extent of the disease was not far from fifty per cent. greater on school attendants than on others. And in the age period twelve to fifteen years, the school attendants suffered nearly three times more than those who did not. Indeed, this circumstance is now so generally accepted that restrictions in the school attendance often form one of the earliest, if not the chief, of the measures adopted by local authorities to prevent the diffusion of the disease. School attendances are recognized as serving to diffuse the malady amongst a somewhat scattered population. Indeed, in hitherto uninfected households children between three and twelve years of age, who at a given period, were attending school became affected five or six times as numerous as children of the same age, who at the same period were not attending school. It was also seen that the attacks of sore throat, which did not present the typical signs of diphtheria, often but trivial in their character, served as links between the more marked outbreaks of the disease. Hence, besides resort to measures of disinfection of the school-houses and of invaded houses.

sustained medical effort was made to eliminate from the school on the occasion of each of its reopenings all cases of sore throat, however mild."

In an article addressed to the Epidemiological Society of London by the same author, he goes on to say: "I drew the conclusion that under certain circumstances the property of infectiveness appeared to be a matter of progressive development, and that throat illness which, under one set of conditions, might remain practically non-infective, might under others become specifically infective and in its transmission acquire characteristics not to be distinguished from those clinically known to be diphtheria."

I have quoted somewhat at length from the article mentioned, for the reason that this was written of a time before the specific organism of diphtheria was known and long before the method of detecting and isolating that organism by bacteriological investigation was in vogue. And yet the conclusions arrived at are identical with those which modern observers reach, after exhaustive study and long series of tube-cultures and bacteriological examinations.

It may be of interest to relate the experience of the Hartford Board of Health in dealing with the epidemic as it occurred in this city during the past six months, and draw such conclusions as seem fair from the experience we have had.

Prior to 1899 the number of cases of diphtheria reported average somewhat over one hundred in each year, namely:

For 1898	133
For 1897	147
For 1896	141
For 1895	89
For 1894	83

These, it must be understood, are all the cases in which throat-cultures showed the presence of the Klebs-Loeffler bacillus. Many of them were not clinical cases in the sense that they showed marked symptoms, and many showed no membrane. Many, indeed, have been so mild that the attending physicians were probably quite skeptical as to there being any danger of their communicating the disease to others.

In 1899 the first five months of the year showed an average of nine or ten cases a month. In July, however, twenty-two cases were reported with five deaths; in August, nineteen cases with six deaths; in September, fifty-two cases, with six deaths. By the middle of September the public and parochial schools reopened, and in the month of October ninety-one cases were reported, with fifteen deaths.

It was evident that the epidemic was upon us, and the question was raised as to what measures must be taken to arrest the spread of the disease. Up to this time the disease had been in the main confined to a district comparatively limited in extent and tributary to two large public schools, accommodating in the aggregate nearly 2,500 children. It was a section of the city where sanitary conditions were none of the best, where over-crowding of tenement houses was most prevalent, and where, as a whole, the population was most dense. The disease was confined in the main to children from five to fifteen years of age. The majority of the cases reported occurred among school children. It was evident that the disease was spread from child to child among those attending the schools, and probably to a greater degree during their attendance at school. The steady spread of the disease, its tendency to invade other school districts, and the rapidly increasing mortality made it imperative that prompt action be taken and the question was raised whether the two infected schools must be closed, throwing some 2,500 or 3,000 children out on to the streets, or some method adopted by which the incipient cases could be separated and quarantined and prevented from associating with the well in the schools.

Accordingly, two physicians were appointed, who visited each school of the city in rotation, examined every child in every room, and in every case in which there was any suspicion of local throat catarrh or discharge from the nose, or enlarged glands at the angle of the jaw, anything in fact that would lead one to suspect a previous or present catarrhal inflammation of the throat, tube-cultures were taken and sent to the city laboratory for examination. In the month of October 2,836 children were examined by Dr. Botsford; 142 were found to present evidences sufficient to

warrant the culture being taken, and of that 142, thirty-one proved to have Klebs-Loeffler bacilli in free growth. During the same month Dr. Carlon examined 2,481 children, took 145 cultures, of whom twenty-two were found to be infected with the Klebs-Loeffler bacilli. All children found thus infected were excluded from school, were sent home with instructions to their families to consult their family physician and obtain treatment, and were not readmitted until the second culture could be taken and their throats proved to be free from germs of the disease.

A number of these cases in the many children thus excluded presented no evidence of disease whatsoever, and considerable indignation was expressed by patients, as well as in some instances by the family physicians at thus imperatively excluding them from school on the bare evidence of a bacteriological culture. It was asserted that the bacilli thus found without visible lesion were not dangerous; that these same Klebs-Loeffler or similar bacilli could be found in the nasal secretions of many healthy people, and that great injustice was being done many children by thus labelling them contagious, when there was no risk whatever in allowing them to associate with healthy children. It is undoubtedly true that the technique of bacteriological investigation cannot always be infallible, and that in occasional instances a bacillus not to be differentiated from Klebs-Loeffler may prove, on investigation, to be nonvirulent. But considering the emergency existing, it seemed wiser to risk excluding a few healthy children than to take any chances in permitting a possible infected child to remain in attendance among its fellow pupils. But careful investigation of several instances that came before my notice of children excluded while apparently healthy promptly developed diphtheria, or where children in immediate contact with them contracted the disease without other recognizable method of exposure, may be of interest in enlightening us on this point. Dr. Carlon sends me in the following cases:

J. B., aged five and one-half years; the school culture on November 21st showed Klebs-Loeffler; was excluded from school. His brother, an adult not attending school, de-

veloped diphtheria November 25th; his older sister developed diphtheria December 1st.

R. K., school-culture shows Klebs-Loeffler October 10th; small brother developed the disease within a few days.

E. B., aged six years, was excluded from school December 21st with Klebs-Loeffler present in throat culture. On December 23d her four-year-old brother developed the disease in a severe form.

M. M., aged seven years, showed Klebs-Loeffler on December 21st; throat otherwise clean and boy well. On December 25th he was attacked with diphtheria with every symptom.

J. R. showed infected throat February 11th; February 24th he became ill with diphtheria of a moderately severe type.

Dr. Botsford reports as follows:

Of the sixty-one children that I have excluded on account of Klebs-Loeffler in cultures, eighteen have been reported as sick within the following week. Not all of these can be shown to be sick with diphtheria because all did not have a physician, but their mothers reported them as having sore throat and too ill to come to school for re-examination. Two others who did not return for examination after quarantine became sick with clinical diphtheria and ran a more or less severe course of the disease.

All who are familiar with the habits of school children and the conditions which prevail during school life, will not be surprised at the ease with which a disease as communicable as diphtheria is spread from child to child. In many of our public schools, until very recently, it was the custom for all leadpencils to be distributed to the school in the morning, collected at night and redistributed the following day again. Naturally each child sucked the point and chewed the end of his or her leadpencil and passed it on to the next child on the following day. The common property sentiment of chewing-gum, of apples, of pocket-handkerchiefs for those who possess such a luxury, and the general and familiar aspect of the average school towel are sufficient reasons alone for almost any infection to be spread from child to child. Moreover, few if any public schools are

properly ventilated, and when one considers that these children spend from four to five or more hours a day, fifty or sixty in a room, closely crowded, poorly ventilated, often insufficiently fed, and exposed to all the means of immediate contagion that I have suggested, it is not surprising that throat disorders spread from child to child.

As a result of these investigations and my own experience with diphtheria for a number of years, it is my judgment that diphtheria is more frequently a very mild and trivial malady than we formerly had any reason to believe. It is quite evident that many cases of simple catarrh of the nose or throat are actually due to the presence of the Klebs-Loeffler bacillus, but never attain sufficient virulence to cause an exudate and are entirely unattended with any constitutional disturbance whatsoever. It is only in exceptional circumstances, owing perhaps to the condition of the child, or in exceptional years, owing possibly to some undue virulence of the specific organism itself, that the disease becomes severe and epidemic. But that it prevails year in and year out, and that the organism itself is nearly ubiquitous, there can be no question.

The system of thus weeding out from among school children all with infected throats by means of systematic examinations and the use of throat cultures in suspected cases, has been continued to the present time; the result may be briefly summarized:

In October,	91	cases of Diphtheria reported,	15	deaths.
“ November,	122	“	“	12
“ December,	78	“	“	7
“ January,	52	“	“	2
“ February,	59	“	“	5
“ March,	49	“	“	6

No public or parochial school has been closed, all infected as well as healthy children have been under observation, and as an incidental advantage of medical supervision several cases of desquamatory scarlatina, scabies and other contagious diseases have been discovered among healthy children and promptly sent home for disinfection.

A word in conclusion may not be out of place regarding the control of an epidemic of diphtheria where bacteriolo-

gical methods are not obtainable. While it is undoubtedly an advantage to be able to say whether the local throat catarrh is due to the Klebs-Loeffler or to an ordinary non-virulent organism, it is not essential, for if every child were excluded in which any symptom of local or nasal throat catarrh were present, nearly the same results would be obtained. Many cases of simple colds and sore throats would probably be classed as diphtheritic. But the precaution of excluding all cases showing any catarrh whatsoever would do no harm during the prevalence of an epidemic.

THE USE OF NITROUS OXIDE GAS AT THE BRIDGEPORT HOSPITAL.

N. E. WORDIN, M. D.,

BRIDGEPORT.

III.

Nitrous oxide gas as an anesthetic is of particular interest to the physicians of Connecticut. It was the agent adopted and put forward by Dr. Horace Wells in preference to ether. It was because ether proved to be the more popular and perhaps the better anesthetic that Morton gained more glory and credit than Wells. The manner in which the Hartford physicians supported Wells by practically demonstrating that nitrous oxide was an anesthetic by the use of which capital operations could be performed, has been recorded elsewhere and has become a matter of history. A new use for nitrous oxide has of late appeared and for about two months has been carried on at the Bridgeport Hospital. I refer to the adoption of the gas as a preparation for and an aid to the more permanent anesthetic, ether. This idea was suggested by Dr. F. S. Wakefield, the junior intern, who had seen it used at the clinics of Drs. Weir and McBurney in New York, and had since used it at the Maine General Hospital, at Lewiston, Maine, where he was during a portion of last summer. At the Bridgeport Hospital the administration of the anesthetic has been entirely in charge of Dr. Wakefield.

An analysis of the first fourteen cases is given below. Attention is particularly called to the following facts: First, the short time from beginning the inhalations of gas until complete anesthesia is produced: Second, almost entire absence of vomiting, only two of the fourteen having been disturbed at all in that manner: Third, absence of all excitement or struggling on the part of the patient: Fourth, absence also of all disagreeable sensations of the anesthetic on the part of the patient.

A record is also submitted of the only case in which the gas was not given, which may serve as something of a contrast.

REPORT ON FIRST FOURTEEN CASES.

No.	Length Eth.-Anesth.	Amount Ether used, Drams.	Gas used, Gals.	Complete Anesth. in minutes.
1	1h 57m	8½	5	2
2	1 1	9½	7	2½
3	57	8	7	3
4	1 31	12	5	3
5	1 11	13½	7	5
6	14 15s	5	10	3½
7	31 30	6½	5	5
8	17 30	4½	7	3
9	57 30	10½	7	2½
10	1 16 30	11½	7	6
11	32 45	4½	5	2½
12	36 30	10	7	5
13	39 45	8	7	5
14	28	6	7	4
—	—	—	—	—
14	12 11 15	119	93	52

Averages.

In 1 hour, drams 9.7 used (ether).

In each anesthesia 6.6 gals. gas used.

“ “ “ complete anesthesia in 3.7m.

The anesthesia was not disagreeable in any of the cases and in none was there any knowledge of the change from gas to ether, so that there is all loss of consciousness in about 45 seconds. One case, who had taken ether alone and ether-gas subsequently, says that while in the former case her sensations were most disagreeable, in the latter they were nothing but pleasant; all choking and nausea done away with. In each anesthesia we have used approximately 6.6 gallons of gas. Gas costs two cents a gallon.

The average time for complete anesthesia has been 3.7 minutes; shortest, two minutes; longest, six minutes.

The amount of ether used is probably not diminished much by employment of the combination method. Time of anesthesia is very much shortened. Sensations to patient much more agreeable. Vomiting less conspicuous.

F. S. WAKEFIELD, M.D.,
Bridgeport Hospital.

HYDATIDIFORM DEGENERATION OF THE CHORIONIC VILLI.

R. LAUDER, M. D.,

BRIDGEPORT.

IV.

The following interesting and uncommon case from Fairfield, the Committee considers should receive special record.

Mrs. F. S., aged thirty-three, residence Waterbury. She has one child, aged three years. About the first of March she came to Bridgeport to attend the funeral of a relative. For some six weeks previous to this she had been flowing daily at intervals, for which she had received treatment from her physician. He, believing her pregnant and that a miscarriage was inevitable, had advised a curettment. After her arrival in this city she continued to flow more or less. This hemorrhage came to be very severe and alarming, and I was summoned on the afternoon of March 16th. On examination the os was found to be soft and dilatable. Within the uterus was a soft friable material, having a peculiar odor. The abdomen was as large as that of a woman at full term. There was fever, hyperesthesia, jactitation, a nervous condition and symptoms of septic absorption. Recognizing the necessity for prompt action, I called assistance for anesthesia and immediately prepared to curet the uterus. I found within a placenta-like substance permeated with minute blebs from the size of a pin-head to that of a small marble. These vesicles contained a colorless fluid. Some of the substance was like placenta, without the vesicles. No fetus was found. Later in the afternoon I was obliged to curet again and secured a double handful of this soft, shapeless substance. For two or three days small quantities of this material continued to be passed. After the

curetting the flowing was slight, but there was much shock, as the result of the operation; pulse 120, extremities cold, features pinched and hard, almost collapse. From this she rallied slowly. Her temperature rose to 105 1-2 degrees within twenty-four hours after the operation. For two or three days she was given intra-uterine injections of bichloride, 1-1,000. She made a good recovery.

I take pleasure in reporting this case, because of its rarity. I have had one other case in my practice. In the year 1874 was called to attend a woman in labor. My services had been previously engaged. Knowing that she had had a difficult delivery, I had secured the promise of ready assistance, should it be needed. I found the os dilated, but could find no presenting part of the child. Moreover, there was considerable hemorrhage. Realizing the unnatural condition of affairs, I summoned my counsel, an old and experienced physician. Attempting to find the child, he was unsuccessful, but he did get some hydatids. As he became tired, weakened and faint, I called a further consultant. He was unfamiliar with such a condition of affairs. But recognizing the hydatids from a specimen, which had been presented in clinic during my college course, I proceeded to remove them by hand, introduced into the uterus. More than two quarts in bulk were taken away, many of the hydatids being as large as Malaga grapes. The task was a difficult one. It was before the curette was known for such purposes, nor were there any such things as antiseptics. The woman, deprived of the benefit of these more modern appliances, died within twenty-four hours.

MEDICAL PAPERS.

REPORT ON THE PROGRESS OF MEDICINE.

ALFRED G. NADLER, M. D.,

NEW HAVEN.

Were Hippocrates to reappear on this planet, it is quite probable that he would desire an immediate return to his present abode, overcome with dismay and discouragement. The voluminous mass of medical literature placed before him for perusal and study would cause his precipitate flight.

To those who have continued their medical reading for the past few years, it is apparent that wonderful strides have been made in all branches of medicine. So much research has been carried on both in the laboratory and by clinicians, that it is wellnigh impossible for the average practitioner to keep in touch with the rapid progress and to derive practical benefit therefrom.

It is beyond the scope of this paper to report all progress in medicine within the past year. I must content myself with only mentioning many things, devoting my attention to those which appear especially noteworthy.

TYPHOID FEVER.

No report on the progress of medicine can omit an account concerning typhoid fever. Two years ago, Doctor Tiffany reported that the results of the treatment of typhoid fever, with anti-typhoid serum were very contradictory, and the number of cases few, so that no conclusions could be drawn. Since then Doctor McFarland, after a careful study of this subject, says that the results attained are scarcely sufficient to give a hopeful outlook for the future and on the whole, discouraging.

Experiments have been carried on among the British soldiers in India for the purpose of demonstrating the prophylactic value of typhoid serum. These experiments prove that there is some measure of safety procured by inoculation.

It is now almost universally acknowledged that the Widal test is a specific diagnostic sign. Considerable has been written of late regarding the diet in typhoid fever. Bushuyer reports a series of eighty cases with a mortality of ten per cent., where the patients were given a free diet, consisting of semi-solid food with some meat. His colleague, Sartsievrich, treated seventy-four cases in the same military hospital with a purely liquid diet and had a mortality of twelve per cent. There has not been enough accomplished, however, to warrant a general change in the present methods of feeding typhoid patients.

VACCINATION.

In connection with the use of typhoid toxin^e inoculations as a preventive of the disease, I wish to call your attention to the almost marvelous results obtained by wholesale vaccination in Porto Rico. No better argument in favor of vaccination could be desired than the immediate stamping out of the dread small-pox in our new territory. Doctor Wadhams says:

“The total population is about 1,000,000. Of this number about 800,000 were vaccinated, the remaining 200,000 probably had had the disease. When the work began, there were several thousand cases, but within two months, after the work was completed, there was not a single case on the island.

INFLUENZA.

The recent epidemic of influenza has again demonstrated the fallacy of any specific treatment. It is suggested that carbolic acid in large doses, twelve grains in half an ounce of syrup of orange peel and one and one-half ounces of water be given. The use of the decoction of cinnamon given every half hour for four doses and then every hour until temperature falls is proposed. The treatment must be largely symptomatic. No one as yet has discovered a means to prevent the great depression which follows la grippe.

RADIOLOGY.

That medicine is prepared to take advantage of every scientific advance or discovery is well demonstrated by the

study and application of the Roentgen Rays. There is a great future before radioscopy and radiography in connection with diseases of the thorax. As a diagnostic agent in pulmonary diseases, the X-Ray will prove of vast benefit to the practitioner.

Stubbert gives the results of his researches as follows:

1. The fluoroscope is an accurate agent for corroborating and extending diagnosis made by ordinary methods.

2. It is capable of demonstrating foci of tuberculous infection earlier than can be distinguished by the ear.

3. It shows either unilateral or bilateral enlargement of the heart and all displacements of that organ.

4. Emphysema, asthma, pleurisy, hydro-pneumothorax, pyo-pneumothorax, hydrothorax and pneumonia are all easily recognized and their limits demonstrated. In the last named disease it has been claimed that a more certain prognosis may be assured by the use of the fluoroscope.

5. Thoracic aneurisms are recognizable in their early stages.

6. Cavities which have escaped detection by auscultation or percussion may be discovered.

7. The presence of fluid in the pleural sac may be positively determined.

To the life insurance examiner the X-Ray will soon prove indispensable. It is not for him to diagnose the disease, but to discover the presence of a pathological condition. With the fluoroscope this is more readily and easily established than by any of the older methods.

Within the past few years ailments grouped under the general head of Diseases of the Blood, Diathetic and Metabolic Diseases, Diseases of the Spleen, Thyroid Gland, and Lymphatic System have engrossed the attention of pathologists and clinicians and in no other branches of medicine has so great progress been made. Furthermore, there is opportunity for more good work and one discovery but leads to another. We now understand the relations of certain glands and organs, which previously have been hidden and we are enabled to use this knowledge for the benefit of our patients. Modern treatment of disease

demands that we avail ourselves of every laboratory facility. In diseases of the blood and allied ailments this is particularly necessary.

LEUCOCYTOSIS.

It is well known that leucocytosis is a symptom of disease. The following are some of the most important prognostic and diagnostic points to be gained from the presence or absence of leucocytosis:

“In malignant disease a steady rising count foretells a fatal termination. Uncomplicated typhoid fever, measles and all forms of simple tubercular infection, except meningitis, do not show any leucocytosis. In pneumonia the leucocytosis may appear before the physical signs, as in central pneumonia.

“Absence in any but a mild case is a bad prognostic sign, the termination almost invariably proving fatal. The count in pneumonia begins to fall before the temperature, but reaches normal after it, and it does not fall in a pseudocrisis and in cases of non-resolution and consolidation after drop of temperature the leucocyte-count remains high. In typhoid fever the appearance of a leucocytosis would point to perforation, otitis, phlebitis, or some other complication rather than a relapse.

“In diagnosis between scarlet fever and measles, leucocytosis favors the former.” (Sajous' Monthly Cyclopedic of Practical Med., May, 1899).

Besredka studied leucocytosis in diphtheria. He found that the count of polynuclear leucocytes was always characteristic, though the count of total leucocytes was not. In a rabbit, receiving a very large dose of toxin, the polynuclears increased up to twelve or sixteen hours and then decreased regularly. After a smaller dose, an increase was always found, but the curve showed oscillations. Animals inoculated and saved with antitoxine showed a polynuclear leucocytosis for twelve or fifteen days after the injection. The same thing was observed in children treated for diphtheria. A fatal termination in spite of antitoxine failed to show characteristic polynuclear leucocytosis. This, he regards as a most valuable prognostic sign.

THERAPEUTICS.

Therapeutics has kept pace with other departments of medicine. Physiologists and clinicians are devoting much time and thought to the serum treatment of diseases. Rarely now, does one see an objection to the use of diphtheria antitoxin. It is generally conceded that the antitoxin is not required in all cases of diphtheria. That it has decreased the rate of mortality is indisputable. The success of this serum has opened a large field for experiment. The results are too meagre to report anything conclusive, but the future offers promise of valuable aid.

But little new has been gained in general therapy. Many new coal-tar preparations have been offered to the profession. Many of those whose value has been proven, such as acetanilid and phenacetin, will be included in the new pharmacopeia.

Heroin, a derivative of morphine, has proven a decided acquisition to our store of useful drugs. It is not so harmless as was formerly supposed. It has a far greater depressant action on respiration than morphine. Heroin is also a cardiac depressant. The maximum adult dose should not exceed one-fourteenth grain.

Whether liquid air will be added to our therapeutic resources remains to be seen. Some use has been made of it as a local anesthetic, and in cutaneous diseases with some favorable results.

DRY HEAT.

During the past year there has appeared a new therapeutic agent which gives great promise. I refer to dry heat of high degree. This agent has been in extensive use in the large cities of this country and the results secured have been very striking. It seems to exercise its influence in conditions which have hitherto caused us much trouble and anxiety to conquer and remove, such as very obstinate and chronic unabsorbed pneumonic deposits, respiratory and heart failure from acute pneumonia, neuralgia, sprains and diseases characterized by deficient oxidation. It is being investigated extensively and its scope of influence seems to be greater than we at present can have any idea of.

A number of articles have appeared during the year and the concensus of opinions stated by the writers seems to be practically the same.

The apparatus for applying this dry heat consists of an oven so arranged that the heat is uniformly distributed. Within is a hammock arrangement for the part to be treated, which part must be well wrapped in some absorbent material to prevent burns.

Dr. C. E. Skinner, of New Haven, has been investigating this new therapeutic agent for the past two years. His results he tabulates as follows:

"In pneumonia, with the heart as weak as it may be and the patient breathing from fifty to sixty times a minute, with great difficulty of respiration, the application of hot air over the affected lobe produces a remarkable strengthening of the pulse, together with decrease in the rapidity of action, removes the respiratory difficulties, making the movement easy, and relieves the pleuritic pain at once; so that at the end of three-quarters of an hour, the patient's heart action is good and strong and the respiratory difficulty markedly lessened. This is probably due to a reflex nerve action caused by direct action of heating nerve endings in pleura and lungs. The auscultatory and percussion signs of consolidation disappear entirely in from two to four days, the patient steadily grows better, both generally and locally, from the time of first treatment. The fever and respiratory rate progressively decrease, but do not disappear altogether until the disease has run its normal course.

"In peritonitis, the cramp and cutting pains are entirely relieved within twenty minutes and the temperature is reduced within two hours after treatment, and the course of the disease markedly decreased.

"In rheumatism, pain is relieved within fifteen minutes to half an hour, while parts are at rest, but movement of parts produces pain temporary in character. The temperature also subsides within two or three hours. The disease enters immediately upon a course of recovery. Ordinarily a case of acute rheumatism will recover in ten days if the patient is under control. Medicines (salicylates) are given in connection with treatment. This is necessary to

produce satisfactory result. Hot air is of little use, except to remove pain temporarily, without medicines, but when we reflect how hard it is to cure many cases of rheumatism with any kind of medicine and to relieve the pain, hot air by securing the relief from pain, which is immediate and sure, assumes the aspect of great desirability.

“In sprains, if the injury comes under treatment within four or five hours, complete recovery takes place in from twenty-four to forty-eight hours, while the pain is gone at once. In old sprains, it takes longer to cure the lesion, but the relief from pain is as immediate, as in recent cases.

“These sprain and rheumatic cases can go about their business, it taking longer to effect a cure.

“In arthritis deformans we get a curative result in from three to six months.

“In obesity it promises much, but so little has been done that positive statements as to permanent results cannot be affirmed.”

Taking all in all, we seem to have in hot air, an agent which is going to play a very important and desirable part in therapeutics of the future. Those familiar with its use are very enthusiastic.

STATE SANATORIA FOR TUBERCULOUS PATIENTS.

CHAS. D. ALTON, M. D.,

HARTFORD.

The economic consideration of the value of a human life increasing or decreasing the wealth of a community will form the view point of this contribution. How much is an adult human life worth, and how can we best conserve the interests of the State and, with equal benefit, of each community in the state, by saving to the commonwealth the productive value of that life?

It may not be known generally to the public, but to every medical man at all conversant with state and city mortality reports it has long and too well been a recognized fact that tuberculosis is the most prevalent disease of modern times and the foremost cause of death. So well recognized is this fact that individuals and organizations, both at home and abroad, have for years been urging methods for the prevention, arrest and even cure of this great wealth and life destroyer. Others have already taken the initiative, and whatever Connecticut or communities in Connecticut may conclude to do, they will be but following in the footsteps of pioneers who have tested the methods, solved many problems, and declared the results. How long our action shall be delayed and for how long these benefits shall be denied to us depends, I think I may say without fear of contradiction, upon the interest and earnestness of the medical profession.

It is said that we of the United States are far behind the countries of Europe in the systematic care of tuberculosis patients. On the continent of Europe are one hundred Sanatoria for patients of this class; of these Russia has eleven, France twenty-one, and Germany forty-three, while England, Scotland and Ireland have twenty-six. In our

own country are about thirty-five, nearly all of which are under private management, very few being public institutions. Of late much consideration has been given to institutions freely open to the poor, not only in view of the personal needs of such individuals, but to free the more densely populated centers from the danger of infection, and third, to restore invalid lives to their productive value and prevent their becoming a prolonged charge upon charity or the state; for it has been proved by conclusive demonstration that while a gratifying majority of incipient cases are by systematic hygienic regime restored to their vocation, a considerable percentage of those in advanced stages are also restored for many years of usefulness. Uncared for these impaired lives are a menace to the health and happiness of thousands of healthy lives. Rob them of the fruit of their toil and at last, even if not a cost to the State, you withdraw from the wealth of the community just so much productive or creative force.

If it were from cholera or the plague or epidemics of small-pox, we would act with a determination, driven desperate by alarm, but having tolerated from tuberculosis this perpetual endemic out-classing by its victims over and over again any plague known to us, we have admitted our inability, through lack of knowledge, to cope with it until familiarity and apathy have bred contempt. But now that the way seems opened not by the trial of some vaunted cure, but by following a rational systematic method based upon a clearer knowledge of cause, and its accuracy already proved by results, it becomes this Medical Society to make known to our fellow-citizens of the State the present knowledge upon this vital question and to take the initiative in such steps toward education as shall in time prove the beneficence of our action.

What are some of the existing conditions, as shown by statistics, in state, city or country, calling for a serious consideration of this question?

The annual report of our State Board of Health shows an average annual death loss during the past ten years of over fifteen thousand lives from tuberculosis, while the total average death loss from all infectious or contagious dis-

eases is only eleven thousand one hundred. And yet the State and local Health Boards were formed largely for the purpose of preventing loss from these latter causes and it is only of recent years that tuberculosis has fallen to their consideration, and only now as a matter of serious interest without definite means allowed them of prevention. It is worthy of note that of these fifteen hundred deaths from tuberculosis nearly twelve hundred occurred between the ages of twenty and sixty, the productive years, contributing the greatest value to the community; while of the eleven hundred losses from contagious and infectious diseases a very large percentage were under ten years of age, the naturally dependent, non-productive period. It would seem that we tax ourselves heavily to protect largely the non-productive age that we may lose these valuable lives, uncared for, when they should, in their productive period, add to our material wealth.

We know that, according to custom, and already recognizing the benefits of climatic and institutional treatment, we send many of our patients to health resorts and they die beyond the limits of the State. These departures are most frequently advanced cases, many of which could have been arrested, if not cured, could they have had early treatment at sanatoria within the State. It would seem therefore that the Board of Health's estimate of twelve hundred adult deaths could accurately be increased to nearly or quite fifteen hundred deaths annually of Connecticut citizens from this cause alone. And the value of a human adult life is estimated at \$1000. A total loss to the state of Connecticut of one and a half millions of dollars a year.

One authority estimates that tuberculosis kills 152,000 people in the United States each year, 75 per cent. of whom are of the laboring class. In the late war the loss was 6300 lives from all causes.

The following statements are grouped from a set of papers on tuberculosis presented at the meeting of the American Medical Association in 1899 by able writers.

Of the 75,000,000 people in our land to-day ten millions or more will die of tuberculosis unless we develop methods for its prevention. The general results of post-mortems

show that an average of from two-fifths to one-half of all persons dying from whatever cause, give evidence of tubercular infection of the lungs. Biggs demonstrated characteristic lesions in the lungs alone of 60 per cent. of his post-mortems. Grawitz found tuberculosis in the lungs of one hundred and fifty-two out of two hundred and twenty-one patients, being nearly 70 per cent. of all infections. It is estimated that a consumptive expectorates at times as many as seventy millions of the bacilli in twenty-four hours. The spread of tuberculosis by means of sputum and fine droplets expelled during coughing has been exhaustively investigated and proven by Flugge of Breslau.

Ferguson says: From a pathologic point of view tuberculosis is the most loathsome disease we have; from the sanitary point it is the most widely scattered, and furthermore, it is the disease that carries off more than any other. Its infection is carried about in innumerable ways, by our household pets, birds, cats, dogs; the paper money we carry in our pockets and moisten with our fingers; the dried sputum transferred from street or car by trailing dresses, the towels in public lavatories, the books of a circulating library, the cup of the drinking fountain. It involves all the nations of the earth, every organ and tissue of the body, it pays no respect to person or sex.

Dr. Evans of Chicago says: 1. Tuberculosis is the most widespread of all diseases. 2. It is the most costly of all diseases. 3. It is the most important economic problem that confronts the American people. 4. Tuberculosis is, relatively, gaining in frequency.

In New York City, according to Biggs and Prudden, there are, it is safe to say, 20,000 people walking its streets each day affected by tuberculosis and carrying the possibility of infection to the other people of the city. In Chicago one-tenth of the mortality is from tuberculosis. There is one death from tuberculosis to 8.4 deaths from all causes. According to German statistics, tuberculosis kills thirty times more people than small-pox and scarlet fever combined, sixteen times more than typhoid fever, eight times more than diphtheria, and

four and one-half times as many as all these diseases together.

During the past fifteen years there has been an apparent decrease in the annual mortality from tuberculosis. Some authors declare, however, that this slight improvement is not in proportion to the decreased loss from all diseases. In Philadelphia, for instance, while there has been a marked decrease in the percentage of tuberculosis for each 100,000 inhabitants, there has been no material decrease as compared with the death-rate from all diseases.

If this improvement is actual, it is undoubtedly due to our increased intelligence as to the cause of the disease and the conditions that foster and perpetuate it, the recognition that its fatality increases with density of population and that separation, isolation, sunlight, fresh air and good food give the greatest assurance of cure.

We have seen that a large percentage of these cases are among those working for the lowest wages and consequently amid the poorest sanitary conditions; going further we find the mortality rises as the tenement houses become more crowded. This leads us easily to see that the opposite conditions, separation, sanitation, hygiene, are the essential steps toward the reduction of this alarming death-rate.

The results of Hospital or Sanatorium treatment of tuberculosis show what has been and what may be accomplished.

We have long since come to accept the contagiousness of tuberculosis, and even before the full acceptance of that theory we recognized the curative value of altitude, sunlight and pure air. Acting upon this recognition and appreciating the added value of separation, restricted hygiene and generous diet under the discipline of systematic direction, many came to realize that few homes and no tenement houses offered opportunities for cure as compared with elevated health homes removed from city air and unsanitary conditions. The result was the isolated camp in the mountain forest or the small private resort, then came the sanatorium both private and semi-public and now finally, after all these experimental steps have been fully tested, we have the completely equipped, scientifically conducted hospital

owned and controlled and operated by the state, not for the benefit of any privileged class nor solely for the patients themselves, but to preserve to the state the lives that represent its wealth.

The very recent work on tuberculosis by Dr. Knopf gives accurate and interesting details of sanatoria both in Europe and America, and from its pages we learn that to the United States belongs the credit of having erected the first sanatorium for consumptives among the poorer classes, where the weekly charge of five dollars only in part covers the cost of care. This is the Adirondack Cottage Sanatorium, founded by Dr. Trudeau.

This Sanatorium has now some eighteen separate cottages and can accommodate nearly one hundred patients. From a recent report by Dr. Baldwin we learn that during the past fifteen years it has cared for one thousand two hundred patients, three-fourths of whom were advanced cases. Of the whole number 23 per cent. were discharged cured; 56 per cent. were discharged with the disease arrested; 19 per cent. were discharged with the disease stationary and 2 per cent. died at the institution. From the results here shown we must realize that all patients discharged from such an institution act as educators to prevent the spread of tuberculosis and thus indirectly prove of signal benefit to the community.

From Dr. Stubbert's report of the Loomis Sanatorium at Liberty, New York, we learn that "During the past six months 18 per cent. had lost their bacilli. During the first year 13 per cent. of the patients discharged were apparently cured, while during the past six months 23 per cent. of those discharged were apparently cured, and 70 per cent. of those discharged were either cured, had their disease arrested or were so much improved as to be able to return to their work." Only those in the early stages of the disease are received, and the charges are from seven dollars to ten dollars per week. It has a city branch where incurable cases are entertained.

Not pausing to mention the large resorts of Germany and passing by a number of small homes for consumptives in America, we come to the institution most worthy of our

study as a hospital furnished and managed by the state, the "Massachusetts State Hospital for Consumptives and Tuberculosis Patients," which as Dr. Knopf says "marks an era in the study of modern phthisio-therapy. It is the first state in this country to take care of its consumptive poor." The Act of the Massachusetts Legislature was approved, June 5th, 1895. It determined the appointment of a board of five trustees. The trustees had authority to purchase on behalf of the state the necessary property and cause to be erected a hospital to accommodate not less than two hundred patients, at a cost not to exceed one hundred and fifty thousand dollars. The hospital was built at Rutland, in the hills of Worcester County, one thousand six hundred feet above the sea. Its two hundred beds were soon filled. The weekly charges are paid by individuals or their friends, by the towns in which they have residence, or, in the discretion of the trustees, from the treasury of the commonwealth. The hospital was opened October 1, 1898.

The first year's report has been presented by Dr. Bowditch of Boston. There were treated some two hundred and twelve cases of all degrees. Of these 30.97 per cent. were discharged, after an average stay of four months, as "arrested," or as many authorities would say "cured," 46.10 per cent. were discharged "improved" or "much improved" and 21.23 per cent. are set down as "not improved." The fact is shown that of the thirty-five "arrested" cases, twenty-seven were in the beginning of the disease, conclusively proving the value of early diagnosis and prompt treatment.

It would be of great interest to pursue this subject further and see the benefits already shown through years of experience in the hospital treatment of tuberculosis both at home and abroad, but the results all tend to the same end, the greatly increased number of lives saved. Approximately 25 per cent. of cases cured, 50 per cent. of cases so far improved as to be safely returned to their vocations.

Success has, in a limited measure, crowned the efforts of New York state physicians and sanitarians by securing from the legislature an appropriation for a state hospital for incipient cases, not so large an appropriation as desired, but they have made a beginning.

With examples on either side of us, it would seem that the members of this Society, for it devolves upon us, ought not to delay in definite concerted action. It is known to us physicians, not to people generally, that treatment at home, depending upon the intelligent execution of our directions regarding diet and hygiene, is not satisfactory. We strive for success only to reap failure and that largely because of ignorance and indifference. I take it that our minds are one in believing that for the purpose of cure the utmost intelligence and obedience must be exercised or the patient must be entirely subject to a line of discipline that experience has proved the best and, for more certain results, his life must be lived apart from such artificial conditions as contribute to his state and in the midst of such natural conditions as contribute to his cure.

I grant that much can be done by education in the way of prevention, by public talks, by clubs for the discussion of tuberculosis, by constant instruction between physician and patient, and all this should be done, but the great education of the masses will begin when the "cured" and "improved" return from the sanatoria and spread among their friends the knowledge of what constitutes sanitary cleanliness.

The hills of Connecticut offer many a fair site for such an establishment as Massachusetts has founded. I could lead you to many an elevated plateau of one thousand feet, or sunny hillside of greater height, sheltered by a wooded hill, exposed to a southern sun, not inconvenient of access, with porous soil and supplied with pure water. Such places we have in our midst—there is no lack, the only thing lacking, the as yet untried thing in this cause, is the will of the people.

My own thought is that, First, each of the large cities should have its own hospital for chronic patients, to which should be transferred those cases already cared for in almshouses and in the wards of city hospitals, and to which should be committed all patients with advanced tuberculosis, falling upon the care of the city or able to contribute the per capita cost of their maintenance.

Second, a State institution should be established for the

care of such cases as give reasonable promise of cure or arrest, where patients are at their own charge or at the charge of the town in which they hold a legal residence.

Either now or later this movement must begin, first by education, by watchfulness on the part of health boards, instruction in crowded districts (especially in tenement houses where only a little over one per cent. of the consumptives recover) and the establishment of hospitals near cities.

But in time the sanatorium for incipient tuberculosis patients must come. We know its needs; why delay? It is confessing ignorance not to know. It is culpable to know and not to act.

SUPPURATIVE INFLAMMATION OF THE MIDDLE EAR AND ITS COMPLICATIONS.

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Inasmuch as this disease is of rather frequent occurrence and its complications, especially Mastoiditis, seem to have become during the past year of much more frequent occurrence than formerly and as this affection is usually seen first by the family physician, this paper is especially addressed to the general practitioner.

On looking into the ear through the auditory canal the long process of the malleus is seen extending downward and backward to about the centre of the drum membrane. This process is embedded in the tissue of the drum membrane. Posterior to it can frequently be seen the long process of the incus, running in the same direction and therefore parallel with the former. The upper part of the tympanum is occupied by the bodies of the ossicles and this region is known as the atticus. The atticus communicates with the antrum by a narrow passage called the aditus ad antrum. An inflammation of the middle ear is nearly always an extension of an inflammation from the nasopharynx through the eustachian tube and the progress of such inflammation, when it involves the mastoid cells, would be in this order:—The eustachian tube, the tympanum proper, the attic, the aditus ad antrum, the antrum, the mastoid cells. An extension from the cells to the lateral sinus, the internal jugular veins, the meninges and brain will be referred to later on. The antrum located directly posterior to the middle ear proper, is simply a mastoid cell, only that it is usually much larger than the others. The mastoid cells which vary greatly in size, number and extent in different individuals, occupy usually the greater part of the mastoid process, com-

municate with each other and are lined with mucous membrane. The facial nerve enclosed in a bony canal and the lateral sinus in contact with the inner surface of the petrous portion of the temporal bone, both lie dangerously near to the field of operation in mastoid diseases, while the inconstant relation of the sinus, in its proximity to the mastoid cells, adds an interest to the surgical operation in this locality that can scarcely be equalled in any other part of the body.

Causes.—Suppurative middle ear disease has for its cause adenoids in the nasopharynx, the eruptive fevers, diphtheria, cerebrospinal meningitis, typhoid fever, la grippe, exposure to severe cold and irritants to the auditory canal and tympanic membrane. Salt water bathing produces a large number of cases of this disease, though I am not quite sure that it always produces its effects through the auditory canal. It may be produced by the irritation to the eustachian tube, or from water finding its way into the tympanic cavity through the tube.

The Sequelae and Complications.—An acute otitis media which has been early and skilfully treated will as a rule make a perfect recovery, the ear will become fully restored to its normal function and anatomical perfection, the suppuration will cease, the mucous membrane of the cavity will return to its normal condition and the perforation in the drum membrane heal. If neglected or improperly treated and especially if the patient has syphilitic taint, or is of scrofulous diathesis, there may be a large part of the drum membrane lost, or it may be swept wholly away together with the ossicles, leaving the inner wall bare and exposed to atmospheric changes, dust and dirt; short of this and what is still worse, a portion of the membrane and the ossicles may remain, while bone caries, granulation growths, etc., caused by the bacteria of decomposition produce excessive discharges of offensive odor. The irritation caused by this secretion sometimes produces polypoid growths in the auditory canal, blocking it up and preventing the escape of the pus and leading to the extension of the disease deeper into the organ. Such cases as these sooner

or later involve the mastoid cells. The virile character of the inflammation in such a case will cause disintegration of the mastoid cells and caries of the adjacent walls. There may be facial paralysis from involvement of the facial nerve; an extension to the lateral sinus will in the different stages of inflammation produce periphlebitis, phlebitis and septic thrombosis. The thrombus once formed may extend inward to the torcular and downward into the jugular vein. The destructive process extending in the temporal bone in all directions, not infrequently produces epidural abscess, dural abscess, abscess of the brain in both the middle and posterior fossae and meningitis. Metastatic inflammation in the lungs and other organs is produced by fragments of the thrombus getting into the circulation. Another and not infrequent complication of this disease is an osteoperiostitis at the external surface of the mastoid process. It may occur without suppuration of either the antrum or mastoid cells. Authorities state that it is an extension from the middle ear by way of the osseous portion of the auditory canal. Dr. Buck of New York states that in these cases there is a marked inflammation with bulging of the canal wall at its posterior aspect. Further on I will relate a case of this complication where there were no signs in the auditory canal of this disease.

Symptoms.—Pain is one of the earliest symptoms; it is referred to the affected part and is usually sharp and severe. Accompanying this is a sensation of fullness, throbbing, tinnitus and partial loss of hearing. There is hyperemia and edema of the parts involved. The throat, especially in the region of the mouth of the eustachian tube is red and swollen. On inspection of the drum membrane, there will be seen at a very early stage, an injection of the plexus of blood-vessels along the extent of the handle of the malleus and also of those of the anterior and posterior folds. A little later the whole drum membrane becomes red and swollen. The lymph poured out by the inflamed mucous membrane of the tympanum is imprisoned by the occlusion of the inflamed and swollen eustachian tube. The drum membrane is seen

to bulge forward, the pain increases in direct proportion to the increase of the fluid, the membrane yields to the pressure and perforates and this is followed by marked relief from pain, when the perforation is large enough to give free exit to the tympanic fluid. The drum membrane usually ruptures about three days from the onset, but the occurrence varies according to the severity of the attack and the rapidity with which the liquid products of inflammation form in the ear. If the surgeon sees the case for the first time just after the ear begins to discharge, the patient will probably state that pain began two, three, or four days ago growing more and more severe and then suddenly ceased when the ear began to discharge. Recovery usually takes place in from ten days to two or three weeks, otherwise it becomes chronic. The principal symptoms of the chronic form are the discharge, the loss of hearing and the chronicity; there is usually no pain. If the discharge has destroyed the drum membrane, is copious and is seen to come from the upper part of the tympanic cavity, it is a pretty certain symptom of disease of the attic and possibly of the antrum also. A bad odor to the discharge indicates caries of the ossicles or other bony structure. The symptoms of mastoid disease are pain over the mastoid process which may extend to the occipital region, the side and top of head and forward to the forehead and tenderness on pressure over the mastoid region. Facial paralysis from osteitis, involving the aqueductus fallopii through which the facial nerve passes sometimes occurs. Hyperemia and edema of the skin covering the mastoid process may mean either disease of the mastoid cells or of the periosteum. When periostitis exists suppuration usually soon follows and fluctuations may be recognized. As a rule the condition of the posterior wall of the auditory canal will clear up the uncertainty. If it be red and swollen, it indicates that the disease has extended from the middle ear, along the bony wall of the canal, to the periosteum covering the mastoid process and that the antrum and mastoid cells may not be involved. If more or less suddenly the discharge from the ear becomes markedly less in amount or ceases entirely, while at the same time, or soon after, pain and tenderness develop over the mas-

toid, these two events form very strong evidence of disease of the mastoid cells. In periostitis the pain and tenderness is found along the anterior margin of the process just behind the auricle and also at the tip. It may be more extensive than this limited area, but it is more restricted in area than in disease of the mastoid cells, when it is often found extending downward into the neck and forward and above the auricle as far as the forehead, also backward toward the occiput. As an illustration of the periostitis without involvement of the antrum, I cite the following case:—Mary McD., six years old, had an acute suppurative inflammation of the right middle ear following scarlet fever. The ear disease began about two weeks after the scarlet fever developed, the drum membrane ruptured on the third day from the beginning of the pain, the discharge was moderate in amount and under the skillful treatment of her physician, Dr. Pierson, it ceased in two weeks and all symptoms disappeared. About five days later, April third, severe pain in the ear returned with redness, tenderness and swelling over the mastoid. She was seen two days later, April fifth, by the family physician. The body temperature at five P. M. was 102.2 degrees and pulse 132; at eleven P. M. temperature 101 degrees, pulse 118. I saw her first at this hour. The mother described the redness and swelling as much less than it was two days before. At this time the swelling was sufficient to cause the ear to stand out from the head much more than its unaffected mate. The skin over the mastoid was hyperemic, with tenderness on pressure at the tip of the process. The drum membrane seemed nearly normal except above, in the region of the attic where it showed slight redness; the perforation had healed, there was no bulging of the membrane. The question of an operation was considered, but it was decided to wait while search should be made for some other possible cause for the temperature. The urine proved normal. April seventh, 9 A. M. temperature 100.7 degrees, pulse 92; 11 A. M. temperature 102.7 degrees; 9 P. M. temperature 102 degrees, pulse 100. Has complained all day of pain in legs and feet. The examination this evening shows swelling and redness over both ankles and the

right knee. These parts are exceedingly tender to the touch; the patient is unable to move the legs without extreme pain. Was ordered large doses of salicylates and local applications to the affected joints. The mastoid is painful on pressure, along a narrow area just behind the auricle and extending to the tip with redness of the surface. —April eighth 9 A. M. temperature 100.5 degrees, pulse 96; 2 P. M. temperature 101 degrees; 9 P. M. temperature 101.2 degrees, pulse 90. April ninth 9 A. M., temperature 101 degrees; 12 M. temperature 98.5 degrees, pulse 80. The tenderness and swelling of mastoid continues, the swelling has increased. April tenth Dr. Pierson found fluctuations, Aspirated, found pus and made an incision in length two inches down to the bone. Considerable pus escaped and the bone was found to be denuded of periosteum. April eleventh while the temperature shows no abnormal elevation, the swelling has somewhat increased upward toward the temporal region. April twelfth, I performed the Schwartze operation. The original incision was extended downward to the apex and upward to a point on a level with the top of the auricle. An area of denuded bone was the seat of the abscess which had been evacuated the previous day. The bone itself, except that it was extremely congested, was otherwise healthy from its surface to the antrum. The antrum was empty and communicated with the middle ear proper. As there seemed no indications for opening the mastoid cells to any further extent this was not done. I examined the external auditory canal before operating. There was no swelling of the canal, nor evidence of inflammation in its posterior wall to any marked degree. It is also certain that the periostitis was not an infection from the antrum. It is possible that the tympanic disease had been carried outward to the surface of the bone by means of the lymphatics and in support of this theory I cite the second case of Dr. Whiting of New York, who found an infected thrombosis of the internal jugular vein, situated between the hyoid bone and the clavicle. The patient died of metastatic pneumonia and at the autopsy no evidence was

found of inflammatory action within the cranial cavity; but there were inflamed lymphatic glands in close proximity to the thrombosed vein. This is, I believe, the only case recorded where a thrombosis of the internal jugular vein has been found, where it was not an extension direct of a thrombosis of a cerebral sinus. One advantage effected by the operation was that it proved that the periostitis did not proceed from the antrum. This is of especial interest when it is known that the auditory canal failed to show the extension outward from the middle ear. The auditory canal symptom is put down by authors as a point of differential diagnosis between disease of the mastoid cells and periostitis.

The symptoms of meningitis of attic origin do not differ materially from meningitis from other causes. The symptoms of extra dural abscess can scarcely be diagnosed from abscess of the brain, but, as operative interference is demanded in both cases, it does not materially matter.

I quote from the valuable work of Dr. Albert H. Buck of New York: "Pain in the head, cerebral excitement, drowsiness, disordered speech, paresis of various kinds, convulsions, optic neuritis, vomiting, constipation and a slow pulse; when some or all of the symptoms develop in the course of an inflammation of the middle ear or mastoid process, there is good ground for suspecting that a suppurative inflammation of the cerebrum or cerebellum has been added to the original disease of the ear. A positive diagnosis is possible in very few cases. This is due to the fact that not one of the symptoms can be referred to a single cause."

Treatment.—In the stage of hyperemia of the tympanum both local and systemic treatment should be instituted. One grain of calomel every hour until the bowels are affected, has a marked effect on inflammation in any part of the head. Aconite in small and frequent doses is of benefit locally, leeches applied as close to the tragus as possible and iodine applied at the external extremity of the auditory canal as a counter irritant. At this stage great care should be observed in examining the ear, a rough

introduction of the speculum, or an indelicate method of cleaning the auditory canal, preparatory to making an examination, will quickly increase the hyperemia. It is essential to obtain a clean and sterile condition of the canal, as a preliminary, in the event of performing a paracentesis. To bring this about, with the least possible irritation to the organ, a gentle current from a fountain syringe, of a weak solution of bicarbonate of soda, in very warm water, should be used and continued until any particles of cerumen or epithelium have been washed out. A solution containing bichloride of mercury 1-1000 should now follow, or hydrogen dioxide, and the canal dried and loosely closed with absorbent cotton. The nasopharynx and mouth of the eustachian tube deserve especial attention. These parts should be sprayed with a warm and bland antiseptic solution and Monsell's solution freely applied. When the drum membrane shows evidence of inflammation and especially if there is bulging outward of this tissue, an incision should be done in its lower and posterior quadrant and of sufficient extent to insure good drainage of the tympanic cavity. As soon as this is accomplished sterilized hot water and bichloride of mercury, strength of 1-5000, should fill the canal and pads of sterilized gauze, wrung out of hot water, applied against the auricle and side of the head to control the pain. The canal should be kept closed with absorbent cotton at all times, except when examining or treating the ear. Rest and avoidance of physical exercise are conducive to a cure. If the above methods of treatment are carefully carried out, under favorable circumstances the inflammation may terminate in resolution, without suppuration occurring. If, however, as is usually the case, the fluid, which was at the outset serum, changes into purulent matter, the indications are to maintain a free opening in the tympanic membrane and frequent douches to keep the auditory canal clean. The removal of the pus from the tympanic cavity may be promoted by mild inflations of the middle ear with the Politzer bag. If there be adenoid growths in the vault of the pharynx, these should be removed, and the nasopharynx rendered healthy. If pain continues after the drum mem-

brane has been incised or has ruptured, giving free vent to the imprisoned secretions, it indicates that the inflammation has extended beyond the mucous membrane of the tympanic cavity and threatens the mastoid region.

Chronic Suppurative Middle Ear Disease.—In chronic suppurative middle ear disease the treatment has to do with the damage resulting from the acute attack. When the drum membrane is in great part or wholly swept away, the absence of the protection to the tympanum afforded by the drum membrane is probably the greatest loss the organ sustains in the matter of a cure. The effects of sudden and extreme changes in temperature, together with irritating particles of dust and dirt floating in the atmosphere, are a source of constant irritation to the tympanic cavity. Under these circumstances, even apparently cured, relapses frequently occur. The treatment consists in cleansing the parts and applying astringents and antiseptics. One of the best remedies, which fulfils both these indications, is argentic nitrate in strength from five to twenty per cent., according to the condition of the mucous membrane. When the suppuration has ceased, an artificial drum may be worn, or a small piece of absorbent cotton saturated with carbolic vaseline. The artificial drum not only protects the ear, but greatly improves the hearing. Whenever the patient goes into the water for a swim or bath, the auditory canal should be well packed, to protect the affected ear from the water. The entire loss of drum membrane has one advantage in that it affords free drainage; when only a small portion is lost the secretions are more or less imprisoned and when caries of the ossicles is also present, with the consequent bad-smelling discharge, the treatment is more complicated. The cleansing of the ear must now be done at very frequent intervals, by means of douching with warm antiseptic solutions, peroxide of hydrogen, etc., and the diseased ossicles stimulated to heal by applying aromatic sulphuric acid. Polyps are very liable to appear under these circumstances. They may be destroyed in their infancy by caustic; when of considerable size by the aural snare. When granulation growths

occur, with foul-smelling discharge, the tincture of iodine freely applied is very efficient. Attention to the nasopharynx and eustachian tube must also be given.

Treatment of Mastoiditis, Epidural and Dural Abscess, Brain Abscess, Thrombosis of the Sinuses, and of the Internal Jugular Vein.—Any one of these subjects is enough, if treated in detail, to make a paper long enough to occupy an entire evening; all I can do therefore is to give a few words to each. The operation for the cure of mastoiditis is known as the Schwartz operation, and if there be chronic disease of the attic coexisting, the operation known as the Stacke must be done, or a modification of this, known as the Schwartz-Stacke operation. The Schwartz operation consists in opening the mastoid cells and removing all diseased tissues. The first step after the parts have been shaven and cleansed, is to make an incision just above the ear, curving it back and down and then directly down to, or an inch below, the apex of the mastoid. This incision should be two lines posterior to the auricles. The knife should cut through to the bone. The periosteum should be raised freely from the bone and ample space given by retracting the tissues, for operating on the bone. With the chisel and hammer the mastoid cells and antrum should be opened and all diseased structures removed. This is the Stacke operation.

If now there be chronic disease of the Attic, the operation should be extended into this region. The principal features of the Schwartz-Stacke operation, otherwise known as the radical operation, are as follows: to extend the previous incision forward in the temporal region, but here only through the skin, and retract forward the temporal muscle: to dissect the auricle from its attachments posteriorly, also to dissect and detach the posterior wall of the membranous canal, then to draw them well forward. The posterior and superior bony wall of the canal should now be chiseled away, down as far as the tympanum, also the bony tissues between it and the antrum. The diseased ossicles may now be removed, and caries of the walls of the middle and internal ear may be treated. This is the only

operation, which in chronic disease of the attic, will in most cases effect a cure. If thrombus of the lateral sinus is believed to exist the inner table of the skull over a section of this vessel should be removed and the sinus examined. By the appearance of its walls and by palpation and pressure a diagnosis can be effected. If the sinus is found to contain a thrombus its extent should be discovered. The bone forceps or rongeur and curette are the chief instruments needed in this work. The sinus should be laid bare upward and backward toward the torcular and downward toward the bulb. Its walls should be incised and extended toward the torcular until a free flow of blood demonstrates the limit of the thrombus in this direction. It should be compressed to thoroughly close it at this point and then proceed toward the bulb for its limit in that direction. Great care should be taken not to break up the clot which might then get into the circulation. Plugging the vessel beyond the limit of disease should now be effected, the sinus laid open between the two compressed points, curetted, cleansed and packed with iodoform gauze. If the thrombus extends down into the bulb we have now to do with a thrombus of the internal jugular vein. The usual method of operating for thrombosis of this vein is to make an incision along the anterior border of the sternocleidomastoid muscle from its origin downward toward or to the clavicle, dissect down to and under its margin, retract it and search for the vessel. Another method which seems easier and more rational which is original with Dr. Kenyon and is the method which he teaches to his post-graduate class on diseases of the ear is as follows: An incision is carried in a straight line from the anterior aspect of the tip of the mastoid process to the sternoclavicular articulation, cutting down through all the tissues including the sternomastoid muscle. By this method the vein is reached directly and is easily exposed through its entire length and can be readily examined to ascertain the extent of the thrombus. All branches of the vein should be double ligatured and cut between. The diseased vein should then be ligated above and below and excised, the wound cleansed and the cut muscle brought together with deep sutures of catgut, the skin coapted and held together

with sutures and a dressing applied. Some operators prefer to ligate the vein as a preliminary step to insure the general circulation from invasion of particles that might accidentally become detached from the thrombus during the operation.

Abscess of the dura and of the brain can be reached by removing portions of the skull with the chisel and rongeur or trephine.

FIVE HUNDRED AND SEVENTY-NINE CASES OF
INFECTION OF THE TEMPORAL BONE,
WITH BRIEF COMMENT.

F. M. WILSON, M.D.,

BRIDGEPORT.

There are three reasons why I bring this subject before you to-day. First, the invitation of our President; Second, that during its one hundred and eight years only one paper has been presented to the Connecticut State Medical Society upon this subject; Third, that within the last decade substantial advance has been made in the surgery of this region.

The present classification of the more common affections of the Temporal Bone, is anatomical, and it is by no means certain that we are ready for any other classification; but if we pay too much attention to the anatomical classification, we shall be in danger of separating things which are very closely related to each other: e. g., a bit of infective material is inhaled and lodges in the nostril, causing "Rhinitis." If the infection extends to the pharynx, it becomes "Pharyngitis." If it extends up the Eustachian tube, it becomes "Salpingitis." If it reaches the Tympanum, it becomes "Otitis." If it extends to the Mastoid, it becomes "Mastoiditis." If it extends to the cerebral cavity, it becomes "Sinus Thrombosis," "Abscess of Brain, Pachymeningitis," "Leptomeningitis," etc.

But this whole chain of events occasionally goes on in the same person and as the process is an "Infection," the terms "Streptococcus Infection," "Pneumococcus Infection," "Staphylococcus Infection," and others of less frequent occurrence, are creeping into use. The present difficulty, so far as the Temporal Bone is concerned, is that so many kinds of Bacteria are found together that it is difficult to

select the dominant one. From my private records, covering a period of twenty years, I have tabulated five hundred and seventy-nine cases. Although each of them is an "Infection of the Temporal Bone," not one of them is so classified in the records. They are all recorded as acute or chronic Suppurative Otitis with or without complications.

I am more fully aware than any of you can be, of the defects and uncertainties of these records. The bacteriological examinations have been so few and incomplete that I have not included them at all. The principal test of hearing, in the table, is the watch, a defective one, as you all know, but notwithstanding its defects, it is still the most widely used test, and in the majority of cases approximately correct.

A special inquiry has been made as to the influence of "Previous Duration." This duration is, of course, estimated by the patient, and usually underestimated.

In looking over old records, it is hard to be accurate in even so simple a thing as the duration of treatment. But notwithstanding all this and more, I have ventured to bring the cases before you and to outline in a brief way some of the evidence which they seem to furnish.

They have been selected in the following manner: No case has been included in which the infection had not extended at least as far as the Tympanic Cavity. Cases of sore throat followed by pain and redness of the drum membrane, either with or without paracentesis, if they get well without purulent discharges, have been excluded. Cases of so-called "sub-acute inflammation of the middle ear" though extending over weeks of time, if they got well without purulent discharge or without producing serious constitutional symptoms, have also been excluded. At the other end of the process, cases which only showed the results of an old infection but were not at the time infected, have been excluded. A considerable number of mild cases with defective record, have been excluded. All other cases have been included. Many of the serious cases have been published in detail before but have been included in the table for comparative purposes. The five hundred and seven-

ty-nine cases, from the purely clinical standpoint, may be roughly divided into three classes. First, those in which the question of damage to hearing was the most important fact in the case. Of these there were three hundred and thirty-eight. Second, those in which slight and fugitive symptoms of danger to life were also present. Of these there were one hundred and thirty-eight. Third, those in which danger to life entirely overshadowed the question of damage to hearing. Of these there were one hundred and three. The ages range from six weeks to seventy-four years.

	Cases
10 years and under,	148
10-20 years,	110
20-30 "	132
30-40 "	90
40-50 "	62
50-60 "	29
60-70 "	6
Over 70 "	2
	579

The sexes are about equally divided. Males, 303; Females, 276.

In 223 cases both bones were infected.

The average duration of the infection is rather startling. Taking all the 579 cases together and the average time during which the infection had existed prior to their first visit, is a little less than seven years.

	Cases
One week or less,	110
One week to one month,	105
One month to one year,	86
One year to ten years,	146
10-20 years,	68
20-30 "	36
30-40 "	21
40-50 "	3
Over 50 "	1
No record,	3
	579

CAUSATION.	Cases
Scarlet Fever,	52
Measles,	15
Tuberculosis,	6
Diphtheria,	2
Swimming,	4
Impacted wax,	4
Snuffing salt water from hand,	3
Nasal Douches,	2
Traumatism,	2
Explosion of Cannon,	1
Violent vomiting,	1
Syringes,	1
Mumps,	1
Foreign body in External Auditory Canal,	1

Of the remaining 484 eighty were recorded as caused by "Grip" and the rest either "took cold" or had "sore throat" previous to the infection, or gave no history of any cause.

Accidental local infection, then of the nasopharyngeal mucous membrane, was the cause of more than four-fifths of all these cases, and constitutional diseases played a very minor role.

Under the heading "Harm Done" these facts are recorded that among 579 persons who had 802 infected Temporal Bones, there is just one case of normal hearing in an affected ear at the time of the first visit; that besides this one there are only eight who could hear over 20-40; that of 802 ears 236 were too deaf to hear the watch at all, leaving 557 who could hear the watch twenty inches or less, at the time of first visit.

RESULTS.

First, gross results, without any attempt at explanation. Five hundred and seventy-nine persons were infected; forty-one recovered normal hearing in one or both ears; sixty-four others recovered more than half their hearing in one or both ears; sixteen died; four hundred and fifty-eight were more or less inconveniently deaf at the last record.

INFLUENCE OF "PREVIOUS DURATION."

Of the forty-one who recovered normal hearing, in only six cases had the infection existed over a month. Of the sixty-four who recovered over half their hearing, twenty-three had been infected over a month.

TABLE I.

DURATION OF INFECTION.	Cases	Hearing Improved
30-40 years,	21	3
20-30 "	36	8
10-20 "	68	26
1-10 "	146	55
One month to one year,	85	47
One week to one month,	105	76
One week or less,	110	78
		293

TABLE II.

DURATION OF INFECTION.	Cases	Infective Processes Stopped
30-40 years,	21	8
20-30 "	36	19
10-20 "	68	29
1-10 "	146	67
One month to one year,	85	37
One week to one month,	105	54
One week or less,	110	65
		279

As the "Previous Duration" increases, the number of cases in which the hearing was improved at all, no matter how slightly, decreases faster than the number of cases in which the defective process was stopped.

In eighteen cases the hearing at the last visit was worse than the hearing at the first visit, just enough to keep up the old delusion that a running ear was a thing not to be interfered with.

The most important group of cases is of course the one hundred and three serious cases. Of these forty-seven were treated without surgical interference, with four deaths. In seventeen cases surgical interference was advised and de-

clined, with seven deaths; thirty-nine cases were treated by operation, with five deaths.

Of the four deaths where operation was not advised, one was extensive leptomeningitis, confirmed by autopsy; two were comatose when first seen and one died after passing out of my hands; probable diagnosis, abscess of Temporal Lobe.

Of the seven deaths where operation was advised and declined, two died of pyemia; one of meningitis; four were seen only once and their causes of death are not known.

Of the five deaths among the operative cases, one had Leptomeningitis, one had Leptomeningitis and abscess of the Cerebellum. Both these diagnoses were confirmed by autopsy. One was Sinus Thrombosis with sudden death from endocarditis, and in one the Mastoid Cells and Antrum were found free from infection (comatose when first seen.)

PROGRESS OF THE SURGERY OF THIS REGION.

One need not go so very far back to reach a time when the temporal bone would not be opened, no matter how grave the case, unless there was swelling, redness and tenderness over the mastoid process, but now the absence of redness and swelling over the mastoid, in the presence of threatening constitutional symptoms, usually means that the outer table of the temporal bone is thick and is an additional reason for operating and not against it. It is not so very long ago that most surgeons made the convex surface of the mastoid the point of attack. Owing to the irregular course and size of the lateral sinus, the supra-meatal triangle higher up is now more frequently chosen.

It is not so very long ago that a surgeon who had perforated the outer table of this bone considered his duty done, unless perhaps he might break down a few partitions between the mastoid cells. In still more recent years the accidental wounding of the lateral sinus usually put a stop to the operation and a plug of wood driven into the bone, like a bung into a barrel, was gravely advocated as a sure means of stopping the hemorrhages. A wider experience has greatly lessened the fear of this accident, and however much we

may differ as to the surgical propriety of opening or not opening the sinus, the operation is not always stopped because of accident to it. In fact, the surgeon who opens it for Sinus Thrombosis usually seeks to make it bleed, as evidence that he has reached the limits of the thrombus, disregarding the old surgical fear of entrance of air.

Again, it is only in recent years that abscess of the brain has been attacked with any courage by the surgeon, and the number of cases is constantly increasing.

Up to date, operations for Leptomeningitis have given small encouragement. Leptomeningitis over small areas does certainly occur in operative cases which recover, but wherever this is the principal way in which the infection extends, and wherever a considerable area of either fossa is involved, no treatment has yet been devised that will stay the process. In conclusion, however much we may admire the Eustachian Tube from the physiological standpoint, from the surgical standpoint it is merely a weak place in the human anatomy, a route of infection, frequently used. Other infective pockets in the roof and sides of the pharynx can be obliterated, but this cannot and must remain in the future as in the past, a menace to hearing and in lesser degree to life itself.

With reference to the danger to hearing, the most important single fact is the duration of the infection and if that duration is long enough to cause the usual deposit of cicatricial tissue in the Tympanum, the opportunity for complete restoration of hearing has usually passed. The infective process may be stopped and the hearing perhaps improved, but no method of dealing with cicatricial tissue around the little bones of the ear has been other than exceptionally successful. So, if our standard is high, if we aspire to leave the hearing power normal, then no minute is too soon to begin the treatment. As a rule the treatment of fresh infections is highly satisfactory. Exceptionally, they cause all varieties of bad results, up to the loss of life itself, in spite of the most careful treatment from the start.

With reference to the more serious side of the question, we are in the era of extensive surgery of neglected cases,

and judging from the otological literature of the last five years, one might almost infer that aurists spend more than half their time at this work. But Infection of the Temporal Bone when threatening the brain, can cause so many and so various clinical pictures that this almost endless succession of reported cases seems necessary and out of it all is bound to come that increased attention to this infective process in every part of its course which sooner or later will greatly limit its power for harm.

No attempt has been made in this paper in any way to show how neglected cases can be treated more successfully. No attempt has been made to compare different methods of treatment, but simply and solely to emphasize the too much neglected fact, that early and persistent treatment is the only road to normal hearing, and that the exceptions to this merely go to prove the rule.

Dr. Swain would like to adopt the thought of Dr. Bulkley previously expressed, and suggest that we read over and over the paper of Dr. Wilson.

Dr. Alling—It is an important subject. We have to deal with an inaccessible part. In regard to "grip," we do get more ear trouble in "grip" epidemics. There is a certain form of infection specific with "grip." It is rapid and the cells of the mastoid break down quickly. They are found full of pus.

Dr. Wilson—Nearly all men investigating the subject say little about the "grip" bacillus. But the opinion is gaining ground that the streptococcus is more serious in its working than the staphylococcus. Dr. Swain has noticed bloody discharges frequently which in his opinion denotes a deeper disease. Bloody serum from the middle ear denotes a severe case.

FIVE HUNDRED AND SEVENTY-NINE CASES OF INFECTION OF THE TEMPORAL BONE,
WITH BRIEF COMMENT.

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
1 Sister A.,	33	F	Both	27 years	R. E. W. p-40 L. E. W. 0-40	Steam. Hot water. Rest in bed.	1 month	R. E. W. p-40 L. E. W. 25-40 No pus	Tenderness over right mastoid.
2 Marjorie A.,	6	F	Right	1 week	R. E. W. 0-40	Hot water and peroxide of hydrogen.	6 weeks	R. E. W. 2-40	In bed 10 days; fever, pain, and tenderness over mastoid.
3 Reuben P. A.,	23	M	Both	3 years	Tuberculosis R. & L. E. W. 0-40	Removal of granulations. Peroxide of hydrogen.	2 weeks	Still running	Had general tuberculosis advanced.
4 Fred H. A.,	43	M	Right	10 days	Grip R. E. W. 0-40	Hot water. Boric acid solution. Rest in bed. Recovery.	6 weeks	R. E. W. 20-40	Mastoid red, tender, and swollen; fever; one relapse the next year and one relapse 7 years later.
5 John A.,	40	M	Right	No history	No test Man comatose	Operation. Death in 12 hours.	1 day		Temp. 103. Enormous swelling right side head. Fistula into throat and over mastoid. Operation. Death. Similar attack 1 year ago.
6 Mary A.,	30	F	Left	2 weeks	L. E. W. 7-40	Hot water.	9 days	L. E. W. 28-40	
7 Frank A.,	28	M	Both	R. 6 yrs. L. 1 yr.	R. E. W. 0-40 L. E. W. 4-40	Peroxide of hydrogen.	7 days	Still running	
8 Mrs. Geo. W. A.,	28	F	Right	5 years	R. E. W. 0-40	Hot water.	2 weeks	Still running	
9 Jennie N. A.,	17	F	Right	1 week	R. E. W. 5-40	Hot water. Boric acid powder.	1 week	R. E. W. 0-40	
10 Wm. R. A.,	29	M	Right	16 years	R. E. W. 0-40	Hot water. Leeches. Rest in bed.	4 weeks	R. E. W. 30-40	Three relapses in 18 years; much pain, redness, and swelling over mastoid; recovery without operation.
11 Miss L. A.,	31	F	Both	5 years	R. E. W. 0-40 L. E. W. 2-40	Peroxide of hydrogen.	29 days	R. E. W. 0-40 L. E. W. 2-40	

NAME.	Age.	Sex.	One or both	Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
12 Miss Madeline A.,	30	F	Both	Both	25 years	R. E. W. 2-40 L. E. W. 6-40	Peroxide of hydrogen.	2 months	No pus R. E. W. 4-40 L. E. W. 20-40 L. E. W. 0-40	
13 Stella V. A.,	7	F	Left	Left	3 weeks	Menses L. E. W. 0-40	Operation. Whole outer table of mastoid removed. Sigmoid sinus exposed. Peroxide of hydrogen.	3 months		Fever. Post-auricular abscess, pus also in cells and antrum. Recovery.
14 Mrs. W. S. B.,	43	F	Left	Left	38 years	L. E. W. 6-40	Peroxide of hydrogen.	3 days	No pus L. E. W. 3-40	Ear does not run all the time but many attacks, usually easily controlled.
15 C. B. B.,	30	M	Left	Left	20 years	L. E. W. 0-40	Sulphate of zinc. Hot water. Carbolic acid.	6 weeks	No pus L. E. W. 5-40	Sixteen years later, no relapse.
16 Mrs. C. B. B.,	29	F	Both	Both	18 years	R. E. W. 10-40 L. E. W. 8-40	Peroxide of hydrogen. Nitric acid for granulations.	33 days	No pus R. E. W. 20-40 L. E. W. 15-40	Ten years later, no relapse.
17 Herbert C. B.,	12	M	Both	Both	10 years	R. E. W. 0-40 L. E. W. 0-40	Boric acid powder.	18 days	No pus R. E. W. 2-40 L. E. W. 0-40	
18 Etta M. B.,	14	F	Both	Both	5 years	R. E. W. 30-40 L. E. W. 10-40	Peroxide of hydrogen.	9 days	No pus R. E. W. 20-40 L. E. W. 10-40	
19 Wm. B.,	62	M	Right	Right	7 weeks	R. E. W. 11-40	Peroxide of hydrogen.	13 days	No pus R. E. W. 20-40	Two years later, relapse.
20 John B.,	32	M	Right	Right	4 days	R. E. W. 2-40	Hot water. Steam. Rest in bed.	2 weeks	No pus R. E. W. 25-40	Pain. Fever. Much prostration.
21 Michael B.,	17	M	Left	Left	13 years	L. E. W. 0-40	Hot water. Steam. Rest in bed.	27 days	Still running L. E. W. 0-40	Severe pain over whole side of head. Fever.
22 Ruth A. B.,	13	F	Left	Left	5 weeks	L. E. W. 1-40	Rest in bed. Dry cleaning and dry heat to mastoid.	3 months	No pus L. E. W. 40-40	Operation advised but declined. High temp. 104°.
23 Josephine F. B.,	9	F	Both	Both	4 years	Scarlet fever. Ordinary voice at three feet	Peroxide of hydrogen.	5 days	Still running Ordinary voice at three feet	

24	Mrs. Susan J. B.,	57	F	Both	45 years	R. E. W. 10-40 L. E. W. 4-40	Peroxide of hydrogen.	2 months	No pus R. E. W. 0-40 L. E. W. 2-40	Thirteen years later, no relapse.
25	John M. B.,	55	M	Both	53 years	Scarlet fever R. E. W. 2-40 L. E. W. 0	Inflation, Boric acid sol. Enlarged opening in right M. T.	7 weeks	No pus R. E. W. 25-40 L. E. W. 0-40	Left ear. Hearing totally destroyed at first attack. Right has run only occasionally.
26	R. P. B.,	39	M	Both	20 years	R. E. W. 0-40 L. E. W. p-40	Removal granulations. Nitric acid. Boric acid powder. Mono-chlor. acetic acid. Hot water.	7 years	Still running R. E. W. 0-40 L. E. W. p-40	Treatment intermittent. Comes when granulations form. Mastoid often tender. Later removal of adenoids.
27	Eliza B.,	6	F	Both	4 days	R. E. W. 20-40 L. E. W. 14-40	Hot water.	5 days	No pus R. E. W. 30-40 L. E. W. 40-40	Later removal of adenoids.
28	Minnie B.,	8	F	Both	2 weeks	Grip R. E. W. 20-40 L. E. W. 4-40	Peroxide of hydrogen and removal of adenoids.	1 day	R. E. W. 20-40 L. E. W. 4-40	Treatment carried out elsewhere.
29	Patriek B.,	32	M	Left	4 days	Traumatism L. E. W. p-40	Removal of twig from tympanum. Peroxide of hydrogen. Hot water. Inflation. Boric acid sol.	23 days	No pus L. E. W. 20-40	After removal temp. went to 102°.
30	Charles B.,	39	M	Left	1 week	L. E. W. 6-40	Inflation. Boric acid sol.	1 week	No pus L. E. W. 12-40	Three years later, L. E. W. 1-40.
31	C. R. B.,	20	M	Left	7 weeks	L. E. W. 1-40	Alcohol.	10 days	No pus L. E. W. 1-40	
32	Ella L. B.,	17	F	Right	12 years	R. E. W. 0-40	Peroxide of hydrogen. Hot water.	3 weeks	No pus R. E. W. 0-40	
33	Wm. Herbert B.,	5	M	Both	2 months	Scarlet fever R. E. W. 3-40 L. E. W. 10-40 L. E. W. 4-40	Bichloride sol. (1-5000) Hot water.	16 days	No pus R. E. W. 8-40 L. E. W. 25-40	
34	Viola R. B.,	5	F	Left	1 year	L. E. W. 4-40	Boric acid powder.	10 days	No pus L. E. W. 10-40	
35	F. C. B.,	45	M	Right	3 days	Grip R. E. W. 0-40	Steam. Paracentesis M. T. Hot water. Peroxide of hydrogen. Mastoid operation. Thick bone, small antrum. Removal of polyp. Nitric acid. Peroxide of hydrogen.	4 weeks	Died on 28th day	Sudden pericarditis 36 hours before death.
36	Arthur E. B.,	28	M	Left	4 months	L. E. W. 0-40	Peroxide of hydrogen. Bichloride (1-2000). Hot water. Inflation. Peroxide of hydrogen.	3 weeks	L. E. W. c-40	In next four years, four relapses. Mastoid often tender. Pain and temp. Highest temp. 101°.
37	Henry B.,	49	M	Left	3 months	L. E. W. 7-40		11 days	Still running L. E. W. 10-40	
38	F. N. B.,	20	M	Both	1 year	R. E. W. 0-40 L. E. W. 0-40	Inflation. Peroxide of hydrogen.	13 days	R. E. W. 0-40 L. E. W. p-40	

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Cause ^s and Harm Done	Treatment.	Duration of Treatment.	Last Record.	Remarks.
39 Mrs. James L. B.,	60	F	Left	6 weeks	Grip L. E. W. 0-40	Rest in bed. Steam. Hot water.	17 days	Still running L. E. W. 0-40	Pain, swelling, tenderness over mastoid. Fever.
40 J. T. B.,	43	M	Both	1 month	Tuberculosis R. E. W. 0-40 L. E. W. 0-40	Boric acid powder.	1 month	Still running L. E. W. 6-40	P. M. Temp. 102°.
41 Grace M. B.,	11	F	Both	1 week	R. E. W. 5-40 L. E. W. 1-40	Peroxide of hydrogen.	12 days	No pus R. E. W. 20-40 L. E. W. 40-40	Eight years later, R. E. W. 40-40, L. E. W. 40-40.
42 Mrs. Eli B.,	57	F	Both	18 years	R. E. W. 0 L. E. W. 0-40	Boric acid powder.	4 weeks	Still running R. E. W. 0	In right ear total deafness; left ear hears loud voice direct in ear.
43 James W. B.,	25	M	Right	4 days	Grip R. E. W. 0-40	Peroxide of hydrogen.	31 days	No pus R. E. W. 40-40	Pain. Fever.
44 C. D. B.,	44	M	Left	3 weeks	L. E. W. 0-10	Steam. Hot water.	5 weeks	No pus L. E. W. 10-40	Two months later, relapse left.
45 Fannie May B.,	9	F	Both	2½ years	Scarlet fever R. E. W. e-40 L. E. W. 2-40	Peroxide of hydrogen.	2 months	No pus R. E. W. 6-40 L. E. W. 6-40	
46 Walter B.,	30	M	Both	1 month	R. E. W. 10-40 L. E. W. 1-40	Yellow oxide mercury. Peroxide of hydrogen.	2 weeks	No pus R. E. W. 25-40 L. E. W. 4-40	
47 Susie B.,	26	F	Left	3 months	L. E. W. 7-40	Biehoride sol. (1-3000) Hot water.	16 days	No pus L. E. W. 15-40	Temp. was above normal a week.
48 M. L. B.,	25	F	Right	2 months	R. E. W. 0-40	Peroxide of hydrogen.	6 weeks	Still running R. E. W. 0-40	Obscure pain in right side head and tenderness over mastoid.
49 Frederick A. B.,	17	M	Left	4 days	Grip L. E. W. 3-40	Boric acid powder.	11 days	L. E. W. 2-40	
50 Willie B.,	6	M	Both	5 years	Ordinary voice at two feet R. E. W. p-40	Peroxide of hydrogen.	2 months	Ordinary voice ten feet	
51 Henry D. B.,	27	M	Both	5 years	R. E. W. p-40 L. E. W. 6-40	Boric acid powder.	1 month	R. E. W. 2-40 L. E. W. 10-40	

52	Carrie P. B.,	4	F	Both	2 years	Scarlatina Right ear, ordi- nary voice at five feet Left ear, 0	Mastoid operation left. Large post-audicular ab- scess. Extensive caries of mastoid.	3 months	Right ear, ordi- nary voice at five ft. Left ear, ordinary voice at 1 ft.	No pus at end of 3 months, but 2 months later relapse in left.
53	Charles B. B.,	27	M	Right	6 weeks	R. E. W. p-40	Inflation. Peroxide of hy- drogen.	31 days	No pus R. E. W. 4-40	Fifteen years later, relapse.
54	Martha B.,	26	F	Right	5 years	R. E. W. p-40	Boric acid powder.	27 days	No pus R. E. W. 4-40	Two years later, no relapse.
55	A. C. B.,	32	M	Both	15 years	R. E. W. 20-40 L. E. W. 1-40	Hot water, and later, boric acid powder.	1 month	R. E. W. 30-40 L. E. W. 1-40 R. E. W. p-40	Many attacks of what he calls "neuralgia in the ear."
56	William I. B.,	31	M	Right	7 years	R. E. W. p-40	Peroxide of hydrogen.	35 days	Still running R. E. W. 2-40 L. E. W. 4-40	Swollen glands in neck. Mastoid tender. No fever.
57	Ellen B.,	9	F	Both	3 years	R. E. W. 0-40 L. E. W. 4-40	Peroxide of hydrogen.	2 months	Still running R. E. W. 2-40 L. E. W. 4-40	Pain and tenderness over mastoid. No fever.
58	Nellie B.,	22	F	Left	4 years	L. E. W. 6-40	Peroxide of hydrogen.	3 weeks	Still running L. E. W. 6-40	Pain over whole right side head. Fever.
59	Mary R. B.,	19	F	Right	4 days	R. E. W. 2-40	Rest in bed. Steam and hot water.	17 days	No pus R. E. W. 20-40	In 8 years, five relapses.
60	Wallace S. B.,	16	M	Both	13 mos.	Too young to test.	Peroxide of hydrogen.	2 months	No pus	
61	John B.,	2	M	Left	1 month	L. E. W. 0-40	Rest in bed and hot water.	1 month	Still running L. E. W. 0-40	Pain, tenderness, and swell- ing over mastoid. No oper- ation. Recovery.
62	Mrs. Jane R. B.,	33	F	Left	20 years	L. E. W. p-40	Boric acid powder.	12 days	No pus L. E. W. p-40	One month later, relapse, controlled in 10 days.
63	Willis N. B.,	35	M	Both	3 weeks	Grip R. E. W. 0-40 L. E. W. 0-40	Rest in bed. Steam. Hot water.	3 weeks	R. no pus L. still running L. E. W. 0-40 R. E. W. 0-40	Severe pain over left side head. Drowsiness and very deaf. Operation ad- vised and declined.
64	Mrs. F. S. B.,	40	F	Right	10 years	R. E. W. p-40	Peroxide of hydrogen. Boric acid. Bichloride sol. (1-1000)	9 weeks	No pus R. E. W. 0-40	Bicloride solution (1-1000) continuously was what stopped discharge. Six months later, relapse.
65	Mrs. W. F. B.,	35	F	Right	2 weeks	Grip R. E. W. 4-40	Hot water.	20 days	No pus R. E. W. 28-40	Fever. Much pain in ear.
66	Lillie L. B.,	23	F	Both	13 years	Scarlet fever R. E. W. 1-40 L. E. W. 4-40	Peroxide of hydrogen. Boric acid powder.	4 days	Still running R. E. W. 1-40 L. E. W. 4-40	

NAME.	Age.	Sex.	One or both	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
67 Rudolph B.,	13	M	Both	6 years	R. E. W. 3-40 L. E. W. 3-40	Bichloride sol. (1-1000)	18 days	Still running R. E. W. 3-40 L. E. W. 3-40	
68 Jerome W. B.,	4	M	Left	4 weeks	Ordinary voice at three feet	Peroxide of hydrogen.	1 week	Ordinary voice at ten feet	Hearing normal 2 months later. 9 months later, re- lapse. 14 months later, second relapse. Tenderness over mastoid. Recovery without opera- tion.
69 W. S. B.,	40	M	Right	10 days	Grip R. E. W. 0-40	Rest in bed. Steam, hot water, and leeches.	6 weeks	Still running R. E. W. 0-40	
70 Edward B.,	9	M	Right	4 days	Foreign body in ext. and canal R. E. W. 5-40 R. E. W. c-40 L. E. W. c-40	Peroxide of hydrogen.	3 weeks	No pus R. E. W. 40-40	
71 Gertrude B.,	18	F	Both	13 years	R. E. W. 5-40 R. E. W. c-40 L. E. W. c-40	Peroxide of hydrogen. Hot water.	8 days	Still running R. E. W. c-40 L. E. W. c-40	Pain. No fever.
72 Willard F. B.,	9	M	Right	2 years	R. E. W. 6-40	Peroxide of hydrogen.	4 weeks	No pus R. E. W. 25-40	
73 Edward M. B.,	6	M	Both	5 years	R. E. W. 0-40 L. E. W. 0-40	Removal polyph. Mono- chloracetic acid. Boric acid powder.	5 weeks	Still running R. E. W. 0-40 L. E. W. 0-40	
74 Mrs. Henry S. B.,	42	F	Right	33 years	Scarlet fever R. E. W. p-40	Peroxide of hydrogen.	2 months	No pus R. E. W. 0-40	In 24 years, 5 relapses.
75 Stanley B.,	8 m.	M	Both	4 months	Too young to test. Grip	Peroxide of hydrogen.	19 days	No pus	Six years later, no relapse.
76 Wilson J. B.,	11	M	Left	4 days	Grip L. E. W. 3-40	Rest in bed. Continuous dry heat. Peroxide of hydrogen.	2 months	L. E. W. 0-40	Mastoid operation. Opened and scraped antrum. Re- covery.
77 Thos. J. B.,	16	M	Left	1 year	L. E. W. 1-40	Peroxide of hydrogen. Hot water.	12 days	Still running L. E. W. 1-40	Pain and slight edema over mastoid.
78 Henry C.,	16	M	Right	4 days	R. E. W. 5-40	Steam. Rest in bed. Atro- phine sol.	9 days	No pus R. E. W. 30-40	Slight relapse a few days later, which yielded easily.
79 Kate C.,	14	F	Right	2 weeks	Mumps R. E. W. 3-40	Rest in bed. Steam. Hot water. Cotton pad.	3 weeks	Still running R. E. W. 10-40	Pain and swelling over mas- toid. Recovery without operation.

80	Mrs. J. L. C., . . .	27	F	Right	25 years	R. E. W. 0-40	Removal of polyp. Nitric acid. Peroxide of hydrogen.	2 months	No pus R. E. W. 0-40	In 7 years, 4 relapses.
81	J. W. C., . . .	22	M	Right	4 days	Grip R. E. W. 1-40	Inflation. Peroxide of hydrogen.	2 weeks	No pus R. E. W. 20-40	Normal hearing some weeks later.
82	Florence L. C., . .	13	F	Right	6 years	R. E. W. 6-40	Boric acid powder.	2 weeks	No pus	In 2 years, 2 relapses.
83	Anna A. C., . . .	34	F	Left	13 years	L. E. W. 3-40	Boric acid powder.	25 days	R. E. W. 10-40	Eight years later, removal of granulations from left tympanum.
84	Mamie E. C., . . .	9	F	Left	5 years	L. E. W. 0-40	Removal of polyp. Nitric acid. Alcohol.	3 weeks	No pus L. E. W. 9-40	Pain and fever. Temperature ran to 103.4°.
85	Marcia P. C., . . .	10	F	Right	7 years	Scarlet fever R. E. W. 6-40	Peroxide of hydrogen.	9 days	No pus R. E. W. 6-40	Pain, swelling, redness, and tenderness over mastoid.
86	James C., . . .	29	M	Right	1 month	R. E. W. 0-40	Rest in bed. Leeches. Poultees. Cotton pad.	1 month	Still running R. E. W. 0-40	Recovery without operation.
87	Cornelia C., . . .	14	F	Right	2 months	R. E. W. 10-20	Peroxide of hydrogen.	1 month	No pus R. E. W. 10-40	In 2 years, 4 relapses.
88	G. G. C., . . .	49	M	Right	40 years	R. E. W. 0-40	Peroxide of hydrogen.	2 weeks	Still running R. E. W. 0-40	Partial coma. Temperature 104°. No redness or swelling over mastoid.
89	F. T. C., . . .	6	M	Right	4 days	Grip R. E. W. 0-40	Mastoid operation. Opened antrum freely.	2 months	Still running R. E. W. 0-40	Recovery. Temp. 101° after operation.
90	Caroline St. J. C., .	28	F	Right	2 years	R. E. W. p-40	Removal of granulations. Nitric acid. Peroxide of hydrogen.	3 months	No pus R. E. W. 15-40	Severe pain. Fever. Three years later, no relapse.
91	Walter C. C., . . .	44	M	Both	3 weeks	R. E. W. 5-40 L. E. W. 7-40	Hot water and cotton pad.	10 days	No pus R. E. W. 30-40 L. E. W. 20-40	Large quantity pus. Slight rise only of temperature.
92	Wm. John C., . . .	10	M	Both	4 weeks	R. E. W. 0-40 L. E. W. 1-40	Mastoid operation. External tubes mastoid carious (right).	3 months	No pus R. E. W. 10-40 L. E. W. 40-40	Recovery.
93	Levi S. C., . . .	11	M	Both	4 years	Scarlet fever R. E. W. c-40	Boric acid powder. Hot water.	6 weeks	No pus R. E. W. 20-40 L. E. W. 25-40	Pain and much swelling exterior and canal.
94	H. C. C., . . .	51	M	Both	3 years	R. E. W. c-40 L. E. W. e-40	Removal of granulations. Nitric acid. Boric acid powder.	7 weeks	No pus R. E. W. 0-40 L. E. W. 6-40	In 14 years, 2 relapses.
95	Sylvester G. C., . .	16	M	Left	5 years	Scarlet fever L. E. W. 0-40	Bichloride sol. (1-2000).	11 days	Still running L. E. W. 0-40	

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
96 James S. C.,	59	M	Left	12 days	Grip L. E. W. 2-10	Boric acid powder.	9 days	No pus L. E. W. 35-40	In 16 years, no relapse.
97 M. F. C.,	43	M	Left	3 weeks	Grip L. E. W. 0-40	Boric acid pulv.	8 days	No pus L. E. W. 25-40	
98 Mrs. John A. C.,	35	F	Right	2 years	R. E. W. c-50	Peroxide of hydrogen.	17 days	No pus R. E. W. 4-40	In 11 years, 3 relapses.
99 Mrs. James C.,	55	F	Left	2 years	L. E. W. 0-40	Hot water. Peroxide of hydrogen.	5 weeks	Still running L. E. W. 0-40	Pain and fever during first week of treatment.
100 Miss E. A. C.,	28	F	Both	26 years	Scarlet fever R. E. W. c-40 L. E. W. 5-40	Alcohol. Boric acid powder.	3 months	No pus R. E. W. 4-40 L. E. W. 6-40	
101 Albert P. C.,	10	M	Both	6 years	Scarlet fever R. E. W. 0-40 L. E. W. 0-40	Boric acid powder.	1 month	No pus R. E. W. 1-40 L. E. W. 5-40	Eight months later, no relapse, R. E. W. 4-40. L. E. W. 25-40.
102 E. F. C.,	27	M	Right	24 years	Scarlet fever R. E. W. 6-40 L. E. W. 21-40	Peroxide of hydrogen.	2 weeks	Still running R. E. W. 6-40 L. E. W. 24-40	
103 Mrs. John C.,	41	F	Right	5 weeks	R. E. W. 0-40	Operation. Outer tables mastoid removed. Large antrum full of pus.	3 months	L. E. W. 34-40	Amount of pus excessive.
104 Agnes C.,	20	F	Right	12 days	Grip R. E. W. 0-40	Mastoid operation.	2 months	No pus R. E. W. 15-40	Fluctuating temperature the main reason for operating.
105 Thos. J. C.,	33	M	Left	2 years	L. E. W. 8-40	Hot water. Peroxide of hydrogen.	2 weeks	L. E. W. 6-40	Discharge profuse. Slight fever (101°) for 2 days.
106 Mrs. T. P. C.,	35	F	Both	29 years	Scarlet fever R. E. W. 2-40 L. E. W. 0-40	Boric acid powder.	5 weeks	No pus R. E. W. 2-40 L. E. W. 0-40	Hearing for watch much poorer than for voice. Hears ordinary voices at twenty feet.
107 Hattie C.,	24	F	Right	4 years	R. E. W. 7-40	Hot water. Steam. Cotton pad. Rest in bed.	3 weeks	Still running R. E. W. 7-40	Pain and tenderness over mastoid. No operation.
108 Edith A. C.,	28	F	Right	4 days	Grip R. E. W. 2-40	Peroxide of hydrogen.	16 days	No pus R. E. W. 15-40	Recovery.

109	A. C. C., . . .	42	M	Left	4 days	Swimming L. E. W. 0-40	Rest in bed. Steam. Hot water. Lecches. Cotton pad.	5 days	Still running L. E. W. 0-40	Patient passed out of my hands. Three days later became comatose and died. Operation advised and declined.
110	Mary Hazel C., . .	8	F	Left	3 years	L. E. W. 2-40	Peroxide of hydrogen.	13 days	Still running L. E. W. 2-40	Relapse, and 6 years later both running.
111	Mary Martin C., . .	16	F	Both	12 years	Scarlet fever R. E. W. c-40 L. E. W. c-40	Peroxide of hydrogen.	1 month	No pus R. E. W. c-40 L. E. W. c-40	
112	Mary E. C., . . .	19	F	Both	5 years	Menses R. E. W. 3-40 L. E. W. 3-40	Removal of granulations. Peroxide of hydrogen.	10 weeks	Still running R. E. W. 2-40 L. E. W. 2-40	Temp. before removal of granulations 101°. Temp. in 3 days, normal.
113	Leonard A. C., . .	25	M	Right	1 day	Grip R. E. W. 10-40	Boric acid powder. Steam and cotton pad.	22 days	R. E. W. 10-40	Pain and fever. 7 weeks later, R. E. W. 40-40.
114	Miss M. C., . . .	22	F	Right	9 weeks	R. E. W. 4-40	Peroxide of hydrogen. Boric acid powder.	1 month	R. E. W. 20-40	In 2 years, 2 relapses.
115	Rev. T. M. C., . .	34	M	Both	30 years	R. E. W. 10-40	Nitrate of silver and bichloride sol. (1-2000).	27 days	R. E. W. 25-40 L. E. W. 6-40	
116	Chas. N. C., . . .	44	M	Both	23 years	R. E. W. 0-40 L. E. W. 0-40	Removal of polypt and granulations. Peroxide of hydrogen.	6 weeks	No pus R. E. W. 0-40 L. E. W. 0-40	In 6 years, 4 relapses.
117	Katherine H. C., . .	18 m.	F	Both	1 month	Too young to test	Peroxide of hydrogen.	10 days	No pus	
118	Bernard D., . . .	32	M	Right	2 days	Grip R. E. W. c-40	Peroxide of hydrogen. Hot water.	3 days	Still running R. E. W. c-40	
119	Thos. D. D., . . .	28	M	Right	3 days	Grip R. E. W. 0-40	Steam. Hot water. Lecches.	6 days	Still running R. E. W. 0-40	Temp. 103°. 2d day. Three months later, no pus. R. E. W. 40-40.
120	Jennie D., . . .	4	F	Right	1 week	R. E. W. 0-40	Steam. Hot water. Poul-tices. Mustold operation.	1 month	Still running R. E. W. 10-40	Six months later, no pus. R. E. W. 30-40.
121	Daniel D., . . .	36	M	Left	2 days	Grip L. E. W. 6-40	Dry heat. Peroxide of hydrogen.	16 days	No pus L. E. W. 15-40	
122	Estelle A. D., . . .	11	F	Left	8 years	L. E. W. 1-40	Bichloride sol. (1-2000).	1 month	Still running L. E. W. 1-40	
123	W. S. D., . . .	23	M	Both	18 years	Scarlet fever R. E. W. 0-40 L. E. W. 0-40	Removal of polypt. Nitric acid. Boric acid powder.	6 weeks	No pus R. E. W. 5-40 L. E. W. p-40	One year later, no relapse. R. E. W. 5-40. L. E. W. 2-40.
124	Joseph H. D., . . .	1	M	Left	3 weeks	Too young to test	Right side mastoid operation. External tables cartious.	5 weeks	No pus	Thirteen years later, no relapse. L. E. W. 35-40.
125	Mrs. J. B. D., . . .	48	F	Left	1 day	L. E. W. 0-40	Paracentesis left M. T. Rest in bed. Peroxide of hydrogen.	2 weeks	No pus L. E. W. 10-40	Pain. Fever (100.8°).

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
126 Mrs. Geo. H. D., . . .	28	F	Left	23 years	Scarlet fever L. E. W. 4-40	Peroxide of hydrogen. Boric acid powder.	11 days	No pus L. E. W. 4-40	One year later, no relapse.
127 Hilda O. D., . . .	21	F	Both	10 years	R. E. W. 0-40 L. E. W. 20-40	Removal of polyp. Per- oxide of hydrogen.	13 days	Still running R. E. W. 0-40 L. E. W. 20-40	Six months later, right still running.
128 Delia D., . . .	22	F	Both	15 years	R. E. W. 10-40 L. E. W. 0-40	Peroxide of hydrogen.	5 weeks	No pus R. E. W. 30-40 L. E. W. 0-40	
129 Geo. D., . . .	41	M	Both	35 years	R. E. W. 3-40 L. E. W. 0-40	Peroxide of hydrogen.	2 weeks	Still running R. E. W. 3-40 L. E. W. 0-40	
130 Geo. Edson D., . . .	3	M	Left	1 week	Too young to test	Panas' fluid. Hot water.	13 days	No pus	Temp. for a week, 103.1°.
131 Fredk. H. D., . . .	21	M	Right	5 years	R. E. W. 0-40	Removal of granulations. Alcohol. Nitric acid. Peroxide of hydrogen.	5 weeks	Still running R. E. W. 0-40	
132 R. D., . . .	33	M	Both	4 years	R. E. W. 20-40 L. E. W. 3-40	Removal of granulations. Nitric acid. Alcohol.	4 weeks	Still running R. E. W. 20-40 L. E. W. 3-40	One year later, no relapse.
133 Walter W. E., . . .	32	M	Both	3 years	R. E. W. 2-40 L. E. W. 0-40	Removal of polyp. Nitric acid. Boric acid powder.	17 days	No pus R. E. W. 4-40 L. E. W. c-40	Two months later, no re- lapse.
134 Berkeley H. E., . . .	7	M	Both	1 week	Grip R. E. W. c-40 L. E. W. 3-40	Peroxide of hydrogen.	16 days	No pus R. E. W. 25-40 L. E. W. 40-40	Fever for 3 days (101°).
135 Mrs. J. A. E., . . .	27	F	Right	3 years	R. E. W. 2-40	Peroxide of hydrogen.	7 days	Still running	
136 L. E. E., . . .	42	M	Right	6 months	R. E. W. 0-40	Mastoid operation. Ex- tensive.	13 days	Death. Antopsy.	Septo-meningitis in middic and post fosse, with ab- sence cerebellum.
137 Louise C. E., . . .	17	F	Both	12 years	R. E. W. 0-40 L. E. W. 2-40	Peroxide of hydrogen. Boric acid powder.	5 weeks	No pus R. E. W. 0-40 L. E. W. 6-40	Three months later, no re- lapse.
138 Fredk. M. E., . . .	32	M	Right	6 weeks	R. E. W. 0-40	Mastoid operation. Ex- tensive.	5 weeks	R. E. W. 0-40	Recovery.

139	Floy F.,	10	F	Left	2 weeks	Grip L. E. W. 0-40 L. E. W. 0-40	Rest in bed, Steam, Hot water Cotton pad. Removal of granulations. Nitric acid. Boric acid powder.	4 weeks 2 months	L. E. W. 25-40 No pus L. E. W. 0-40	Recovery without operation. In 3 years, 5 relapses.
141	Robt. F. F.,	13	M	Both	3 months	R. E. W. 1-60 L. E. W. c-60	Inflation. Peroxide hydrogen.	7 weeks	R. E. W. 1-60 L. E. W. 1-60	Left facial paralysis.
142	Bernard F.,	30	M	Right	2 days	Impacted wax R. E. W. 0-40 R. E. W. 0-40	Removal wax. Peroxide of hydrogen.	23 days	No pus R. E. W. 20-40	Pain and much swelling ext. aud. canal.
143	Mrs. Alice F.,	59	F	Both	50 years	L. E. W. 0-40	Peroxide of hydrogen.	8 days	No pus R. E. W. 0-40 L. E. W. 0-40	Ears have not run continuously.
144	Mrs. Arthur F.,	28	F	Right	8 years	Measles R. E. W. 1-60	Peroxide of hydrogen.	6 weeks	Still running R. E. W. 1-60	Two years later, still running.
145	Daniel M. F.,	63	M	Right	3 weeks	Grip R. E. W. 5-40	Peroxide of hydrogen. Hot water.	10 days	No pus R. E. W. 10-40	Pain and fever, highest temp. 101° 6.
146	Francis C. F.,	9	M	Left	2 days	Grip L. E. W. 0-40	Peroxide of hydrogen.	8 days	No pus L. E. W. 30-40	Severe pain for 24 hours.
147	Irma May F.,	8	F	Both	2 weeks	R. E. W. 1-40 L. E. W. p-40	Hot water. Inflation. Hot water. Peroxide of hydrogen. Rest in bed.	1 month	No pus R. E. W. 30-40 L. E. W. 20-40	Fever for 2 days 101°. Pain back of ear. Temp. 102° for 5 days.
148	Mrs. Louise F.,	52	F	Both	12 years	R. E. W. 0-40 L. E. W. 10-40	Peroxide of hydrogen.	4 months	No pus R. E. W. 20-40 L. E. W. 30-40	
149	Abraham F.,	60	M	Right	4 months	R. E. W. 0-40	Panas' fluid.	2 weeks	No pus R. E. W. 10-40	
150	Etta May F.,	11	F	Both	8 years	R. E. W. 6-40 L. E. W. 0	Peroxide of hydrogen. Boric acid powder.	2 months	Still running R. E. W. 6-40 L. E. W. 0	Facial paralysis left side has existed for 7 years.
151	John S. F.,	53	M	Both	40 years	R. E. W. 3-40 L. E. W. c-40	Peroxide of hydrogen.	6 weeks	No pus R. E. W. 3-40 L. E. W. c-40	One relapse in a month, another 5 years later.
152	John F.,	30	M	Left	1 week	Grip L. E. W. 5-40	Peroxide of hydrogen. Hot water.	1 month	No pus L. E. W. 40-40	Temp. 102.4° on first day, normal 4 days later.
153	Edna L. F.,	1	F	Right	6 months	Too young to test	Hot water.	7 weeks	No pus Too young to test	High temp. 102°-104° for a week. In the next year 4 relapses, which yielded readily to treatment.
154	May A. F.,	11	F	Both	8 years	R. E. W. 4-40 L. E. W. 2-40	Removal polypi and granulation. Nitric acid. Alcohol. Bichloride solution. Peroxide of hydrogen.	3 years	Still running R. E. W. 4-40 L. E. W. 2-40	Treatment at intervals.

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harn Douc.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
155 Bertha M. G., . . .	20	F	Both	13 years	R. E. W. c-40 L. E. W. 3-40	Peroxide of hydrogen.	1 month	Still running R. E. W. c-40 L. E. W. 3-40	
156 Mary Ann G., . . .	14	F	Right	10 years	Scarlet fever R. E. W. 0-40	Removal polypus. Nitric acid. Bichloride solution. Boric acid powder. Hot water. Peroxide of hydrogen.	2 years	No pus R. E. W. 0-40	Three years later, two relapses.
157 Ida G., . . .	2½	F	Right	2 months	Too young to test	Peroxide of hydrogen.	10 days	Still running	Temp. 100-102° during whole treatment.
158 Ida May G., . . .	19	F	Left	8 months	L. E. W. 6-40	Poultices to mastoid.	6 days	No pus L. E. W. 12-40	
159 H. I. G., . . .	47	M	Right	2 days	Grip R. E. W. 0-40	Rest in bed. Hot water. Poultices to mastoid.	5 weeks	No pus R. E. W. 0-40	Operation advised and declined. One month later, R. E. W. 20-40.
160 J. J. G., . . .	7	M	Both	6 years	R. E. W. 6-40 L. E. W. c-40	Mastoid operation. Boric acid powder. Peroxide of hydrogen.	3 months	No pus R. E. W. 8-40 L. E. W. c-40	External table left mastoid-carcious. Operation. Recovery.
161 Frances E. F. G., . . .	20	F	Both	4 weeks	R. E. W. 1-40 L. E. W. 4-40	Boric acid powder.	3 weeks	No pus R. E. W. 15-40 L. E. W. 20-40	
162 Mrs. Henry G., . . .	63	F	Right	3 weeks	Grip R. E. W. 0-40	Boric acid powder.	4 weeks	No pus R. E. W. 30-40 L. E. W. 40-40	Four years later, relapse.
163 Herbert M. G., . . .	12	M	Left	4 days	Grip L. E. W. 0-40	Paracentesis left M. T. Peroxide of hydrogen.	3 weeks	No pus R. E. W. 30-40 L. E. W. 30-40	Edema, pain and tenderness over mastoid region.
164 Elbridge G., . . .	40	M	Left	6 weeks	Swimming L. E. W. 3-40	Rest in bed. Steam. Cotton pad.	6 weeks	No pus R. E. W. 6-40	In 10 months three relapses. Mastoid involved each time.
165 Nathan G., . . .	43	M	Right	1 day	Grip R. E. W. 0-40	Rest in bed. Steam. Hot water. Poultices over mastoid.	4 weeks	No pus R. E. W. 80-40 L. E. W. 40-40	Mastoid involved each time.
166 Russell G., . . .	48	M	Right	5 days	Grip R. E. W. 0-40	Rest in bed. Hot water. Steam. Poultices to mastoid.	6 weeks	No pus R. E. W. 10-40	Later (about 6 months), hears ordinary voice 20 feet.
167 Louis F. G., . . .	19	M	Right	15 years	R. E. W. 1-40	Peroxide of hydrogen.	4 weeks	No pus R. E. W. 0-40	In seven years four relapses.
168 Mrs. E. T. G., . . .	28	F	Right	2 weeks	Grip R. E. W. 1-40	Hot water. Peroxide of hydrogen.	1 week	No pus R. E. W. 40-40	Pain and fever. Temp. on second day 102.1°

169	Oscar H. G., . . .	31	M	Right	3 months	R. E. W. e-40	Removal polyp. Boric acid powder.	3 weeks	R. E. W. 10-40	Three years later, relapse.
170	J. W. G., . . .	29	M	Left	8 years	L. E. W. 0-40	Hot water. Peroxide of hydrogen.	11 days	Still running L. E. W. e-40	
171	Nellie R. G., . . .	24	F	Right	1 day	Snuffing salt water R. E. W. 3-40 L. E. W. p-40	Steam. Cotton pad. Hot water.	3 weeks	No pus R. E. W. 40-40	Water which caused infection, snuffed from hand.
172	Geo. H. G., . . .	31	M	Left	20 years	R. E. W. 4-40	Removal polyp. Peroxide of hydrogen.	1 month	No pus L. E. W. p-40	In eight years four relapses.
173	Joseph A. G., . . .	31	M	Right	3 weeks	R. E. W. 3-40	Peroxide of hydrogen.	10 days	No pus R. E. W. 20-40	One month later, R. E. W. 40-40.
174	Ida G., . . .	20	F	Both	10 years	R. E. W. 3-40 L. E. W. 3-40	Peroxide of hydrogen.	10 days	Still running R. E. W. 3-40 L. E. W. 3-40	
175	Thos. G., . . .	39	M	Left	2 weeks	Swimming L. E. W. 3-60 R. E. W. 6-40	Peroxide hydrogen.	2 weeks	No pus L. E. W. 3-40	No relapse in 16 years.
176	H. F. G., . . .	32	M	Right	5 days	Snuffing salt water R. E. W. 0-40 L. E. W. 0-40	Rest in bed. steam. Hot water. Cotton pad.	3 weeks	No pus R. E. W. 30-40	Great pain, edema and tenderness over mastoid. Fever.
177	Alfred G., . . .	23	M	Both	8 days	R. E. W. 6-40	Peroxide of hydrogen.	1 month	No pus R. E. W. 40-40 L. E. W. 40-40	
178	Mrs. L. G. G., . . .	30	F	Both	25 years	Snuffing salt water R. E. W. 6-40	Peroxide of hydrogen. Boric acid powder.	6 weeks	Still running R. E. W. 6-40 L. E. W. 6-40	Taught her to use peroxide of hydrogen, and 5 years later she reports "no pus for 3 years."
179	Miss Marcella G., . . .	30	F	Right	1 month	R. E. W. 10-40	Boric acid powder.	3 weeks	No pus R. E. W. 10-40	
180	A. W. G., . . .	41	M	Right	17 years	R. E. W. 1-40	Peroxide of hydrogen.	1 month	Still running R. E. W. 1-40	
181	Christopher G., . . .	9	M	Both	5 years	Scarlet fever R. E. W. e-40 L. E. W. e-40	Boric acid solution. Alcohol. Boric acid powder.	5 weeks	No pus R. E. W. e-40 L. E. W. e-40	
182	Eleanor G., . . .	17	F	Both	10 days	Grip R. E. W. 10-40 L. E. W. 10-40	Peroxide hydrogen. Hot water.	2 weeks	No pus R. E. W. 40-40 L. E. W. 40-40	Pain and fever. Temp. 100.8°-102° for a week.
183	Martha D. G., . . .	23	F	Right	1 day	Grip R. E. W. 0-40	Paracentesis M. T. Peroxide of hydrogen. Hot water.	1 month	No pus R. E. W. 30-40	Pain and fever. Temp. went to 103°, and was normal only last week.
184	Gustav H., . . .	17	M	Both	12 years	R. E. W. 6-40 L. E. W. 0-40	Peroxide of hydrogen. Boric acid powder.	2 months	No pus R. E. W. 10-40 L. E. W. 2-40	

NAME.	Age.	Sex.	One or both	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
185 Agnes G. H., . . .	20	F	Right	18 years	R. E. W. 1-40	Removal of granulation. Nitric acid. Boric acid powder.	1 month	Still running R. E. W. 1-40	
186 Walter H., . . .	13 Mos	M	Left	3 days	Too young to test.	Peroxide of hydrogen. Hot water.	11 days	No pus. Not healed.	Temp. was up to 101-102.4° for a week.
187 Edwin F. H., . . .	36 Mos	M	Right	2 months	R. E. W. p-40	Peroxide of hydrogen.	3 weeks	No pus R. E. W. p-40	In 5 years three relapses.
188 Fannie A. H., . . .	31	F	Left	30 years	L. E. W. 3-40	Peroxide of hydrogen. Boric acid powder.	1 month	No pus L. E. W. 3-40	In 6 years four relapses.
189 James H., . . .	33	M	Both	20 years	R. E. W. 4-40 L. E. W. 0-40	Boric acid powder.	23 days	No pus R. E. W. 4-40 L. E. W. 0-40	In 9 years four relapses and R. E. W. 1-40, L. E. W. 0-40.
190 Louisa H., . . .	40	F	Left	2 weeks	Death	Comatose when first seen. Mastoid operation.	1 day	Death 16 hours after operation	No autopsy.
191 Franklin H. H., . . .	14 Mos	M	Both	6 weeks	Post auricular abscess	Mastoid operation. Extensive.	4 months	Wound closed. Ear still discharging	Recovery.
192 Patrick J. H., . . .	27	M	Right	10 years	R. E. W. 0-40	Rest in bed. Removal of polypus. Steam. Hot water. Cotton pad and poultices.	5 weeks	No pus R. E. W. 0-40	Operation advised and declined. Pain, redness, swelling, and tenderness over right mastoid. Recovery without operation.
193 Wm. G. H., . . .	42	M	Right	1 month	Grip R. E. W. 0-40	Rest in bed. Steam. Hot water. Poultices over mastoid.	2 months	Still running R. E. W. 0-40	Edema, redness, and tenderness over mastoid. Recovery without operation.
194 Cecilia H., . . .	19	F	Left	10 days	L. E. W. 5-40	Hot water.	1 week	No pus R. E. W. 30-40	Pain and fever 99-100.5°
195 Mary J. H., . . .	8	F	Right	6 years	R. E. W. 5-40	Boric acid powder.	3 weeks	No pus R. E. W. 15-40	
196 Frederick W. H., . . .	6 Wks	M	Left	5 days	Death	In convulsions when seen. No operation.	.....	Death in six hours	Left ear ran freely. Suddenly stopped and cerebral symptoms followed. No autopsy.

197	Mrs. Mark H., . . .	55	F	Right	30 years	R. E. W. 0-40	Mastoid operation. Curetting antrum.	6 months	No pus R. E. W. 0-40	Pain, redness, swelling, and tenderness over mastoid. Recovery. Pain. Temp. 100-101°.
198	Mrs. Geo. W. H.,	20	F	Right	3 weeks	R. E. W. c-40	Hot water. Boric acid powder.	9 days	R. E. W. 20-40	In 4 years two relapses.
199	Agnes H., . . .	23	F	Right	5 months	R. E. W. 8-40	Boric acid powder.	3 months	No pus R. E. W. 30-40	
200	Thos. John H.,	5	M	Left	30 mos.	L. E. W. c-40	Boric acid powder.	26 days	No pus L. E. W. c-40	
201	Wm. T. H., . . .	41	M	Right	3 weeks	Grip L. E. W. 0-40	Rest in bed. Hot water. Poultices over mastoid.	5 weeks	No pus L. E. W. 6-40	Pain, tenderness, and edema over mastoid. Recovery without operation.
202	Lillie E. H., . . .	16	F	Both	4 years	R. E. W. p-40 L. E. W. 2-40	Inflation. Peroxide of hydrogen. Boric acid powder.	1 month	No pus R. E. W. 3-40 L. E. W. 8-40	
203	Mrs. E. A. H., . . .	42	F	Both	35 years	R. E. W. 1-40 L. E. W. 3-40	Inflation and boric acid powder.	6 weeks	No pus R. E. W. 6-40 L. E. W. 25-40	In 16 years five relapses.
204	Edwin W. H., . . .	21	M	Both	10 years	R. E. W. 25-40 L. E. W. 8-40	Peroxide of hydrogen. Boric acid powder.	1 month	No pus R. E. W. 40-40 L. E. W. 40-40	Three years later relapse, left.
205	Hattie L. H., . . .	9	F	Both	4 years	Grip R. E. W. 7-40 L. E. W. 12-40	Boric acid powder. Hot water. Rest in bed. Peroxide of hydrogen.	2 weeks	No pus R. E. W. 6-40 L. E. W. 25-40	In 15 years, three relapses. With third relapse of left mastoid complications. Recovery without opera- tion.
206	Mary L. H., . . .	30	F	Right	3 weeks	R. E. W. 20-40	Boric acid powder.	1 week	No pus R. E. W. 30-40	Two years later, relapse.
207	Martin H., . . .	22	M	Right	3 years	R. E. W. 6-40	Removed Polyp. Nitric acid. Peroxide hydro- gen. Boric acid powder.	6 days	Still running R. E. W. 6-40	
208	Jesse M. H., . . .	25	M	Left	12 years	L. E. W. 10-40	Removed polyp. Boric acid powder.	4 weeks	No pus L. E. W. 20-40	
209	Chas. H., . . .	30	M	Both	25 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of Hydrogen.	2 weeks	Still running R. E. W. 0-40 L. E. W. 0-40	
210	Chas. R. H., . . .	27	M	Right	3 days	Tuberculosis R. E. W. 0-40	Peroxide of Hydrogen.	20 days	Still running R. E. W. 0-40	No pain. Temp. in after- noon 101°.
211	Mrs. David H., . . .	35	F	Left	3 months	L. E. W. c-40	Peroxide of hydrogen. Hot water.	15 days	No pus L. E. W. c-40	Profuse discharge. Dizzi- ness.
212	Albert C. H., . . .	18	M	Left	11 years	L. E. W. 3-40	Peroxide of hydrogen.	1 month	No pus L. E. W. 3-40	
213	James H., . . .	35	M	Right	8 days	Traumatism R. E. W. 10-40	Dry cleansing. Boric acid powder.	6 days	No pus R. E. W. 35-40	

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
214 Mrs. Frank I. H.,	33	F	Left	1 week	Grip L. E. W. 0-40	Rest in bed. Hot water. Foultices over mastoid.	3 weeks	No pus L. E. W. 0-40	Ear ran 2 days, suddenly stopped and mastoid began to swell. Recovery without operation. Six years later, L. E. W. 40-40. Two years later, relapse.
215 Mrs. Frank E. H.,	30	F	Right	23 years	R. E. W. 3-40	Peroxide of hydrogen.	6 weeks	No pus R. E. W. 3-40	
216 C. H. H.,	23	M	Right	19 years	R. E. W. 0-40	Rest in bed. Hot water. Peroxide of hydrogen.	5 days	Still running R. E. W. 0-40	
217 Katie H.,	14	F	Both	7 years	Scarlet fever R. E. W. c-40 L. E. W. 0-40	Removal of polyp from each. Peroxide of hydrogen. Boric acid powder.	3 weeks	Still running R. E. W. c-40 L. E. W. 0-40	Eleven years later, right still running. Left not.
218 Simon Peter H.,	20	M	Both	18 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen.	18 days	Still running R. E. W. 0-40 L. E. W. 0-40	
219 Isaac H.,	50	M	Right	4 weeks	R. E. W. p-40	Paracentesis right M. T. Rest in bed. Later, mastoid operation. Boric acid powder.	6 weeks	No pus R. E. W. p-40	Thirteen years later, no relapse. R. E. W. 25-40
220 Mrs. Amy L. H.,	25	F	Right	23 years	R. E. W. p-40	Panas' fluid.	4 weeks	No pus R. E. W. 3-40	
221 Bertram D. H.,	5	M	Right	2 years ¹	R. E. W. 2-40		1 month	No pus R. E. W. 20-40	One year later, relapse. Well in 10 days.
222 Marian H.,	5	F	Left	2 weeks	Grip L. E. W. 5-40	Peroxide of hydrogen.	10 days	No pus L. E. W. 20-40	Pain and fever (100°, 102°) for 8 days.
223 Lizzie H.,	7	F	Both	3 months	Scarlet fever R. E. W. 0-40 L. E. W. 0-40	Removal polypi and pieces necrosed bone from left mastoid.	6 weeks	Still running R. E. W. 0-40 L. E. W. 0-40	Spontaneous perforation and fistula left mastoid.
224 F. Louise H.,	21	F	Both	19 years	Scarlet fever R. E. W. 10-40 L. E. W. 12-40	Peroxide of hydrogen.	4 weeks	Still running R. E. W. 10-40 L. E. W. 12-40	Four years later, R. E. W. 10-40, L. E. W. 12-40.
225 Mrs. C. G. H.,	31	F	Left	3 years	L. E. W. 5-40	Boric acid powder.	22 days	No pus L. E. W. 5-40	Two years later, relapse, easily controlled.
226 Nellie E. H.,	20	F	Left	5 years	Measles L. E. W. 6-40	Peroxide of hydrogen.	13 days	Still running L. E. W. 20-40	

227	Fannie N. H., . . .	4	F	Right	3 months	R. E. W. 0-40	Removal of polypus. Nitric acid. Powdered alum. Rest in bed. Hot water. Steam. Poultices over mastoids. Peroxide of hydrogen.	1 month	No pus R. E. W. 0-40	Ten years later, no relapse. R. E. W. 40-40. L. E. W. 40-40. Two years later, R. E. W. 40-40. L. E. W. 40-40. One month later, no relapse.
228	Miss Alice H., . . .	32	F	Both	2 weeks	Nasal douche R. E. W. 0-40 L. E. W. 0-40		25 days	No pus R. E. W. 15-40 L. E. W. 15-40	
229	Gretta H., . . .	5	F	Both	3 days	R. E. W. 5-40 L. E. W. 5-40		5 weeks	No pus R. E. W. 20-40 L. E. W. 20-40	
230	Samuel I. H., . . .	28	M	Both	2 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen. Boric acid powder.	4 weeks	No pus R. E. W. 0-40 L. E. W. 0-40	
231	Mrs. J. G. H., . . .	35	F	Both	3 years	R. E. W. 3-40 L. E. W. p-40	Peroxide of hydrogen.	13 days	No pus R. E. W. 5-40 L. E. W. 1-40	
232	Wm. D. H., . . .	17	M	Left	13 years	Scarlet fever L. E. W. 0-40		4 weeks	No pus L. E. W. 0-40	Relapse 18 years later.
233	Porter I., . . .	8	M	Right	4 years	R. E. W. 1-40 L. E. W. 6-40	Removal of granulations. Nitric acid. Monochloro- acetic acid. Peroxide of hydrogen. Boric acid powder. Panase' fluid.	3 months	No pus R. E. W. 1-40	Four years later, relapse. Requiring mastoid opera- tion. Recovery.
234	Walter T. I., . . .	27	M	Both	20 years	R. E. W. 1-40 L. E. W. 6-40		17 days	Right still run- ning. Left stopped. R. E. W. 1-40 L. E. W. 10-40	
235	F. Richard I., . . .	27	M	Both	6 years	R. E. W. 6-40 L. E. W. p-40	Removal of polypi. Mono- chloroacetic acid. Boric acid powder.	6 weeks	No pus R. E. W. 6-40 L. E. W. 10-40	Four years later, relapse, which yielded easily.
236	Lizzie J., . . .	15	F	Both	10 years	R. E. W. 10-40 L. E. W. 15-40	Removal polyp. Boric acid powder. Inflation.	1 month	No pus R. E. W. 30-40 L. E. W. 25-40	
237	Henry G. J., . . .	19	M	Left	5 days	Grip L. E. W. 0-40	Hot water. Steam. Per- oxide of hydrogen.	6 days	Still running L. E. W. 0-40	Two months later, mastoid inflammation. Operation advised but declined. Re- covery.
238	A. J., . . .	35	M	Right	3 years	Grip R. E. W. 0-40	Rest in bed. Hot water. Poultices over mastoid. Cotton pad. Hot water.	5 weeks	No pus L. E. W. 0-40	Operation advised but de- clined. Recovery.
239	Arthur P. J., . . .	19	M	Right	4 days	Grip R. E. W. 20-40 L. E. W. 15-40		1 week	No pus R. E. W. 40-40	Pain and fever. Highest temp. 100.5°.
240	Leon B. J., . . .	15	M	Left	10 days	Peroxide of hydrogen.		10 days	No pus L. E. W. 15-40	Pain and fever. Temp. 99°- 101° for two days.

NAME.	Age.	Sex.	One or both Bones.	Purification of Infection.	Causes and Harm Done.	Treatment.	Purification of Treatment.	Last Record.	Remarks.
241 Wm. J.,	35	M	Right	1 week	R. E. W. 3-40	Paracentesis of M. F. Rest in bed. Hot water. Peroxide of hydrogen. Boric acid powder.	11 days	No pus R. E. W. 10-40	Pain and fever. On 5th day temp. 102°.
242 Alfred J.,	23	M	Both	4 years	R. E. W. 8-40 L. E. W. 18-40	Boric acid powder.	6 weeks	No pus R. E. W. 8-40 L. E. W. 20-40	
243 Amy B. J.,	12	F	Right	2 years	L. E. W. 3-40	Iodination and boric acid powder.	3 weeks	No pus R. E. W. 35-40	Twelve years later, relapse.
244 Hannah A. K.,	32	F	Both	30 years	R. E. W. c-40 L. E. W. 0-40	Peroxide of hydrogen.	1 month	No pus R. E. W. c-40	Much dizziness which ceased after pus stopped.
245 Mrs. Patrick K.,	53	F	Both	12 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen.	8 days	No pus R. E. W. c-40 L. E. W. 0-40	
246 Miss Julia K.,	28	F	Left	3 months	L. E. W. 5-40	Removal polyp. Peroxide of hydrogen.	13 days	No pus L. E. W. 8-40	
247 John P. K.,	40	M	Right	5 months	Removal of wax with syringe R. E. W. c-40 L. E. W. 6-40	Peroxide of hydrogen.	11 days	No pus R. E. W. c-40	
248 Mary A. K.,	24	F	Left	22 years	R. E. W. 6-40	Peroxide of hydrogen.	10 days	No pus L. E. W. 6-40	Ran steadily from age of 2-12. Did not run again until age 20.
249 Sarah K.,	23	F	Right	21 years	R. E. W. 3-40	Peroxide of hydrogen. Boric acid powder.	6 weeks	No pus R. E. W. 3-40	Eleven years later, relapse.
250 Geo. K.,	8 m.	M	Left	.....	Too young to test	Post articular abscess. Pus outside periosteum. Mastoid operation.		External wound nearly healed	Six weeks later, measles, followed by pneumonia and death.
251 Nellie K.,	22	F	Right	3 days	R. E. W. c-40	Paracentesis right M. F. Peroxide of hydrogen.	22 days	No pus R. E. W. 25-40	
252 F. Mand K.,	19	F	Right	5 days	R. E. W. 8-40	Peroxide of hydrogen.	19 days	No pus R. E. W. 18-40	Two years later, relapse.
253 Sadie L. K.,	14	F	Right	7 years	R. E. W. p-40 L. E. W. 0-40	Peroxide of hydrogen.	5 weeks	R. E. W. 4-40	
254 Mrs. John M.,	23	F	Left	23 years	L. E. W. 0-40	Boric acid powder.	24 days	L. E. W. 0-40	Three months later, relapse.

255	Michael L., . . .	54	M	Right	9 weeks	R. E. W. 0-40	Rest in bed. Hot water. Poultrices to mastoid. Mastoid operation. Removal of polyp. Nitric acid. Peroxide of hydrogen. Alcohol. Alum.	3 months	No pus R. E. W. 4-40	Seven years later, no relapse.
256	John J. M., . . .	19	M	Right	7 years	R. E. W. 0-40	Rest in bed. Hot water. Extensive removal. Cotton pad. Peroxide of hydrogen.	5 weeks	Still running R. E. W. 0-40	One month later, mastoid operation. Extensive chiseling for deep-seated antrum. Recovery. Recovery.
257	Mrs. Daniel O., . . .	25	F	Right	.....	R. E. W. 0-40	Mastoid operation. Extensive removal.	1 month	R. E. W. 0-40	Mastoid operation right side. Recovery. 5 years later, R. E. W. 30-40, L. E. W. 40-40. Three years later, relapse.
258	Marion P., . . .	3	F	Both	6 weeks	Grip R. E. W. 0-40 L. E. W. 0-40	Rest in bed. Hot water. Cotton pad. Peroxide of hydrogen.	25 days	Still running R. E. W. 0-40 L. E. W. 0-40	Recovery.
259	Arthur H. P., . . .	13	M	Left	3 weeks	L. E. W. 0-40	Rest in bed. Hot water. Cotton pad. Poultrices over mastoid.	2 months	No pus L. E. W. 0-40	Recovery.
260	Howard C. S., . . .	5	M	Left	6 months	L. E. W. 0-40	Mastoid operation. Extensive removal.	6 weeks	No pus L. E. W. 0-40	Recovery.
261	Etta M., . . .	7	F	Both	3 weeks	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen.	23 days	Still running R. E. W. 0-40 L. E. W. 0-40	One month later, double mastoid operation. Recovery. Three years later, R. E. W. 40-40, L. E. W. 40-40.
262	Mary B., . . .	5	F	Both	3 days	Measles	Peroxide of hydrogen.	2 weeks	No pus in one, the other still running No pus	Recovery.
263	Helen C. D., . . .	11	F	Right	5 years	Scarlet fever R. E. W. 8-40	Peroxide of hydrogen.	2 months	No pus	Recovery.
264	Emma E., . . .	4	F	Left	2 months	L. E. W. 0-40	Peroxide of hydrogen.	2 weeks	No pus	Recovery.
265	Mrs. James C. F., . . .	33	F	Right	5 years	R. E. W. 4-60	Peroxide of hydrogen. Eutrophen.	9 months	Still running	Recovery.
266	Mrs. Gus. J. G., . . .	40	F	Right	12 years	R. E. W. 0-40	Peroxide of hydrogen.	2 months	R. E. W. 0-40	Recovery.
267	Emma G., . . .	10	F	Left	4 years	Scarlet fever	Peroxide of hydrogen.	2 years	Still running	Recovery.
268	Mrs. Edw'd H., . . .	29	F	Right	10 years	R. E. W. 5-60	Peroxide of hydrogen.	2 weeks	Still running	Recovery.
269	Emily L., . . .	33	F	Both	25 years	L. E. W. 3-60 R. E. W. 15-60	Peroxide of hydrogen.	2 weeks	No pus	Both relapsed later.
270	Corra L., . . .	21	F	Both	3 years	L. E. W. 10-60	Peroxide of hydrogen.	6 months	Still running	Recovery.
271	Mary L., . . .	19	F	Both	1 year	Removal of granulations.	Peroxide of hydrogen.	1 week	Still running	Recovery.
272	Frank L., . . .	26	M	Left	1 year	L. E. W. 10-60	Peroxide of hydrogen.	4 days	No pus	Later, L. E. W. 50-60.

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
273 Harry L., . . .	8	M	Right	3 days	R. E. W. 0-40	Paracetesis M. F. Hot water. Peroxide of hydrogen.	3 weeks	No pus	Dr. G. reports "perfect recovery."
274 Alice N., . . .	7	F	One	1 year	0-40	Peroxide of hydrogen.	8 days	No pus	
275 John O., . . .	30	M	One	2 days		Hot water. Atropine (gr. ii ad oz. i).	1 month	No pus	
276 Rudolph A. N., . . .	10	M	Both	10 years	R. E. W. 8-40 L. E. W. 6-40	Peroxide of hydrogen.	2 months	No pus	
277 Edgar C. L., . . .	6	M	Both	5 years	Tuberculosis	Peroxide of hydrogen. Boric acid sol.	2 months	No pus right Left still running	
278 John K. M., . . .	15	M	Left	4 years	L. E. W. 0-60	Peroxide of hydrogen.	2 years	Still running	
279 E. B. P., . . .	42	M	Both	2 months	R. E. W. 6-40 L. E. W. 0-40		2 months	R. E. W. 8-40 L. E. W. 4-40 R. E. W. 3-40	
280 Mary E. P., . . .	59	F	Right	3 months	R. E. W. 2-40	Inflation. Peroxide of hydrogen.	6 weeks		
281 John K., . . .	26	M	Right	30 years	R. E. W. e-40	Cleanse. Hot water.	1 day	R. E. W. 10-40	
282 Elsie C. K., . . .	4	F	Right	3 weeks	R. E. W. p-40	Cleanse. Hot water.	2 days	Still running R. E. W. p-40	Pain and fever. Later, recovery, and parents said "good hearing."
283 A. R. L., . . .	39	M	Right	1 day	Grip R. E. W. 5-40	Cleanse. Hot water.	10 days	No pus R. E. W. 40-40 L. E. W. 40-40	Pain and fever. Temp. 100-102 3°.
284 Lizzie LaC., . . .	41	F	Right	2 weeks	Grip (?) R. E. W. 6-40	Boric acid powder.	6 weeks		Runs occasionally.
285 Frank E. L., . . .	27	M	Both	19 years	R. E. W. 20-40 L. E. W. 20-40	No treatment. Case seen occasionally for 3 years.	.....	Final record. R. E. W. 6-40 L. E. W. 3-40	
286 Lewis F. L., . . .	21	M	Both	.....	R. E. W. 4-40 L. E. W. 4-40	Thorough removal of inspissated pus, epithelium, etc.	1 day	"much improved"	
287 John L., . . .	10	M	Left	2 weeks	Not tested	Hot water douche at home.	.....	R. E. W. 40-40 L. E. W. 40-40	Pain and fever. Highest temp. 101°.

288	Morgan L., . . .	2	M	Right	9 days	Temp. 104° Pulse 140 Respiration 50 R. E. W. 0-40	Comatose when seen. Cleanse.	..... 1 day	R. E. W. 0-40	Operation advised and declined. Death in 12 hours.
289	George L., . . .	35	M	Right	20 years	R. E. W. 0-40	Cleanse.	4 weeks	R. E. W. p-40	Discharge continuous.
290	Mrs. John W. L., . . .	27	F	Right	22 years	R. E. W. 2-40 Polypus Scarlet fever Ordinary voice at 2 feet	Removal of polypus and ioric powder. Cleanse.	1 day		No discharge.
291	Annie L., . . .	4	F	Both	1 year	Ordinary voice at 2 feet	Cleanse.	2 days		
292	Mrs. Noah L., . . .	40	F	Left	2 days	Grip L. E. W. 30-40	Steam and hot water.	1 month		Pain. Temp. 102°.
293	Chas. L., . . .	38	M	Left	4 weeks	Grip. Pain. Vomiting. Dizziness. Swelling; tenderness over mastoid	Rest in bed and hot douche.	1 month	R. E. W. 40-40 L. E. W. 40-40	This record made 7 years later.
294	James L., . . .	28	M	Both	4 weeks	Naso pharyngitis R. E. W. 8-40 L. E. W. 3-40 R. E. W. 13-40	Cleanse. Inflation. Zinc Sulph.	1 week	R. E. W. 14-40 L. E. W. 10-40	Both ears still discharging.
295	Sister L., . . .	30	F	Right	2 weeks	R. E. W. 8-40	Boric solution at home (warm).	1 day	R. E. W. 40-40	This record made 5 months later.
296	Mrs. Kate L., . . .	43	F	Left	2 days	L. E. W. p-40	Hot water and inflation	11 days	R. E. W. c-40 L. E. W. c-40	Has non-infective inflam. both middle ears, of 5 years duration.
297	Helen N. L., . . .	4	F	Left	3 months	Tuberculosis (?) L. E. W. 2-40	Incision M. T. Incision in glands of neck. Cleanse and bicliloride. Cod liver oil internally.	2 months	L. E. W. 2-40	Have seen her, off and on, for 6 years. Left ear still discharging.
298	Mrs. Jennette L., . . .	60	F	Right	9 days	Pain. Deafness. Tinnitus	Paracentesis Memb. Falcida. On inflation dress pus was forced through incision. Syringe with hot water. Cleanse with Panas' fluid. Mur. coc. on cotton for pain.	3 weeks	Ordinary voice at 10 feet	Mastoid cells probably involved. Recovery without operation.
299	Anna L., . . .	24	F	Right	2 days	R. E. W. 4-40	Cleanse with Panas' fluid.	9 days	R. E. W. 30-40	Pain slight. Temp. 101-102° for 4 days.
300	Baby L., . . .	6 m.	M	Right	1 week	Pain and pus	Cleanse with hot water.	2 days	Pus stopped in 8 days. Report from parents R. E. W. 0-40 L. E. W. 0-40	Five relapses in 10 years, each yielding readily to treatment.
301	Lester L., . . .	8	M	Both	4 years	Scarlet fever R. E. W. 0-40 L. E. W. 0-40	Cleanse with peroxide of hydrogen.	13 days		

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
302 Rose A. L., . . .	3	F	Both	4 days	Measles R. E. W. 10-40 L. E. W. e-40	Cleanse and hot water.	2 days	R. E. W. 10-40 L. E. W. e-40	Discharge continuous.
303 Georgianna L., . . .	22	F	Both	Rt. 19 yrs. Lt. 1 mo.	Scarlet fever Deaf mute	Syringe. Cotton pad and steam.	1 day	R. E. W. { L. E. W. 0	Mastoid tenderness; very profuse discharge. Temp. 101.2°.
304 John M. L., . . .	49	M	Left	1 week	Swimming L. E. W. 0-40	Hot water and mild antiseptics.	1 day	L. E. W. 0-40	Ordinary voice at 3 feet
305 Reba A. L., . . .	5	F	Both	3 weeks	Grip. Ordinary voice at 3 feet	Pus has stopped. No treatment.	.....	Ordinary voice at 3 feet	Six months later, ordinary voice at 20 feet.
306 Mrs. M. L., . . .	38	F	Both	1 year	R. E. W. e-40 L. E. W. 40-40	Steam for pain. Boric acid. Zinc sulph.	1 month	R. E. W. 10-40 L. E. W. 40-40	is rare.
307 Willie L., . . .	10	M	Both	9 years	Ordinary voice at 5 feet	Cleanse. Inflation and Boric pulv.	19 days	Ordinary voice at 10 feet	Treatment, off and on, for 2 years.
308 Mrs. Anna MacK., . . .	39	F	Both	31 years	Scarlet fever R. E. W. e-40 L. E. W. 0-40	Cleanse. Inflation. Nitric acid to granulations.	2 weeks	R. E. W. 0-40 L. E. W. 0-40	Hearing improved for voice by artificial M. T.
309 Agnes M., . . .	3	F	Left	5 months	Ordinary voice at 1 ft. with left ear	Cleanse.	4 days	Ordinary voice at 2 ft. with left ear	
310 Wm. F. M., . . .	34	M	Both	16 years	R. E. W. 1-60 L. E. W. 24-60	Boric solution and peroxide of hydrogen.	2 weeks	R. E. W. 1-60 L. E. W. 24-60	
311 George M., . . .	72	M	Left	2 weeks	L. E. W. 0-40	Cleanse and boric solution.	2 days	L. E. W. 0-40	Later mastoid became involved and Wilde's incision was done by another physician.
312 Catherine M., . . .	50	F	Both	4 years	Ordinary voice 2 feet	Cleanse and boric pulv.	3 weeks	R. E. W. 3-40 L. E. W. 0-40	Relapse 7 years later.
313 Daniel M., . . .	44	M	Right	35 years	R. E. W. 3-40 L. E. W. 0-40	Cleanse and boric solution.	8 days	R. E. W. e-40	
314 Matthew M., . . .	4	M	Left	5 months	Ordinary voice at 2 feet	Cleanse and peroxide of hydrogen.	1 day	Ordinary voice at 2 feet	

315	Mrs. Bridget M.,	55	F	Both	20 years	R. E. W. e-40 L. E. W. e-40	Cleaso at home with peroxide.	1 day	R. E. W. 0-40 L. E. W. e-40	Small amount of pus. Under observation 7 years, off and on.
316	Lily A. M.,	17	F	Right	3 months	R. E. W. 0-40	Cleaso and boric pulv.	1 day	R. E. W. 6-40	Much pain. Highest temp. 102°.
317	T. H. M.,	3 m.	..	Both	3 weeks	Too young to test.	Cleaso with peroxide.	3 weeks	No pus	
318	Maggie M. M.,	14	F	Both	5 years	Scarlet fever	Cleaso. Peroxide and boric acid pulv.	1 month	No pus	
319	Addie A. M.,	24	F	Both	1 week	Grid. R. E. W. 10-40 L. E. W. 0-40	Cleaso with peroxide only. Poultices to left mastoid.	8 days	R. E. W. 20-40 L. E. W. 10-40	Operation advised and declined. Relapse 9 yrs. after. Left mastoid involved in both attacks. Recovery without operation.
320	Mrs. Edward M.,	23	F	Both	18 years	R. E. W. 6-40 L. E. W. 8-40	Cleaso with peroxide.	1 day	R. E. W. 6-40 L. E. W. 8-40	
321	George M.,	2	M	Right	3 months	Scarlet fever Too young to test	Cleaso with hot water.	1 day	Too young to test	
322	Wm. B. M.,	24	M	Right	2 weeks	R. E. W. 1-40	Cleaso with hot water.	3 weeks	R. E. W. 15-40	
323	George T. M.,	3	M	Both	2 months	Measles Too young to test	Cleaso with hot water.	24 days	No pus Too young to test	Pain, and slight rise in temperature during 1st week.
324	George M.,	45	M	Right	20 years	R. E. W. 0-40	Syringe three times a day and follow with peroxide.	1 day	R. E. W. 0-40	Treatment carried out elsewhere.
325	Catherine M.,	2	F	Left	3 days	Naso pharyngitis. Too young to test	Hot douche.	7 days	No pus Too young to test	Pain for 3 days. Temp. 100° for 2 days.
326	Fraok F. M.,	9	M	Both	6 months	Necrotic otitis. R. E. W. 2-40 L. E. W. c-40	Removal of polypus from right. Cleaso with hot water and peroxide of hydrogen.	6 weeks	No pus R. E. W. 20-40 L. E. W. 20-40	
327	John M.,	3 mos	M	Both	3 days	Naso pharyngitis. Too young to test	Hot water.	4 days	Both discharge. log	Severe pain, no fever.
328	Marg't. E. M.,	22	F	Both	5 years	R. E. W. 3-40 L. E. W. 3-40	Hot water and peroxide.	6 days	11 years later R. E. W. 1-40 L. E. W. c-40	In 14 years three relapses.
329	Annie M.,	4	F	Left	2 months	Ordinary voice at two feet	Hot water and inflation.	6 weeks	Ordinary voice at ten feet	Temperature on one day reached 103°.

NAME.	Age.	Sex.	One of both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
330 Hugh M., . . .	29	M	Right	2 weeks	Grip R. E. W. 4-40	Hot water. Steam and boric solution.	4 days	R. E. W. 20-40	
331 Jennie A. M., . . .	7	F	Right	6 months	Scarlet fever Ordinary voice at three feet R. E. W. 25-40 L. E. W. 10-40	Hot water and boric solu- tion.	8 days	Ordinary voice at twelve feet	
332 Mrs. Jane M., . . .	42	F	Both	3 days	R. E. W. 25-40 L. E. W. 10-40	Cleanse. Inflation and Panass' fluid.	15 days	No pus R. E. W. 25-40 L. E. W. 15-40 R. E. W. c-40	Severe pain, no fever.
333 John M., . . .	30	M	Right	3 weeks	Grip R. E. W. c-40	Hot water and dry heat. Rest in bed. Peroxide of hydrogen.	5 weeks		Mastoid operation advised and declined. Recovery.
334 Eugene B. M., . . .	23	M	Both	3 years	Polypus right R. E. W. 0-40 L. E. W. 0-40	Removal polypus. Nitric acid and peroxide of hydrogen.	19 days	R. E. W. 0-40 L. E. W. 0-40	
335 Thos. M., . . .	6	M	Both	2 months	Adenoids R. E. W. 4-40 L. E. W. 4-40	Removal of adenoids. Peroxide of hydrogen.	2 weeks	R. E. W. 40-40 L. E. W. 40-40	
336 Henry E. M., . . .	40	M	Both	39 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen.	2 days	R. E. W. 0-40 L. E. W. 0-40	Hears ordinary voice 10 ft.
337 Mrs. Chas. M., . . .	23	F	Right	2 weeks	R. E. W. 0-40	Steam. Hot water and rest in bed.	3 weeks	R. E. W. 10-40	Pain and tenderness. Right mastoid probably involved.
338 Duncan M. M., . . .	7	M	Both	6 years	R. E. W. 1-40 L. E. W. 15-40	Peroxide of hydrogen.	5 weeks	R. E. W. 10-40 L. E. W. 20-40	Three months later no pus, and hearing "the same."
339 Alice H. M., . . .	5	F	Both	3 months	R. E. W. p-40 L. E. W. p-40	Inflation and peroxide.	2 weeks	R. E. W. 6-40 L. E. W. 2-40	Fifteen years later, R. E. W. and L. E. W. 40-40.
340 Patrick M., . . .	50	M	Both	20 years	R. E. W. 0-40 L. E. W. p-40	Cleanse. Nitric acid to granulations and hot water.	5 weeks	R. E. W. 0-40 L. E. W. p-40	
341 John B. M., . . .	9	M	Left	4 days	Measles L. E. W. 2-40	Steam and hot water.	10 days	L. E. W. 25-40	Later, L. E. W. 40-40.
342 Mrs. Archibald M., . . .	38	F	Right	33 years	Polypus R. E. W. 1-40	Removal of Polypus. Nitric acid. Peroxide of hydrogen.	3 weeks	No pus R. E. W. 1-40	Eleven years later, no re- lapse.

343	Mrs. R. G. S. M.,	35	F	Left	1 year	Grip L. E. W. 0-40	Steam and hot water. Incision enlarging opening in M. T.	8 weeks	L. E. W. 0-40 No pus	Severe pain. Temp. 101.2° before incision, normal three days after.
344	John M.,	23	M	Left	2 days	L. E. W. 0-40	Paracetasis M. T. Inflation and hot water.	4 weeks	L. E. W. 30-40	
345	James Oscar M.,	58	M	Both	35 years	Explosion of cannon R. E. W. 0-40 L. E. W. 6-40	Peroxide of hydrogen.	1 day	R. E. W. 0-40 L. E. W. 6-40	
346	Mrs. Wm. M.,	42	F	Right	4 weeks	Grip R. E. W. 1-40	Leeches and hot water. Rest in bed.	4 weeks	No pus	Mastoid tender. Temperature never above 100°.
347	Fred'k T. F. M.,	4	M	Left	3 weeks	Scarlet fever Ordinary voice two feet	Peroxide hydrogen. Rest in bed. Panas' fluid.	2 weeks	Ordinary voice at fifteen feet	
348	Grace A. M.,	13	F	Right	6 months	R. E. W. 5-40	Peroxide of hydrogen.	10 days	R. E. W. 20-40	Later, R. E. W. 40-40.
349	Wm. M. M.,	65	M	Both	40 years	R. E. W. 6-40 L. E. W. 7-40	Peroxide of hydrogen.	1 month	R. E. W. 8-40 L. E. W. 8-40	Under observation for 8 yrs. Hearing did not fail.
350	Mrs. Chas. A. M.,	22	F	Left	18 years	Grip L. E. W. 1-40	Peroxide. Hot water. Alcohol.	3 months	L. E. W. 1-40	She has dizziness, nausea, pain over mastoid region.
351	Emma M.,	7	F	Right	2 weeks	Cannot hear loud voice	Steam and hot water.	3 weeks	Ordinary voice at ten feet	Pain slight. Temp. 100.8°.
352	Daisy M.,	14	F	Both	12 years	Ordinary voice eight feet	Panas' fluid and boric acid pulv.	2 months	R. E. W. 10-60 L. E. W. 10-60	No relapse in 10 years.
353	Arthur E. M.,	15	M	Both	8 years	R. E. W. 6-40 L. E. W. 7-40	Cleanse with Panas' fluid.	6 months	R. E. W. 0-40 L. E. W. 0-40	
354	Frank M.,	20	M	Both	6 years	R. E. W. 6-40 L. E. W. 6-40	Peroxide of hydrogen.	1 day	R. E. W. 6-40 L. E. W. 6-40	
355	Frank J. M.,	34	M	Left	2 weeks	Tuberculous L. E. W. 5-40	Peroxide of hydrogen.	3 days	L. E. W. 4-40	A month later his wife reports "no discharge."
356	John T. M.,	21	M	Left	20 years	L. E. W. 4-40	Hot water and steam. Alcohol for granulations.	20 days	L. E. W. 7-40	Four months later, relapse.
357	Wm. J. M.,	21	M	Right	6 days	Violent vomit ing	Hot water and peroxide hydrogen.	1 week	No pus R. E. W. 25-40	Question of actual rupture of M.T. by the vomiting.
358	Mrs. E. F. M.,	39	F	Both	31 years	R. E. W. 10-40 R. E. W. p-40 L. E. W. 8-40	Boric acid powder.	1 month	R. still running R. E. W. p-40 No pus L. L. E. W. 1-40	Fourteen years later, left relapsed and began to run again.

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
359 Mrs. E. T. M.,	46	F	Both	20 years	R. E. W. p. 40 L. E. W. 25-40 No pus from L.	Boric acid solution. In- flation.	4 weeks	No pus in either R. E. W. 4-40 L. E. W. 25-40	One month later relapse of right.
360 Mahel M.,	3	F	Both	20 days	Naso pharyngi- tis R. E. W. 0-40 L. E. W. 0-40 R. E. W. 0-40 L. E. W. 20-40	Hot douche. Steam. Per- oxide of hydrogen.	9 weeks	No pus in either R. E. W. 30-40 L. E. W. 30-40	One year later hearing 40-40 in both.
361 John M.,	34	M	Both	2 months	R. E. W. 8-40 L. E. W. 20-40	Inflation and peroxide of hydrogen.	3 weeks	No pus R. E. W. 0-40 L. E. W. 20-40	An acute attack. Ears dam- aged by old infection 20 years ago.
362 Chas. P. M.,	22	M	Both	5 months	R. E. W. 20-40 L. E. W. 6-40	Cleanse and boric acid powder.	2 months	R. E. W. 10-40 L. E. W. 20-40	Left ear has not run during this attack.
363 James H. M.,	21	M	Both	16 years	Measles R. E. W. 3-40 L. E. W. 6-40	Boric acid powder.	10 days	R. E. W. 3-40 L. E. W. 6-40	Record says discharge "al- most stopped."
364 Mary Louise M.,	9	F	Both	8 years	R. E. W. 0-40 L. E. W. 0-40	Syringe and inflation.	3 months	R. E. W. 10-40 L. E. W. 20-40	
365 Alice M.,	21	F	Both	8 years	Scarlet fever R. E. W. e-40 L. E. W. 5-40	Cleanse. Hot water and boric acid solution.	8 months	Right still run- ning left not. R. E. W. 8-40 L. E. W. 10-40	Acute attack. Pain, swell- ing ext. auditory canal, dizziness and fever.
366 Thos. M.,	40	M	Left	15 years	L. E. W. 0-40 Large polypos, left.	Removal of polypos. Nitric acid to stump.	8 days	L. E. W. 10-40 L. E. W. 0-40	
367 Wm. E. N.,	35	M	Left	34 years	L. E. W. e-40	Inflation and hot water. Monochloroacetic acid.	3 weeks	Left still run- ning L. E. W. c-40	Eight years later, left still running.
368 Bessie C. N.,	21	F	Left	4 days	L. E. W. 1-40	Peroxide of hydrogen.	1 month	No pus L. E. W. 40-40	No pain, no fever.
369 Edward O. N.,	12	M	Both	11 years	R. E. W. 0-40 L. E. W. 20-40	Alcohol. Boric acid powder. Removal of granulations.	2 months	No pus R. E. W. 0-40 L. E. W. 30-40	Three years later, relapse.
370 Wm. J. N.,	29	M	Left	2 weeks	L. E. W. 6-40	Cleanse with peroxide hydrogen.	7 days	L. E. W. 40-40	

371	Alice N.,	7	F	Right	1 year	Polypus. Ordinary voice in right ear 4 ft. R. E. W. 0-40 L. E. W. 0-40	Removal of polypus. Nitric acid to stump. Peroxide hydrogen. Boric acid powder.	6 weeks 1 week	No pus Ordinary voice at eight feet. No pus	Many relapses, easily controlled by boric acid powder. Right ear did not discharge continuously, but off and on.
372	Wm. H. N.,	31	M	Both	22 years	Polypus R. E. W. p-40	Cleanse with peroxide of hydrogen.	1 day	R. E. W. p-40	Two months later, no relapse. One year later, relapse in right.
373	Miss Maria N.,	50	F	Right	45 years	R. E. W. 0-40	Peroxide of hydrogen and boric acid powder.	19 days	No pus R. E. W. c-40	
374	Miss Sarah E. O.,	66	F	Right	2 years	R. E. W. 2-40	Boric acid solution. Alcohol. Peroxide of hydrogen. Boric acid powder.	3 months	No pus R. E. W. 1-40 L. E. W. p-40	
375	Mary O.,	19	F	Both	14 years	L. E. W. p-40	Cleanse and Panas' fluid.	12 days	No pus L. E. W. 12-40	Had two previous attacks, one 17 years ago, one 1 year ago.
376	Michael O.,	36	M	Left	3 days	L. E. W. c-40	Rest in bed. Steam. Hot pad and hot water.	2 days	L. E. W. c-40	No test, but he reports "complete recovery of hearing."
377	John O.,	29	M	Left	2 days	L. E. W. 0-40	Antrum opened. Steam. Peroxide of hydrogen.	4 weeks 17 days	L. E. W. 6-40 L. E. W. 20-40	Wound healed quietly. Severe pain. Temp. 102°, but got down to normal on fourth day.
378	Wm. F. O.,	49	M	Left	5 weeks	L. E. W. 0-40	Panas' fluid and peroxide hydrogen.	8 months	R. E. W. c-40 L. E. W. 0-40	
379	Peter O.,	34	M	Left	3 days	L. E. W. 1-40	Inflation. Peroxide of hydrogen.	8 days	R. E. W. 8-40 L. E. W. 4-40	
380	Nelly O.,	17	F	Both	9 years	Scarlet fever R. E. W. 2-40 L. E. W. 0-40	Panas' fluid and peroxide of hydrogen.	24 days	R. E. W. 50-40 L. E. W. 12-40	Ears did not run continuously, but off and on. Left still running.
381	Wm. O.,	29	M	Both	19 years	R. E. W. 7-40 L. E. W. 2-40	Panas' fluid.	6 weeks 5 days	L. E. W. 1-40 L. E. W. 10-40	Cause of original infection unknown. Last attack caused by syringe.
382	L. F. O.,	33	M	Both	20 years	R. E. W. 15-40 L. E. W. 12-40	Peroxide of hydrogen.	2 years	No pus R. E. W. p-40 L. E. W. p-40	Two years later, no relapse.
383	Nellie L. O.,	26	F	Left	21 years	L. E. W. 1-40	Alcohol. Nitric acid. Peroxide of hydrogen.	10 days	No pus R. E. W. 0-40 L. E. W. 0-40	
384	Andrew P. O.,	28	M	Left	15 years	Syringe L. E. W. 3-40	Removal of malloca. Dry cleansing and boric pulv.			
385	Isabel P.,	42	F	Both	9 years	Polypus R. E. W. p-40 L. E. W. p-40				
386	John R. P.,	41	M	Both	4 years	R. E. W. 0-40 L. E. W. 2-40				

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
387 Miss Agnes G. P.,	37	F	Both	32 years	Measles R. E. W. c-40 L. E. W. 25-40	Peroxide of hydrogen and boric acid powder.	6 days	R. E. W. c-40 L. E. W. 25-40	Right ear still running.
388 C. D. P.,	17	M	Right	3 weeks	Bathing R. E. W. 6-40	Dry cleansing.	5 days	L. E. W. 40-40	
389 Chas. A. P., . . .	36	M	Both	2 years	R. E. W. 2-40 L. E. W. 2-40	Syringe with hot water. Alcohol. Boric acid solution.	5 weeks	Still running R. E. W. 2-40 L. E. W. 2-40	Six months later, meningitis and death. No operation. Autopsy.
390 Mrs. W. H. P.,	43	F	Both	17 years	R. E. W. 1-40 L. E. W. 15-40	Peroxide of hydrogen. Inflation. Recovery	3 years	R. E. W. 3-40 L. E. W. 20-40	Treatment not continuous, but occasional.
391 Lizzie P.,	24	F	Right	1 week	Grip R. E. W. 4-40	Hot water. Recovery without operation.	13 days	R. E. W. 30-40 L. E. W. 30-40	Swelling over mastoid.
392 G. R. P.,	45	M	Right	2 weeks	R. E. W. 0-40 L. E. W. 0-40	Opened antrum and in- cised sigmoid sinus.	3 months	R. E. W. 6-60	Temp. 101-102.1°.
393 L. D. P.,	2	F	Right	5 days	Not tested	Hot water. Peroxide of hydrogen.	2 weeks	M. T. healed No pus	Pyemia. Abscesses in other parts of body. Recovery.
394 Austin J. P., . . .	35	M	Both	30 years	Scarlet fever R. E. W. p-40 L. E. W. p-40	Syringe. Alcohol. Per- oxide of hydrogen.	10 days	R. E. W. p-40 L. E. W. p-40	
395 Joseph P.,	14	M	Left	10 years	Polypus L. E. W. 0-40	Removal of polypus. Nitric acid and syringe.	4 days	L. E. W. 0-40	Discharge continuous.
396 Mrs. H. M. P., . .	31	F	Left	2 years	L. E. W. 20-40	Syringe.	3 weeks	L. E. W. 20-40	Much blood with pus. No granulations. M. T. healed.
397 Chas. W. Q., . . .	33	M	Left	3 weeks	L. E. W. 5-40	Peroxide of hydrogen.	10 days	L. E. W. 10-40	No pus. M. T. healed.
398 Michael Q.,	24	M	Right	3 weeks	R. E. W. 0-40	Steam. Hot water.	2 weeks	R. E. W. 20-40	No discharge. M. T. healed.
399 Patrick Q.,	30	M	Both	24 years	R. E. W. c-40 L. E. W. 6-40	Peroxide of hydrogen. Boric acid powder.	4 weeks	No discharge R. E. W. c-40 L. E. W. 6-40	Relapse five years later.
400 Maggie L. R., . . .	27	F	Left	5 weeks	Grip L. E. W. 3-40	Hot water. Hydrarg. hi- chloride sol. (1-3,000).	13 days	L. E. W. 15-40	

401	Daisy B. R.,	5	F	Both	4 years	R. E. W. 4-40 L. E. W. 4-40	Hot water. Carbolic acid. Nitrate of silver. Alcohol. Peroxide of hydrogen.	14 mos.	No pus R. E. W. 20-40 L. E. W. 20-40	Relapse several years later, but only few days duration.
402	S. F. R.,	45	M	Left	6 weeks	Grip L. E. W. 0-40	Hot water. Steam and dry heat. Enlarged opening in M. T.	6 weeks	Still running L. E. W. 0-40	Patient went to Florida and six weeks later died there of probable brain abscess.
403	J. R.,	30	M	Left	25 years	L. E. W. 0-40	Syringe. Bichloride solution. Peroxide of hydrogen. Removal of granulations.	14 years	Occasional relapses L. E. W. 0-40	
404	J. R., Jr.,	4	M	Right	3 years	R. E. W. 4-40	Peroxide of hydrogen	10 days	No pus R. E. W. 10-40	
405	Willie R.,	3	M	Right	2½ years	R. E. W. 0-40	Bichloride solution. Peroxide of hydrogen.	5 days	No pus R. E. W. 4-40	In 13 years have treated eight relapses.
406	Andrew R.,	5	M	Right	4 days	R. E. W. 0-40	Paracentesis M. T. Peroxide hydrogen.	26 days	No pus R. E. W. 40-40	Severe pain. Tender mastoid. Highest temperature 105°. Recovery.
407	Mrs. Benj. O. R.,	22	F	Right	5 years	R. E. W. 1-40	Nitrate of silver. Alum. Peroxide of hydrogen.	19 days	R. E. W. 16-40	
408	Chas. E. R.,	36	M	Left	5 days	Grip L. E. W. 0-40	Steam. Hot water. Peroxide of hydrogen.	2 weeks	L. E. W. 12-40	Five years later, L. E. W. 40-40.
409	Barney R.,	27	M	Both	3 months	R. E. W. 4-40 L. E. W. 0-40	Peroxide hydrogen.	20 days	R. E. W. 40-40 L. E. W. 0-40	No relapse for 6 years.
410	Wm. H. R.,	15	M	Both	8 years	Diphtheria and scarlatina R. E. W. 8-40 L. E. W. 0-40	Removal of granulations and Alcohol. Peroxide of hydrogen.	3 weeks	Still running R. E. W. 8-40 L. E. W. 0-40	Eight years later, both still running. R. E. W. 0-40, L. E. W. 0-40.
411	Ellen Ann R.,	12	F	Right	2 years	Scarlatina R. E. W. 3-40	Bichloride solution	2 days	R. E. W. 3-40	
412	Emeline H. R.,	3	F	Both	6 months	Ordinary voice at one foot Scarlatina (1-5,000).	Bichloride solution	2 days	Ordinary voice at one foot	
413	Alger F. R.,	11	M	Both	8 years	R. E. W. c-40 L. E. W. 0-40	Syringe. Removal of granulations. Peroxide of hydrogen.	6 months	Still running R. E. W. c-40 L. E. W. 0-40	
414	John R.,	24	M	Right	10 years	R. E. W. 10-40	Syringe.	3 days	R. E. W. 10-40	
415	Mrs. D. A. R.,	29	F	Right	25 years	R. E. W. 1-40	Inflation, arg. nit, nitric acid.	1 month	Still running R. E. W. 1-40	
416	Manooy S.,	21	M	Left	1 week	R. E. W. 0-40	Syringe.	2 days	Still running R. E. W. 0-40	
417	Baby S.,	1		Right	3 weeks	Polypus	Removal polypus. Peroxide of hydrogen.	4 days	Still running	Two years later, ordinary voice in right at 20 feet.

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
418 Rob't D. S., . . .	15	M	Both	1 month	Measles R. E. W. 1-40 L. E. W. 1-40	Dry cleansing and boric acid powder.	5 weeks	No pus R. E. W. 20-40 L. E. W. 6-40	Eleven years later no relapse.
419 Mrs. Rob't D. S., . . .	26	F	Left	2 weeks	Wax or efforts at removal L. E. W. 0-40	Peroxide of hydrogen.	6 weeks	No pus L. E. W. 10-40	Two years later, L. E. W. 40-40.
420 Mrs. Wilbert L. S., . . .	26	F	Right	2 months	Grip R. E. W. 0-40	Rest in bed. Hot water. Steam. Mastoid operation.	23 days	No pus R. E. W. 0-40	Mastoid redness, swelling, and pain. Operation. Recovery. Autopsy. Leptomeningitis. Infection direct from tympanum to posterior fossa.
421 Louis H. S., . . .	23	M	Left	1 day	L. E. W. 15-40	Steam and cotton pad, and mastoid operation.	16 days	.....	Death.
422 John Philip S., . . .	35	M	Both	20 years	R. E. W. p-40 L. E. W. c-40	Dry cleansing and boric acid powder.	2 weeks	No pus R. E. W. 30-40 L. E. W. 8-40	In 12 years, four relapses.
423 Wm. S., . . .	13	M	Right	2 weeks	Grip R. E. W. 10-40	Peroxide of hydrogen. Hot water.	10 days	R. E. W. 40-40	Severe pain. Highest Temp. 102°.
424 Abraham M. S., . . .	30	M	Right	3 weeks	R. E. W. c-40	Rest in bed. Steam. Hot water and cotton pad.	2 weeks	No pus R. E. W. 10-40	Pain, redness, and swelling over mastoid. Recovery without operation.
425 Elizabeth S., . . .	2	F	Left	2 weeks	Not tested	Peroxide of hydrogen.	8 days	No pus	Very little pain. Temp. not above 100°.
426 Chas. V. S., . . .	16	M	Left	3 weeks	L. E. W. c-40	Syringe. Arg. nit. to granulations.	12 days	L. E. W. 30-40	No relapse after 4 years.
427 Edson S. S., . . .	34	M	Left	6 years	L. E. W. 0-40	Peroxide of hydrogen.	8 days	Still running L. E. W. 20-40	Adenoids removed.
428 Harry R. S., . . .	5	M	Right	1 year	R. E. W. 4-40	Boric acid solution.	5 weeks	No pus R. E. W. 30-40	
429 Henry F. S., . . .	47	M	Both	30 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen.	1 day	R. E. W. 0-40 L. E. W. 0-40	
430 Wm. C. S., . . .	25	M	Both	3 weeks	R. E. W. 4-40 L. E. W. 2-40	Peroxide of hydrogen.	1 month	No pus R. E. W. 40-40 L. E. W. 40-40	

431	James P. S., . . .	37	M	Right	1 week	R. E. W. 5-40	Peroxide of hydrogen.	2 weeks	R. E. W. 40-40	Two years before, severe earache in left ear.
432	Annie S., . . .	29	F	Both	24 years	Scarlatina R. E. W. c-40 L. E. W. 0-40	Alcohol and removal of granulations. Peroxide of hydrogen.	1 month	R. E. W. c-40 L. E. W. 0-40	Excision right mallens. Wears artificial M. F. with help to hearing.
433	Mary S., . . .	18	F	Both	14 years	Scarlatina R. E. W. 1-40 L. E. W. 0-40	Dry cleansing with borie acid powder.	7 weeks	R. E. W. 10-40 L. E. W. c-40	
434	Clifton P. S., . . .	8 m.	M	Right	2 weeks	Too young to test	Peroxide of hydrogen.	10 days	No pus	Pain. Temp. 101°-103.2°.
435	Theresa A. S., . . .	8 m.	F	Left	1 week	Too young to test.	Dry cleansing.	4 days	No pus	Pain slight. Temp. 102.1°.
436	Robert S., . . .	53	M	Both	40 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen.	1 day	R. E. W. 0-40 L. E. W. 0-40	
437	Geo. M. S., . . .	7	M	Left	5 years	L. E. W. 6-40	Peroxide of hydrogen.	2 weeks	No pus	One year later, relapse.
438	Oscar Everett S., . . .	16	M	Both	15 years	R. E. W. 10-40 L. E. W. c-40	Dry cleansing and borie acid powder.	3 weeks	Still running	One year later, still running.
439	Chas. J. S., . . .	5 m.	M	Both	6 weeks	Too young to test	Peroxide of hydrogen.	2 weeks	No pus	Severe pain. Temp. 100°-102.8°.
440	Nellie B. S., . . .	10	F	Both	1 year	R. E. W. 6-40 L. E. W. 10-40	Nitric acid to granulations. Alcohol. Borie acid powder.	3 years	Still running	Treatment at intervals. One acute attack with pain and fever.
441	Preston H. S., . . .	8	M	Both	4 days	R. E. W. 4-40 L. E. W. 15-40	Peroxide of hydrogen.	11 days	No pus	Pain and highest temp. 100.8°.
442	Anna S., . . .	44	F	Both	40 years	R. E. W. 0-40 L. E. W. 0-40	Dry cleansing and borie acid powder.	3 days	L. E. W. 40-40 L. E. W. 40-40	Was to come later for treatment but did not.
443	Mrs. Elizabeth F. S., . . .	37	F	Right	5 weeks	R. E. W. 0-40	Dry cleansing.	15 days	L. E. W. 0-40	Some weeks later meningitis and death.
444	Florence S. S., . . .	8	F	Left	2 days	L. E. W. 5-40	Peroxide of hydrogen.	19 days	L. E. W. 40-40	Pain and temp. 100.4-103°.
445	Wm. J. S., . . .	18	M	Right	3 months	R. E. W. 4-40	Rest in bed. Hot water. Steam. Recovery without operation.	3 weeks	R. E. W. 20-40	Swelling, redness, and pain over mastoid. Vibratory temperature.
446	Agnes Blair S., . . .	9	F	Both	2 years	Diphtheria R. E. W. 6-40 L. E. W. 6-40	Peroxide of hydrogen.	2 months	R. E. W. 12-40 L. E. W. 12-40	Eight years later, R. E. W. 30-40. L. E. W. 30-40.
447	Clara S., . . .	35	F	Both	25 years	Nasal douche R. E. W. 0-40 L. E. W. 0-40	Inflation. Dry cleansing and borie acid powder.	1 month	R. E. W. 20-40 L. E. W. 40-40	
448	Mrs. Daniel S., . . .	41	F	Both	10 years	R. E. W. p-40 L. E. W. 0-40	Inflation and borie acid solution.	1 day	R. E. W. p-40 L. E. W. 0-40	

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done	Treatment.	Duration of Treatment.	Last Record.	Remarks.
449 Mrs. F. C. S., . .	45	F	Both	15 years	R. E. W. 0-40 L. E. W. c-40	Dry cleansing.	1 month	R. E. W. 4-40 L. E. W. 6-40	
450 John W. S., . .	31	M	Both	25 years	L. E. W. p-40 L. E. W. 3-40	Peroxide of hydrogen. Inflation.	3 days	R. E. W. p-40 L. E. W. 3-40	
451 Mrs. Wm. H. S., . .	37	F	Both	10 years	L. E. W. 1-40 L. E. W. p-40	Inflation and boric acid powder.	4 days	R. E. W. 1-40 L. E. W. p-40	
452 Wm. S.,	47	M	Both	5 years	R. E. W. c-40 L. E. W. 0-40	Peroxide of hydrogen.	2 days	R. E. W. c-40 L. E. W. 0-40	
453 Baby S.,	2	F	Left	3 days	Too young to test	Peroxide of hydrogen.	4 days	No pus Too young to test	Pain and temp. one day 100°.
454 Mrs. W. J. S., . .	25	F	Left	20 years	Scarlet fever L. E. W. 0-40	Inflation and dry cleans- ing.	4 weeks	L. E. W. 6-40	Acute attack pain and temp. 100.2-102°.
455 Wm. W. S., . . .	12	M	Both	5 weeks	Scarlet fever R. E. W. 1-40 L. E. W. 2-40	Dry cleansing.	3 weeks	No pus R. E. W. 10-40 L. E. W. 30-40	
456 Willie S.,	10	M	Both	6 years	Scarlet fever R. E. W. 6-40 L. E. W. 4-40	Dry cleansing and boric acid powder.	6 weeks	No pus R. E. W. 10-40 L. E. W. 4-40	In next 3 years, four relap- ses.
457 Irenc S.,	3	F	Both	2 years	Ordinary voice at one foot	Dry cleansing.	1 day	Ordinary voice at one foot	
458 Ethel H. S., . . .	11	F	Right	3 years	Scarlet fever R. E. W. p-40	Peroxide of hydrogen.	6 days	No pus R. E. W. 20-40 L. E. W. 30-40	In next year, two relapses.
459 Richard T. S., . .	4	M	Left	1 week	Grip L. E. W. p-40	Clean with Panas' fluid. Inflation.	1 month	R. E. W. 30-40 L. E. W. 30-40	One year later, mild infec- tion, right. Well in three days.
460 Marion E. S., . . .	9	F	Right	4 days	R. E. W. p-40	Peroxide of hydrogen.	1 week	R. E. W. 30-40	No relapse in 10 years.
461 Edward S.,	50	M	Both	40 years	Scarlet fever R. E. W. c-40 L. E. W. c-40	Boric acid powder.	2 weeks	No pus R. E. W. 1-40 L. E. W. 1-40	
462 Mrs. John S., . . .	23	F	Left	3 weeks	L. E. W. c-40 L. E. W. c-40	Peroxide of hydrogen.	1 week	No pus L. E. W. 10-40	Fifteen years later, L. E. W. 40-40.
463 Elliot S.,	4 mos.	M	Both	4 days	Too young to test	Peroxide of hydrogen.	2 weeks	No pus Too young to test	Four years later, normal hearing.

464	Fred'k B. St. G., . . .	3 mos.	M	Right	1 week	Too young to test.	Peroxide of hydrogen.	10 days	No pus	Pain, and temp. 100.3°.
465	Chas. D. S., . . .	44	M	Right	40 years	R. E. W. p-40	Peroxide of hydrogen.	1 week	Still running	Acute attack: pain and diz- ziness. No fever.
466	Mrs. Erwin S., . . .	40	F	Right	3 days	Grip R. E. W. 0-40	Leeches. Dry heat. Steam and hot water.	2 weeks	R. E. W. p-40 R. E. W. 20-40	Pain, redness, and swelling over mastoid. 18 years later, relapse.
467	James D. S., . . .	32	M	Both	5 days	R. E. W. 5-40 L. E. W. 0-40	Hot douches. Rest in bed. Cotton pad.	3 weeks	Still running	Swelling and redness over left mastoid. No opera- tion. Recovery.
468	Julia C. S., . . .	15	F	Left	1 week	L. E. W. p-40	Hot water and boric acid powder.	1 month	L. E. W. 40-40	Ten years later, no relapse.
469	Louisa F. S., . . .	5	F	Left	4 days	Not tested	Cleanse and peroxide hy- drogen.	8 days	No pus	
470	Clair E. S., . . .	6	F	Both	3 years	R. E. W. 6-40 L. E. W. c-40	Peroxide of hydrogen.	3 weeks	No pus	Adenoids removed.
471	Sam'l W. T., . . .	21	M	Both	12 years	R. E. W. 0-40 L. E. W. 0-40	Peroxide of hydrogen.	4 weeks	R. E. W. 10-40 L. E. W. 10-40	
472	Allen P. T., . . .	29	M	Both	25 years	R. E. W. 0-40 L. E. W. 10-40	Boric acid powder.	3 weeks	No pus	No relapse for five years.
473	Arthnr C. T., . . .	54	M	Left	10 days	Grip L. E. W. c-40	Hot water. Peroxide of hydrogen	6 weeks	No pus	Pain, and highest temp. 101°.
474	Frances C. T., . . .	20	F	Right	3 months	Grip R. E. W. 0-40	Dry cleansing.	2 weeks	No pus	
475	Frank B. T., . . .	38	M	Both	4 days	R. E. W. 2-40 L. E. W. p-40	Hot water and boric acid powder.	8 days	No pus	Occasional severe pain in mastoid region for six months after.
476	Mrs. Frank T., . . .	42	F	Right	3 weeks	Sp'ts camphor snuffed by mistake into pharynx R. E. W. 0-40 R. E. W. c-40	Rest in bed. Hot water and steam.	10 days	Still running	Nine years later, relapse in both.
477	Wm. L. T., . . .	27	M	Right	20 years	R. E. W. 0-40	Dry cleansing.	5 days	Still running	Pain, and temp. 101°-102.5°.
478	Edith T., . . .	4	F	Right	3 months	R. E. W. 0-40	Boric acid powder and dry cleansing.	10 days	R. E. W. 10-40 R. E. W. 10-40	Five years later, R. E. W. 1-40.
479	Mrs. D. H. T., . . .	37	F	Right	1 day	R. E. W. 0-40 R. E. W. 3-40	Peroxide of hydrogen.	12 days	R. E. W. 10-40	Two months later, no re- lapse.
480	Wm. E. T., . . .	14	M	Both	3 months	L. E. W. 1-40	Peroxide of hydrogen.	2 weeks	R. E. W. 40-40 L. E. W. 40-40	One year later, relapse.

NAME.	Age.	Sex.	One of both	Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
481 Harry W. T., . . .	10	M	Both	10 years	Scarlatina R. E. W. 15-40 L. E. W. p-40	Dry cleansing and inhalation.	3 weeks	R. E. W. 20-40 L. E. W. 10-40	
482 Priscilla P. T., . . .	14	F	Both	3 years	R. E. W. 12-40 L. E. W. 3-40	Dry cleansing and boric acid powder.	1 month	R. E. W. 20-40 L. E. W. 3-40	
483 Thomas T., . . .	56	M	Right	2 days	Stiffing salt water R. E. W. 0-40	Dry cleansing.	10 days	R. E. W. 30-40	
484 Dell H. T., . . .	45	F	Both	3 years	Scarlet fever R. E. W. 0-40 L. E. W. 0-40	Bichloridic solution. Hot water.	3 weeks	R. E. W. 0-40 L. E. W. 0-40	Acute attack. Pain. Highest temp. 100.6°.
485 Minnie S. T., . . .	22	F	Left	4 days	L. E. W. c-40	Peroxide of hydrogen.	20 days	L. E. W. 30-40	
486 May T., . . .	8	F	Right	10 days	Measles Ordinary voice two feet	Hot Donches and peroxide hydrogen.	10 days	No pus, and ordinary voice at 10 feet	Three years later, adenoids, but normal bearing.
487 R. C. T., . . .	43	M	Both	35 years	R. E. W. 3-40 L. E. W. 10-40	Dry cleansing.	8 days	No pus R. E. W. 3-40 L. E. W. 10-40	
488 D. A. T., . . .	23	M	Left	10 days	Tuberculosis L. E. W. 0-40	Peroxide of hydrogen.	3 years	Still running	About 6 months later he died of tub. laryngitis.
489 Florence W. T., . . .	18	F	Left	4 weeks	Grip L. E. W. 0-40	Peroxide of hydrogen.	6 weeks	L. E. W. 0-40	Swelling and tenderness over mastoid.
490 Mrs. Fredk T., . . .	47	F	Left	10 years	L. E. W. 1-40	Peroxide of hydrogen.	3 weeks	No pus L. E. W. 1-40	Six years later, no relapse.
491 Margaret T., . . .	4	F	Right	1 day	Pain and deafness	Rest in bed. Steam, and later peroxide of hydrogen.	5 days	No pus Ordinary voice at 20 feet	Pain. Temp. 100.5°.
492 Mrs. Wm. E. T., . . .	45	F	Left	2 weeks	L. E. W. 0-40	Siegel and peroxide of hydrogen.	12 days	No pus L. E. W. 0-40	Three years later, no relapse.
493 Louis D. T., . . .	5	M	Left	2 weeks	Ordinary voice at 10 feet	Peroxide of hydrogen.	3 weeks	No pus Ordinary voices at 20 feet	A month later, one relapse, which yielded to treatment in a few days.
494 Joseph T., . . .	15	M	Both	10 years	R. E. W. 10-40 L. E. W. 0-40	Boric acid powder.	3 weeks	No pus	Hearing not tested at last visit.

495	Edw'd Van W.,	51	M	Right	2 days	Grip R. E. W. 0-40	Rest in bed. Steam and paracetasis.	4 weeks	No pus R. E. W. 25-40	Pain. Highest temp. 101°.
496	Svitlana E. V.,	2	F	Right	2 days	Too young to test.	Peroxide of hydrogen.	1 week	No pus	Slight pain. Temp. 100°- 102°
497	Mrs. Silas B. V.,	52	F	Both	20 years	R. E. W. 0-40 L. E. W. 0-40	Rest in bed. Leeches. Briqk cathartic and hot water.	1 day	Mastoid red and swollen. Returned home to another city.	
498	Emma V.,	7	F	Both	4 years	Scarlatina and diphtheria	Syringe. Hot water.	3 weeks	No pus R. E. W. 5-40 L. E. W. 5-40	One relapse 3 months later.
499	Horace S. W.,	12	M	Left	3 years	R. E. W. 1-40 L. E. W. 1-40	Peroxide of hydrogen.	15 days	No pus L. E. W. 6-40	Relapse 3 years later. "Well in two weeks."
500	Mrs. J. S. W.,	50	F	Both	40 years	R. E. W. 20-40 L. E. W. 4-40	Dry cleansing.	2 months	No pus R. E. W. 20-40 L. E. W. 4-40 L. E. W. 40-40	No relapse in 17 years.
501	Geo. C. W.,	45	M	Left	12 days	L. E. W. 0-40	Dry cleansing and horic acid powder.	6 weeks	No pus L. E. W. 2-40 L. E. W. 1-40	No relapse, and 7 years later R. E. W. 2-40, L. E. W. 1-40.
502	Harry W.,	31	M	Both	25 years	R. E. W. 2-40 L. E. W. 1-40	Dry cleansing and horic acid powder.	3 months	No pus L. E. W. 35-40	Pain. Temp. 100.5° for 2 days.
503	Henry W.,	10	M	Left	3 days	L. E. W. 2-40	Hot water and peroxide of hydrogen.	8 days	R. E. W. 20-40 L. E. W. 20-40	Redness and swelling over mastoids.
504	Mrs. John W.,	32	F	Both	3 weeks	R. E. W. 0-40 L. E. W. 0-40	Rest in bed. Steam. Hot water. Recovery with- out operation.	20 days	L. E. W. 20-40	
505	A. W. W.,	68	M	Left	2 months	L. E. W. 0-40	Dry cleansing and horic acid powder.	27 days	L. E. W. 20-40	
506	Nellie B. W.,	16	F	Right	2 years	R. E. W. 1-40	Peroxide of hydrogen.	1 month	R. E. W. 5-40	Mastoid operation. Wound healed, but 2 years later lympnam still discharging.
507	John Irving W.,	7	M	Right	3 years	R. E. W. 0-40	Hot water and later operation.	6 months	R. E. W. 0-40	Four years later, no relapse.
508	Mrs. Dever H. W.,	32	F	Right	2 days	Removal of imp. wax	Peroxide of hydrogen.	2 weeks	L. E. W. 6-40	
509	Edw'd L. W.,	16	M	Right	10 years	R. E. W. 0-40 R. E. W. 5-40	Dry cleansing and horic acid powder.	10 days	No pus R. E. W. 4-40	Has had 3 attacks in 17 years.
510	Chas. G. W.,	21	M	Left	1 week	Scarlet fever	Steam. Hot water.	13 days	L. E. W. 10-40	Pain. Highest temp. 102°.
511	Fred W.,	28	M	Left	2 weeks	L. E. W. 1-40 L. E. W. 5-40	Rest in bed. Leeches. Steam.	10 days	No pus L. E. W. 30-40	
512	Mrs. Joseph W.,	25	F	Both	20 years	R. E. W. 3-40 L. E. W. 5-40	Dry cleansing and per- oxide of hydrogen.	1 day	R. E. W. 3-40 L. E. W. 5-40	

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
513 Arthur L. W.,	35	M	Both	1 week	Grip R. E. W. 1-40 L. E. W. 9-40	Hot water. Steam and rest in bed.	13 days	No pus R. E. W. 40-40 L. E. W. 10-40	Pain. Temp. up (100°-101°) for 2 days.
514 Geo. W.,	74	M	Right	4 weeks	Grip R. E. W. 0-40	Steam. Hot water. Rest in bed. Peroxide of hydrogen.	5 weeks	No pus R. E. W. 25-40	Operation advised, declined. Mastoid red, swollen, and tender. Recovery.
515 Nettie S. W.,	20	F	Right	2 years	R. E. W. 1-40	Peroxide of hydrogen.	8 years	Still running R. E. W. 1-40	Amount of discharge small. Treatment occasional. No pus for 6 months at one time, but relapse.
516 Theron W.,	28	M	Both	23 years	R. E. W. 1-40 L. E. W. 0-40	Rest in bed. Hot water and cotton pad.	10 days	R. E. W. 4-40 L. E. W. 10-40	Both mastoids tender. Recovery without operation.
517 Joseph W.,	27	M	Left	3 days	L. E. W. 5-40	Steam. Hot water. Removal of granulations. Peroxide of hydrogen.	18 days	L. E. W. 30-40	Pain. Highest temp. 102.1°.
518 Paul W.,	2	M	Both	10 days	R. E. W. 1-40 L. E. W. 10-40	Peroxide of hydrogen.	4 weeks	R. E. W. 40-40 L. E. W. 30-40	One relapse 2 years later.
519 Arthur E. W.,	6	M	Left	4 years	L. E. W. 2-40	Dry cleansing and boric acid powder.	6 weeks	No pus L. E. W. 15-40	
520 Chas. A. W.,	22	M	Right	5 years	R. E. W. 0-40	Peroxide of hydrogen.	2 weeks	No pus	Four relapses in the next seven years.
521 Elizabeth W.,	6	F	Both	6 years	R. E. W. 0-40 L. E. W. 0-40	Removal granulations. Peroxide of hydrogen. Boric acid powder.	6 years	Still running L. E. W. 0-40	Occasional treatment. Pus stopped for a year once, but relapsed.
522 Theodora W.,	10	F	Right	5 days	R. E. W. 0-40	Hot water.	3 weeks	No pus R. E. W. 40-40	Two months previous similar attack in left ear, but no perforations M. T.
523 Mary W.,	9	F	Left	1 week	L. E. W. 1-40	Peroxide of hydrogen.	19 days	No pus L. E. W. 25-40	
524 Martin W.,	48	M	Both	2 weeks	R. E. W. 0-40 L. E. W. 5-40	Rest in bed. Steam. Leeches. Hot water.	1 day		Saw him but once. Pain in head very severe, and 3 weeks later coma and death. Operation advised but declined.
525 Mary O. W.,	34	F	Left	4 days	L. E. W. 15-40	Peroxide of hydrogen.	4 days	No pus L. E. W. 10-40	

526	Mrs. N. B. W.,	50	F	Both	20 years	R. E. W. 0-40 L. E. W. 0-40	Bichloride solution (1-1000).	30 days	No pus R. E. W. 0-40 L. E. W. 0-40
527	John D. W.,	60	M	Left	3 days	Grip L. E. W. 4-40	Rest in bed and hot water.	15 days	No pus L. E. W. 25-40
528	Elfrida W.,	19	F	Left	1 week	R. E. W. 0-40 L. E. W. 10-40	Boric acid powder.	12 days	No pus L. E. W. 0-40
529	Kittie W.,	7	F	Both	6 years	R. E. W. 10-40 L. E. W. 8-40	Boric acid powder.	6 days	No pus R. E. W. 10-40 L. E. W. 8-40
530	Dorothy W.,	8	F	Right	11 days	Grip R. E. W. 0-40	Hot water and peroxide hydrogen.	3 weeks	No pus R. E. W. 40-40
531	Maurice F. W.,	9	M	Right	3 years	R. E. W. 20-40 L. E. W. 8-40	Boric acid powder.	2 weeks	No pus R. E. W. 40-40
532	Lillie A. W.,	12	F	Both	10 years	R. E. W. 20-40 L. E. W. 15-40	Peroxide of hydrogen.	3 weeks	No pus R. E. W. 20-40
533	Josie A. W.,	18	F	Both	16 years	Scarlet fever R. E. W. 3-40 L. E. W. 10-40	Peroxide of hydrogen and boric acid powder.	6 weeks	No pus R. E. W. 3-40 L. E. W. 10-40
534	Robert W.,	53	M	Both	25 years	R. E. W. c-40 L. E. W. p-40	Peroxide hydrogen.	2 weeks	No pus R. E. W. 8-40 L. E. W. c-40 L. E. W. p-40
535	Freddy W.,	4	M	Both	3 months	Ordinary voice at 2 feet	Boric acid powder.	3 weeks	No pus Ordinary voice at 10 feet
536	Georgie W.,	7	M	Left	3 weeks	L. E. W. c-40	Panas' fluid and boric acid powder.	3 weeks	L. E. W. 30-40
537	Nellie E. W.,	12	F	Right	10 years	R. E. W. 2-40	Peroxide of hydrogen.	4 days	R. E. W. 2-40
538	Lizzie F. W.,	6	F	Both	2 months	Grip R. E. W. 2-40 L. E. W. 6-40	Peroxide of hydrogen.	15 days	R. E. W. 7-40 L. E. W. 7-40
539	Alfred K. W.,	14	M	Left	10 days	Grip L. E. W. 4-40	Hot water.	15 days	L. E. W. 35-40
540	P. W. W.,	42	M	Right	3 weeks	R. E. W. 0-40	Paracetesis right M. T. Hot water. Per- oxide hydrogen. Bi- chloride.	5 months	R. E. W. 30-40
541	Marion W.,	8	F	Both	7 years	R. E. W. 0-40 L. E. W. 0-40	Boric acid powder.	6 weeks	No pus R. E. W. 0-40 L. E. W. 0-40
542	Geo. W. W.,	11	M	Both	10 years	R. E. W. 5-40 L. E. W. 5-40	Peroxide of hydrogen.	2 months	No pus R. E. W. 8-40 L. E. W. 5-40

Six years later, relapse.

Perforation M. T. does not close, probably an old one.

Moderate pain. Temp. 100° -101.5° for 2 weeks. Relapse 5 years later.

Test 2 months later; R. E. W. 40-40, L. E. W. 40-40.

In 2 years, 3 relapses.

Right mastoid opened 14 years ago.

Six months later, an attack in the right ear.

Pain. Highest temp. 101.8°.

Mastoid operation. Recovery.

Ten years later, relapse. Total deafness finally.

One year later, relapse. 2 years later, R. E. W. 30-40, L. E. W. 40-40.

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
543 Fred W., . . .	6	M	Right	3 weeks	R. E. W. 20-40	Peroxide of hydrogen.	2 weeks	No pus R. E. W. 20-40	
544 P. W. W., . . .	3 mos.	M	Left	3 days	Too young to test	Dry cleansing and later peroxide of hydrogen.	12 days	No pus	
545 Wallace W., . . .	40	M	Both	10 years	R. E. W. 24-40 L. E. W. 36-40	Boric acid powder after dry cleansing.	1 month	No pus R. E. W. 24-40 L. E. W. 36-40	
546 Harry W., . . .	5	M	Both	3 months	Scarlet fever Ordinary voice at two feet	Hot water. Peroxide of hydrogen.	4 weeks	No pus right Left still run- ning Ordinary voice at 10 feet	Pain slight. Temp. up to 100-102° for 10 days.
547 Georgianna Y., . . .	24	F	Both	4 years	Grip R. E. W. 2-40 L. E. W. 6-40	Hot water. Steam and rest in bed.	10 days	No pus R. E. W. 6-40 L. E. W. 30-40	Pain. Highest temp. 101°.
548 Robert E. Z., . . .	7	M	Left	6 years	L. E. W. 2-40	Hot water and peroxide of hydrogen.	15 days	No pus	
549 Minnie A. M., . . .	25	F	Left	2 days	L. E. W. 0-40	Leeches. Steam. Rest in bed.	10 days	No pus L. E. W. 15-40	
550 Mary E. N., . . .	11	F	Left	4 years	L. E. W. c-40	Rest in bed. Hot water.	1 month	No pus L. E. W. 6-40	Four years later, L. E. W. 6-40.
551 Warren M. O., . . .	31	M	Left	21 years	L. E. W. 3-40	Rest in bed. Steam. Leeches.	23 days	Still running L. E. W. c-40 Still running L. E. W. 3-40	Nine months later, still running. Redness, tenderness, and swelling over mastoid. 6 years later, attack in right ear.
552 Frances L. P., . . .	9	F	Left	4 years	L. E. W. 0-40	Hot water and peroxide of hydrogen.	9 months	Still running L. E. W. 0-40	Treatment occasionally.
553 Dorothy L. S., . . .	4	F	Left	2 weeks	L. E. W. 1-40	Peroxide of hydrogen.	2 weeks	No pus L. E. W. 20-40	Relapse the next year which lasted for 5 months.
554 Theresa A. M. C., . . .	8	F	Both	5 years	R. E. W. 5-40 L. E. W. 1-40	Boric acid powder.	26 days	No pus R. E. W. 12-60 L. E. W. 10-60	Ordinary voice at 15 feet.
555 Alice P., . . .	5	F	Left	1 year	.....	Removed granulations. Peroxide of hydrogen.	4 years	No pus	Four years later, 2 relapses.

556	Esther R.,	8	F	Both	5 days	R. E. W. 0-60 L. E. W. 0-60	Steam. Peroxide of hydrogen.	1 week	No pus R. E. W. 60-60 L. E. W. 60-60 Still running
557	Wm. S.,	15	M	Both	8 years	R. E. W. 10-60 L. E. W. 2-60	Peroxide of hydrogen.	3 weeks	No pus Still running
558	Sadie F. S.,	20	F	Left	15 years	L. E. W. 12-60	Peroxide of hydrogen.	2 months	No pus
559	Walter S.,	29	M	Right	12 years	R. E. W. 2-40	Granulations removed. Peroxide of hydrogen.	2 months	No pus
560	Louise T.,	6	F	Right	4 days	Measles	Hot water. Peroxide of hydrogen.	2 weeks	No pus "Normal hearing."
561	Ruth T.,	3	F	Right	4 days	Measles	Hot water. Peroxide of hydrogen.	10 days	No pus Later, "normal hearing."
562	Irving E. V.,	19	M	Left	3 years	L. E. W. 2-40	Peroxide of hydrogen.	10 days	No pus Relapse in 4 months.
563	Patsy W.,	12	M	One	4 weeks		Peroxide of hydrogen.	1 week	No pus
564	Esther W.,	4	F	Right	2 years		Peroxide of hydrogen.	1 month	No pus
565	F. D. W.,	13	M	Left	2 weeks	Scarlet fever Tonsillitis	Peroxide of hydrogen.	1 week	No pus
566	Jessie W.,	14	F	Both	1 week	R. E. W. 0-60 L. E. W. 3-60	Peroxide of hydrogen.	2 weeks	No pus
567	Margaret O.,	10	F	Right	2 weeks	Grip R. E. W. 0-40	Rest in bed. Hot water. Peroxide of hydrogen.	1 month	No pus R. E. W. 35-40 Tenderness and swelling over mastoid during first week.
568	John S. C.,	13	M	Both	7 weeks	R. E. W. 0-40 L. E. W. 0-40	Comatose when seen. Operation advised and declined.	1 day	Probable abscess brain. Death. No autopsy.
569	Philip P.,	13	M	Left	3 weeks	L. E. W. 0-40	Operation. Antrum thoroughly scraped. Amount of pus very small.	3 months	L. E. W. 30-40 No redness or swelling over mastoid. Excessive temperature and chills.
570	John J. P.,	48	M	Right	7 weeks	L. E. W. 0-40	Mastoid operation. Mastoid pneumatic. Mastoid cells and antrum all one cavity.	7 weeks	No pus Six months later, died of cirrhosis of liver.
571	Miss M. E. S.,	45	F	Left	1 week	L. E. W. 0-40	Rest in bed. Hot water.	6 weeks	Hearing reported "normal"
572	Mrs. J. C.,	35	F	Right	10 days		Rest in bed. Hot water.	10 weeks	Hearing reported "normal"
573	Lillie B. Mc.,	8	F	Left	5 weeks	L. E. W. 0-40	Saw her hut once.		Hearing reported "normal"
574	John W. K.,	9	M	Left	2 years	L. E. W. 0-40	Mastoid operation extensive.	5 weeks	L. E. W. 0-40 Pyemia when first seen. Mastoid red, tender, and swollen. Operation advised and declined. Death. Post auricular abscess. Mastoid cartious. Recovery.

NAME.	Age.	Sex.	One or both Bones.	Duration of Infection.	Causes and Harm Done.	Treatment.	Duration of Treatment.	Last Record.	Remarks.
575 Christina A. J.,	11	F	Right	9 months	R. E. W. 0-40	Mastoid operation. Caries external table. Sinus wounded accidentally.	7 weeks	R. E. W. 0-40	Carious opening into mastoid, but no pus outside bone. Recovery.
576 Priestley T.,	55	M	Right	2 years	R. E. W. 0-40	Operation. Mastoid solid. Small antrum. Small amount pus.	4 months	R. E. W. 0-40	High temp. (105°), one chill. No restness or swelling over mastoid. Recovery. Walking case. No temperature. No malaise.
577 Jennie W.,	7	F	Right	3 months	R. E. W. 0-40	Post auricular abscess. Carious opening in bones.	4 weeks	R. E. W. 1-40	Death 13 days later. Probably "septic pneumonia."
578 Moses J.,	42	M	Both	6 years	R. E. W. 10-40 L. E. W. 0-40	Rest in bed. Steam. Hot water. Operation advised and declined.	4 days	.....	Probably "meningitis." Death in 5 days.
579 Martin K.,	51	M	Right	3 years	R. E. W. 0-40	Operation advised and declined.	1 day	

ACQUIRED SYPHILITIC DISEASE WITHIN THE CRANIUM.

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That Syphilis is not the mild and easily managed disease that the general practitioner of eight or ten years standing believes is well attested by the frequency of its affections within the nervous system, three, five, ten and even twenty years after infection. Formerly the bad effects of syphilitic infection came in evidence during the primary stages or secondary stages: today we see its most noxious influences exerted in the tertiary stage. So that, notwithstanding early, consistent and radical treatment without recurrence of symptoms for two, three or even many years, yet we do get in these very cases, mild as they may have been, in at least one per cent., (some statistics give as high as 2½ per cent.) syphilitic disease within the nervous system. More than this even, it has been estimated that the nervous system becomes affected in from twelve to twenty-one per cent. of those having tertiary syphilis. Syphilographers and neuropathologists tell us (and the before mentioned statistics as far as they go) that Syphilis affects the nervous system more frequently than any other part of the body. The conclusion is irresistible that any one once having had syphilis can never be guaranteed against a possible sequel or complication with the nervous system, be the treatment never so radical. Hence the importance of the subject to the general practitioner and particularly to the family physician. A case within my own experience strikingly illustrates what I have just said. A young man twenty-five years of age came to me with a chancre followed by mild but characteristic secondary symptoms; he was put upon a thorough

Mercurial course followed by Iodides and faithfully pursued the treatment. About four years after his infection symptoms of disease of the cord appeared, notwithstanding the fact that for three and one-half years no trace of syphilis could be found upon his body. Although the nervous affections may in rare cases come on within a few months after infection or on the other hand as late as thirty years, the period of greatest frequency is three years after the appearance of the initial sore. Leaving out of consideration the degenerative diseases of the nervous system, parasymphilitic diseases so-called, or sequelae, the nervous system is affected not directly by the action of the poison upon nerve tissue itself, but rather indirectly through syphilitic diseases of the membranes and blood-vessels; of these the arterial changes are the most frequent and that at the base.

These diseases are characterized by a greater or less formation of new tissue, exudate if you like, either with or without accompanying inflammation, and while we may have a circumscribed syphilitic meningitis with little or no exudative material, we may on the other hand have a gumma, made up of the gluey material without any connection with inflammatory action. We have, however, in the most common affections such as basilar meningitis involving the cranial nerve roots, a combination of the two elements but still with consequences due to the transformation changes of the latter into contracting fibrous tissues thus tending to destruction of the nervous elements. The gummata invade the brain and produce their effects by pressure and crowding, but do not spread out into the brain-tissue; they are new growths and really spring from the Pia; they are tissue formations from the meninges as the exudative Meningitis is. They are among the most common of intracranial growths, and are most frequent during the most active period of life, from the ages of twenty-five to fifty years. They vary in size from that of a hazelnut to that of a chestnut and are irregular and nodular in form. The meningitis is never acute, rather local than general, but subacute or subchronic in character and affects the nerve roots, when they are involved, either by compression or as an inflammation of the sheath or interstitial tissue, or all

forms may be combined. Hence the irregularity in distribution so characteristic of syphilitic disease; the different areas affected are geographically rather than functionally arranged. Symmetrical bilateral involvement is not ordinarily a syphilitic phenomenon. The exudate is characteristic of syphilis and may be very small or very large; it is more frequently extensive, and when of long standing undergoes degeneration, fibrous in character. The base is the most frequent seat of election for the meningitis and the interpeduncular space is more often involved than any other area at the base. It is scarcely ever exempt, even when the greatest amount of trouble is to be found elsewhere. The circle of Willis may be involved in the gelatinous substance together with the membranes and chiasm; this substance later caseates and undergoes sclerotic degeneration. Such local inflammations in adults are rarely other than syphilitic in origin. The gummata on the other hand are apt to undergo caseous degeneration, are more common at the base and along the cranial nerves, and within the hemispheres and pons; they rarely affect the cerebellum or corpus striatum; the brain substance about such a growth is apt to be softened and inflamed. When the dura is affected the inflammation is more diffuse; this type is more rarely found within the cranium than within the spine. The vascular affections are of considerable importance because of their rather sudden onset and because of the value of a knowledge of their peculiarities in determining prognosis and treatment. The walls of the arteries may be affected in a manner similar to atheroma, and by preference at the giving off of an arterial branch; hence we get thrombosis and resulting necrosis of nerve tissue. Or there may be diffuse thickening of their walls. The arterial walls may be the seat of gummata, causing nodular projections into their lumen which may precede thrombosis and softening.

Aneurism from exudative disease within the muscular layer and resulting fibrous tissue replacing the elastic layer, sometimes occurs, with sudden apoplexy following. This form seems to prefer the larger arteries at the base and is usually rapidly fatal. The mid-cerebral or basilar arteries are the more frequent seat of Aneurism.

The ages of those in whom softening from syphilitic disease occurs, lie between thirteen and forty years, in about one-half of the cases, between twenty and thirty years in one-third of the cases, and between forty and fifty in most of the remainder.

Symptoms—With a proper conception of the pathological conditions liable to be present it is easy to picture what might be the symptomatology. The symptoms depend as well upon the precise nature of the lesion as upon its location and extent. They are different in character from those appearing in the degenerative diseases occurring in syphilitic subjects and due possibly to toxins, and which are slow in progress yet distinctly progressive. These occur just as well and have the same histological characteristics as in non-syphilitic subjects. There are certain symptoms very generally present, sometimes called premonitory symptoms but which, dependent as they are upon organic changes, must be part and parcel of the affection; premonitory they may be however of such later effects as hemiplegia or cranial nerve disease. Such are headache, sleep disturbances, mental changes and physical decline. These general derangements of function are more or less frequently accompanied or followed by others, such as apathy, loss of memory, slowness of thought and speech suggestive of impaired fluency of the reasoning processes, mental failure, possibly mental irritability, incapacity to fix the attention, vertigo, vomiting, polyuria, polydipsia, expressionless countenance from parietic condition of the facial muscles; all these and many others may occur, due to specific inflammation of base and convexity, involving the meninges and roots; or be due to arteritis and phlebitis or to any one or all of these conditions combined. The lesions being generally in diverse tissues, i.e., membranes and vessels, the symptoms are apt to point to multiple lesions or a lesion at one time in one place and at another time elsewhere. We may have basal symptoms with one attack and cortical symptoms in the next attack. The spinal cord being frequently involved, a combination of spinal and cerebral symptoms is considered a diagnostic feature of syphilitic disease. Circumscribed or rather definite local symptoms appear according

as the affection occurs at the base of vertex in regions having special function, or there may be purely psychic symptoms, simulating Dementia Paralytica from diffuse involvement of membranes and cortex of the convexity.

The headaches of syphilitic disease are as a rule diffuse, or if localized not usually limited constantly to any one region; they are constant but characterized by severe exacerbations which in most cases come on at night though not always, for sometimes the exacerbation may be in the morning or at noon.

These accessions of pain are often accompanied by vomiting and giddiness. The headache may be accompanied with insomnia or we may on the other hand have insomnia without headache. A more frequent form of sleep disturbance is somnolence and this may be so extreme as to unfit the patient for business. One case within my experience is quite typical. This man was first troubled with cerebral manifestation ten years after the appearance of his chancre, in the form of vertigo with vomiting; there soon appeared a paraphasia, (use of the wrong word for the one intended); later headache, polyuria and impairment of memory appeared; these symptoms improved under treatment but later some of them recurred together with a deep somnolence, so intense that after sleeping all night he would waken for breakfast, glance at the paper and drop off to sleep again only to be disturbed for his meals and the calls of nature. Besides such general symptoms due no doubt to extensive vascular changes, as yet but slight in degree, we are very liable to get focal symptoms due to vascular occlusion or gunima, which when occurring in the motor region will produce a paralysis of an arm or leg or other limited palsy, or when in or near the cortex Jacksonian epilepsy. Sensory focal symptoms are less common though these are less frequently studied and when present, much less prominent, being limited to tingling in an extremity although occasionally pain may be present and be severe. There may be epileptic seizures usually due to a general involvement of the cortex; the attacks may be either of the Grand Mal or Petit Mal type. In the cases of epileptiform attacks due to syphilis consciousness is not so completely lost as in

ordinary epilepsy, specific disease coming on as a rule after, while epilepsy first appears at or before puberty. Late epilepsy should always be viewed with a strong suspicion of syphilis.

Hence in an adult man above say thirty or thirty-five or forty years in apparent good health and with what appears to be an attack of epilepsy the chances are eight or nine out of ten that it is syphilitic; of course other possible causes such as the toxic, lead, alcohol, trauma, tumors and renal arterial disease must be excluded.

When a syphilitic affection is limited to the base and circumscribed we get the various cranial nerve palsies from inflammation of the sheath, or compression of the nerve roots or trunks in the exudate. Or we get nuclear disease from deposits within the arterial walls producing thrombosis and consequent softening. Hence the common symptoms of unequal pupils, and ptosis which is often unilateral, both very characteristic symptoms of syphilis. The levator fibres seem to be the most susceptible.

I recall vividly a woman of middle age whom I treated for peripheral neuritis and in whom the cause was not very apparent. Examination of her eyes revealed unequal pupils which also failed to react to light. She had never had disease of the eye. She denied having had syphilitic symptoms such as skin eruption and sore throat but later at my office acknowledged it. Strabismus is also a not uncommon syphilitic condition particularly external squint due to paralysis of the fiber going to the internal rectus. You see these affections are limited in degree, partial palsies, a condition characteristic of syphilitic disease. Internal strabismus and diplopia, from sixth nerve palsy be affected, one would expect to get inflammatory affections of the optic nerves and as a matter of fact optic neuritis is not at all uncommon and when due to this cause is characterized by irregularity in and ever changing visual fields, so that a map made on one day would have its outlines altered on the next day.

The chiasma being frequently involved we may have a bi-temporal or one optic tract alone being affected, a lateral or homonymous hemianopsia. Transitory amblyopia how-

ever is not uncommon. Owing to the greater rapidity with which a syphilitic optic neuritis progresses, being more rapid than that found with tumors, treatment must be heroic and the physician on the alert. That the olfactory nerve is sometimes affected is shown by the occasional loss of smell in syphilitics without nasal disease. Evidence of disease of the fifth nerve is shown by severe neuralgic pains in the area of distribution of the affected branch or branches followed later by anesthesia and paralysis of the masticatory muscle on the side of the affection, if the motor root is involved. A troublesome neuroparalytic keratitis is a not uncommon result. This occurred in a patient of mine at the Vanderbilt clinic who came in with a complete ophthalmoplegia of the left eye and anesthesia in the area supplied by the ophthalmic division of the fifth nerve, all of which had followed shortly after a so-called severe neuralgia in the now anesthetic area. Here was a subacute affection of the third, fourth, sixth and that part of the fifth nerve going through the sphenoidal fissure, undoubtedly due to a gummy meningitis at that opening; added to this was the fact that the woman had had a few years previously a transitory squint in the other eye, and the diagnosis was plain. The seventh nerve is rarely affected and when it is so the palsy is complete, it being entirely a peripheral paralysis. Although these affections are almost invariably due to inflammatory mischief or gummata yet they may be caused by an aneurism of syphilitic origin pressing upon the nerve.

The vessels at the base are just as likely as the nerves to be affected and by preference, the mid-cerebrals, those branches going to the internal capsule, basal ganglia and motor cortex; hence the hemiplegias, monoplegias and other palsies due to thrombosis or hemorrhage, more frequently the former. The symptoms are the same as those due to similar vascular changes from other causes except that the "onset" is more gradual in the affections under consideration and we are less apt to have loss of consciousness when they occur. Their severity is also less. We are more apt to get a hemiparesis than a hemiplegia and the loss is more likely to be transient or fugacious, only to return at another time unless guarded against; this is be-

cause the lesion produces a narrowing in the caliber but not a complete and permanent blocking of the vessel.

Also, such a paralysis is very often accompanied by other basal symptoms, oculomotor or other cranial nerve involvement, owing to the general prevalence of the same cause. Crossed paralyzes are very common in syphilis, i.e., a hemiplegia on one side and a dilated pupil or squint on the other, or we may have at one time a hemiplegia of one side and in a year or two or three, the same thing on the other side of the body from extension of the exudate.

Aphasias are common and often fugacious. An aphasia together with left hemiplegia points strongly to syphilitic disease, indicating involvement of both sides of the brain.

There is also a diffuse syphilis of the cortex with predominating mental symptoms, a syphilitic dementia. It very much resembles general paresis but is accompanied with headache, somnolence and vertigo as prominent symptoms. There is a change in character and disposition, the patient becomes morose, irritable and depressed, his memory is impaired and there is diminished capacity for intellectual labor. He is easily tired. The facial expression is dull and heavy and there is an attitude of general relaxation. We may have melancholia or hypochondriacal delusions, often delusions of persecution, and the patient may even attempt suicide. Hallucinations of hearing, taste and smell may appear.

There may be exaltation and delusions of grandeur, not so extravagant however as in dementia paralytica but better systematized. There may be but a mild cerebral excitement. Rarely we do have an acute delirium. This form of syphilis is characterized by its slow development, more or less interrupted course, intermissions or recessions and fresh accesses. The physical symptoms of focal lesions occur early and precede the mental symptoms, such as ocular palsies, ptosis, aphasia, mono or hemiplegia. These symptoms are shifting and fugacious. There may be Amaurosis or optic neuritis, or convulsive attacks like focal epilepsy. There is less amnesia and less difficulty in speech, and absence of Argyll-Robertson pupil, symptoms typical of

general paresis. The expansive state of the latter is rather exceptional in cerebral syphilis.

Diagnosis—In determining whether specific disease is the cause of our symptoms the first question to be asked is, has the patient had a chancre, or if he is ignorant of that fact has he had any secondary manifestations. A denial even of these does not exclude the disease, for it is well known that a man may have syphilis and may have had a very slight sore and mild secondary manifestations without knowing it. A history of chancroid is very suspicious. We must even at times be forced to the conclusion that a man who has had gonorrhœa may have had syphilitic infection and hence this source of disease in the nervous system cannot be excluded. In women in whom both primary and secondary manifestations often go unrecognized, a history of miscarriage or of still-born children or sterility is of value. The presence of unequal or Argyll-Robertson pupils is strong evidence in favor of syphilis, provided of course that the former condition is not due to disease within the eyeball. Syphilitic affections are characterized by intermission in their progress with renewed accession of symptoms. The palsies are often incomplete and fugacious due to rapidly forming but perishable granulation tissue, and, as before said, the contraction of the visual fields in optic nerve affections changes their outlines from week to week. So do also the pupillary reactions and knee-jerks change. As the syphilitic growth requires time, there is a general subacute or subchronic character to the course of the symptoms and though pronounced symptoms may come on suddenly they are usually preceded by various slightly marked symptoms; for instance a syphilitic hemiplegia due to thrombosis is frequently preceded for some days or even a week or two by headache or dizziness or a transient weakness of an arm or leg. So also Gummata are subchronic in growth and their development is so much more rapid than that of other tumors that symptoms of new growth long present without change are very unlikely syphilitic.

With a gumma also the optic neuritis is apt to come on early and take on an acute form.

Isolated disease of cranial nerves, especially of the optic

or third nerve, points rather strongly toward syphilis. Ptosis as already stated, especially when unilateral, is almost pathognomonic. These oculomotor palsies are due either to local meningitis or gummata at the base. Indeed chronic syphilitic meningitis has symptoms of special character only when at the base among the cranial nerves or over the motor cortex; its effects are exerted upon the superficies.

The diagnosis between a gumma and meningitis is often difficult or impossible, though the meningitis covers a larger area and the mischief is more widespread, and the symptoms of irritation preponderate over those of destruction.

Among the vascular lesions we usually have to differentiate between thrombosis and embolism and also between these and the same states due to other causes. As a very general rule it may be stated that hemiplegia in a man under forty-five is very likely syphilitic in origin other ordinary causes being excluded. Senile Atheroma affects as a rule persons over sixty and unless the atheroma is due to renal sclerosis the vane points strongly to the affection under consideration. Renal headaches are less severe as a rule but more persistent than those due to syphilitic disease. Thrombosis from syphilitic disease is often preceded by headache and other premonitory symptoms; the onset is usually deliberate, the palsy being at first slight and then growing worse and usually there is no loss of consciousness or convulsion.

Syphilis is characterized by fugacious palsies, aphasias and sensory losses. Failure of memory and faulty articulation frequently recurring and due to slight vascular changes, are characteristic.

Epileptoid attacks occurring for the first time in men after the age of thirty and when not toxic (renal, lead, alcohol) or traumatic are usually syphilitic. The most common time for an obliterating endarteritis is about the third year after infection and an attack coming on at such a time makes the diagnosis easy.

The previous or concurrent presence of disease of the spinal cord points very strongly to syphilis as the cause of both.

In diffuse syphilis of the cortex the diagnostic difficulties

are greater but the symptoms are more atypical than in general paresis. Of course if secondary manifestations are present it helps greatly; so also does the occurrence of epileptoid attacks, hemiplegia or other palsies. Headache syphilitic in character and followed by hemiplegia or cranial nerve palsy suggests syphilis. Also, aid is derived from the presence of sleep disturbances, vertigo and blunting of the mental faculties.

Lastly, there is the therapeutic test. If the case is recent there is rapid improvement under specific treatment. Sometimes, however, if the lesion is really due to syphilis, specific treatment is no longer of any avail owing to the damage already done from secondary changes. It must also be borne in mind that gliomata and sarcomata are sometimes favorably affected by specific treatment.

The prognosis, though more favorable than in other organic diseases of the cerebrum depends not so much upon what is, as upon what has been going on. Hence the fact that a certain affection under consideration is due primarily to syphilis, does not necessarily imply a favorable outcome. The affection may have already produced irremediable changes in structure so that the most that can be hoped for is a prevention of further damage. Permanent changes may be produced by the pressure of a gumma, or the gumma itself may undergo retrograde change which may make its presence permanent. Hemiplegia due to softening from thrombosis due to disease of the vessel walls is permanent on account of the inability of treatment to restore the softened area. So also in case of hemorrhage from rupture of a vessel whose wall is altered in character by the syphilitic disease. Syphilitic epilepsy due to cortical changes from vascular disease is also beyond reach though further damage may possibly be prevented. The longer the duration of the symptoms the more unfavorable the prognosis. Likewise the appearance of new symptoms while the patient is under radical treatment makes the prognosis bad on account of the unsusceptibility of the individual to the drugs employed, possibly because he has become habituated thereto; or the virulence of the poison may account for this phase of the trouble. If seen early the prognosis is favorable and

treatment is rapidly followed by a disappearance of the slight cerebral palsies, headache, somnolence and other symptoms. There may be only improvement but no absolute cure, some muscular weakness being left, or there may remain some mental weakness.

Sometimes the cranial nerve palsies do not clear up and strabismus or ptosis may remain. The older the patient and also the more remote the lesion from the date of infection, the more unfavorable the prognosis.

If the arterial disease has not produced complete obliteration and consequent softening, we can expect at least approximate cure. Lesions of the convexity are also amenable to treatment. Finally a complete hemiplegia has no better prognosis than hemiplegia from any other cause.

Treatment—The question first resolves itself into preventative and the treatment of the disease itself. It is not enough that a syphilitic follow up treatment by mercury and later iodides for a period of two years to three years after all evidence of disease has ceased to appear; he should take the iodides from two to three or four times a year for a period of three to six weeks at a time as long as he lives. At the same time he should lead a model life with total abstinence. Alcohol renders the vascular system more vulnerable to any invasion and as much so to the syphilitic poison as any other.

The treatment of the nervous affection must be early and active. Nerve tissues degenerate rapidly and no time should be lost in bringing the system under the influence of mercury. Mercury stimulates absorption and is antiphlogistic; it acts probably by destroying or rendering inert the virus of syphilis. The objects of treatment should be to remove the exudate rapidly and to make this result lasting. The mercury should be accompanied by iodide of potassium rapidly increased to sixty, eighty, or even a hundred grains three times a day. It is wonderful how syphilitics tolerate the drug. I prefer to use the mercury by inunction, rubbing into the axilla, thighs and back at least a drachm a day until the gums are touched, and then when the gums have returned to a normal state, to begin again, cautiously however. If improvement ceases the drugs should be pushed

and if there is then no improvement, we have obtained all the benefit possible at present, and should substitute general restoratives, such as iron, cod liver oil, quinine, etc., and later we will find our specifics of value once more. As in prophylaxis, so now repeat the iodides at least twice a year for from three to six weeks. I do not like the hypodermatic treatment with mercury; if preferred, the bichloride may be given in doses of one-tenth grain every two or three hours, into the back or buttocks; or "Gray Oil" may be used which is made up in emulsion of two parts of metallic mercury to one of Lanoline emulsion and of this three parts are taken to one of olive oil; of this one to two minims are injected every two or three days.

In the discussion Dr. Bulkley said: The paper is timely and important. He wants to ask the gentlemen to read and re-read it when it gets into print. He has seen some of the saddest cases of brain syphilis which were not recognized as specific. In one such there were eruptions frequently, afterwards aphasia and finally the patient sank and died under a brain difficulty which could have been cured but was not recognized by the physician at first. If the diagnosis is made early, ninety per cent of these cases can be cured.

There is one other thing. Gentlemen may think there is not much syphilis but throughout every day I see cases of unrecognized ulcerating gummatous disease. It is important that we do not forget the extra-genital chancres. He has a history of one hundred and fifty cases on his book. That was five years ago and fifty have been added since. They come on the fingers from handling poison, on the lips from kissing, on the cheek from shaving. A person may be good and virtuous and yet have syphilis. He may have acquired it innocently. A man with gonorrhoea may have syphilis simultaneously; chancres within the urethra are not uncommon. Sterility is often a diagnostic mark, as much so as miscarriage, and it may be as important as any.

Hutchinson has spoken of syphilis as the great imitator. It imitates skin diseases, it imitates nervous diseases. But with these it has some features of its own. Something is missing or something is added which is not in the other disease which it simulates. Don't forget that the best and the purest in your own family—any one—may have chancres.

A CASE OF (so-called) HEREDITARY CEREBELLAR ATAXIA.

MAX MAILHOUSE, M. D.,

NEW HAVEN.

The patient, F. F., was admitted to the New Haven Hospital, January 13, 1900, with the following history:

Age 32, single, birthplace United States, occupation, postal clerk, father and mother living and well; has five sisters living, in good health. One sister died of pulmonary tuberculosis and another died in infancy, of causes not stated. Mother's mother also died of pulmonary tuberculosis. A sister of his mother is at present an inmate of the Connecticut Asylum for Insane. Mother and father have had muscular rheumatism.

Patient had scarlet fever and diphtheria at fifteen years of age. When a boy had rheumatism of mild degree. In 1887 had sunstroke, which left him very weak. Ten years ago had malaria off and on, but was never confined to his bed. No syphilis, alcoholism or tuberculosis. The history taken on his admission to the hospital states that the patient first noticed in 1887 a dragging of his toes on walking and that his shoes curled up and were worn at the toes; did not walk with a stamping gait and could direct his feet anywhere without trouble. Legs did not cross on walking. On closing his eyes while standing was unable to keep his balance. Had no pain in the legs, but considerable backache. Then his hands commenced to tremble (1888) and his legs shook on walking. These symptoms increased and he had to use two canes on walking in 1888; in 1889 he used a crutch and one cane and in 1890 two crutches. Has lost fifty-seven pounds in weight within the past ten years. Has headaches off and on but not severe. He also states that when twenty-one years of age he noticed an inability to

run; he could walk but when he ran his legs got mixed up, as though they were playing cross tag with one another. For past four or five years erections have been incomplete, and at one time had frequent urination.

Status Presens. A man above medium height, of good frame but somewhat emaciated. A striking feature as he stands supported by his two crutches is the nodding tremor of his head which is aggravated by walking.

There is marked asymmetry of the head, a flattening of the occiput and pronounced sloping of the forehead with considerable flattening over left parietal region. There is some facial asymmetry also, as is evidenced by a greater prominence of the right supraorbital arch than of the left. The nose is directed toward the right and the left palpebral fissure is smaller than the right. His gait is markedly ataxic but he is able to get about fairly well on a level with the aid of crutches, but loses his balance readily on attempting to ascend a step. There is absolutely no muscular weakness in his legs. The knee jerks are present but not exaggerated. There is no ankle clonus. The Romberg symptom is present and he is supported with difficulty when he stands with closed eyes. There is no impairment of sensation of any one of the forms, from head to toe. His movements are quickly performed, jerky, as is observed when he attempts to touch the tip of his nose with the index finger, the eyes being closed. The ataxia of the upper extremities is much less evident than in the legs. His speech is noticeably affected, but changes being at times scanning or staccato and at others characterized by indecision and unsteadiness in the muscles of vocal expression; it is decidedly an ataxic speech. The pupils react neither to light nor accommodation. There is marked lateral nystagmus and on looking upward a rotatory nystagmus; when the eyes are at rest there is no oscillation. There are no contractures and no scoliosis. The grasp of the hands is strong and the muscles of the arms show no loss of power. The pectoral muscles are wasted, otherwise no atrophies are present. There is no optic atrophy and no limitation of the visual fields, but he is myopic, requiring a lens of seven diopters. The superficial reflexes are present, the plantar

being very active. Urine presents no abnormality. The handwriting is like that of a tabetic.

A review of the symptoms reveals the marked ataxia of the whole muscular system without any paralytic phenomena. The case resembles Friedrich's ataxia in its mode of development and general appearance, but differs from the typical disease in its latter onset, in retaining the knee-jerks, in the late and mild affection of the arms, in the loss of the ocular reflexes, and in the absence of contractures or paralyzes; the man has been afflicted twelve years and there is no paralysis or contracture present. The question might arise as to its being a multiple sclerosis, but I believe that this affection can be ruled out by the mode of onset, it being ataxic rather than paraplegic, by the normal reflexes and sensory phenomena and the absence of intention tremor. Furthermore, the long duration of the illness without any paralysis ocular or corporal militates against such a diagnosis. The case is presented not as an argument in favor of the type of hereditary cerebellar ataxia, but rather as a clinical example of ataxia presenting such a symptom-complex.

After presentation of the case Dr. Tuttle remarked upon the slowness of the disease. The patient is an old schoolmate. As a boy at school he was up to the average but had a pernicious habit of cigarette smoking. He would smoke fifty or sixty daily. Later he was employed in the postoffice. There he was bright and did his work well. His appearance here today surprises the speaker. Hasn't seen the patient in five or six years and finds now emaciation, striking change in mental condition, a blank expression of countenance.

THE DIAGNOSIS OF NEURASTHENIA.

GUSTAVUS ELLIOT, A. M., M. D.,

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The terms nervous exhaustion, nerve exhaustion and nervous prostration are commonly used as practically synonymous with neurasthenia.

This condition had been recognized by previous writers, but was first systematically described in detail by the late Dr. George M. Beard, of New York. His earliest paper on the subject was published in the Boston Medical and Surgical Journal, on April 28, 1869, and during the following ten years, he read and published several other papers on different phases of the disease. He distinguished two forms of neurasthenia, cerebral and spinal, and also wrote at considerable length on sexual neurasthenia.

In 1886, Dr. H. C. Wood, of Philadelphia, wrote: "It has not been many years since general debility was a common inscription upon records of diagnosis. In many cases the general debility afflicted the diagnostic powers or zeal of the physician rather than the body of the patient, and it is to be feared that neurasthenia not rarely at present replaces it. * * * The folly of attempting to make neurasthenia a distinct affection is strongly brought out whenever it is attempted to give sharp diagnostic differences between it and other diseases."

This quotation illustrates the attitude—at the time it was written—of many prominent neurologists toward Dr. Beard and the disease with which his name has been deservedly associated. The clearer recognition, in later years, of the importance of neurasthenia is illustrated by the fact that while Dr. Wood, Clinical Professor of Diseases of the Nervous System in the University of Pennsylvania, devoted only nine pages to the subject in Pepper's five-volume Sys-

tem of Medicine, in 1886; twelve years later, Dr. J. J. Putnam, Professor of Diseases of the Nervous System in Harvard University, occupied forty-seven pages in describing the disease in the Loomis-Thompson four-volume *System of Practical Medicine*, published in 1898.

Some of the more characteristic and more common symptoms of neurasthenia are weakness and incapacity for physical or mental exertion to the degree which has been habitual with the individual, consequent upon a recognition of this weakness, a distrust of his ability to accomplish customary tasks, or to control his acts and emotions; depression, impairment of memory, insomnia and unpleasant dreams, distressing sensations in the head, various morbid fears, dilated pupils, weakness of the eyes, noises in the ears; palpitation of the heart, throbbing sensations; disturbances of digestion with flatulence and constipation, choking sensations; disorders of the sexual organs; vasomotor disturbances—hot flashes, general or local sweating; neuralgic pains, and various other abnormal sensations.

Among the affections whose relations and resemblances to neurasthenia are worthy of consideration are hysteria, hypochondriasis, melancholia, paranoia, general paresis, localized lesions in the brain, organic diseases of the spinal cord and lithemia.

In approaching the subject it may be well to point out some general differences between organic and functional diseases of the central nervous system.

But first it is a natural inquiry whether organic diseases may not develop as a result of the long continued existence of an illness, which at the beginning was reasonably regarded as a functional disease like neurasthenia. Some writers have believed that this was of rather frequent occurrence, but most of the more recent authorities believe that it does not happen very often.

In this connection it should be mentioned that neurasthenia may exist as a complication of, or as a result of some organic disease, but this also is of infrequent occurrence.

The chief points of distinction between organic nervous diseases, and functional disorders of the nervous system are:—

1. In organic affections the symptoms persist in a certain locality, and when they change, the increase or diminution of their intensity is gradual. In functional troubles, on the other hand, the symptoms frequently come on suddenly and disappear rapidly. They are also likely to shift from one part of the nervous system to another without any apparent cause. This inexplicable changeableness of the symptoms of functional disease is in striking contrast to the inexorable persistency of the symptoms of grave organic disease.

2. The various reflexes are likely to be increased in functional diseases, and to be diminished in organic diseases of the nervous system. While there are exceptions to this rule, as in multiple cerebrospinal sclerosis, yet its frequent applicability is worth remembering.

3. Some common symptoms of functional disorders are not usually observed in organic diseases. Such symptoms are the vasomotor phenomena, various emotional manifestations, morbid fears, and idiosyncrasies in regard to food and drink.

4. Functional nervous disorders are more likely to occur in those who have the so-called nervous diathesis, indicated by soft skin, fine hair, delicate features and tapering extremities, while organic diseases commonly affect those who are apparently strong and vigorous—such as are not ordinarily characterized as nervous.

It must be remembered that these distinctions are not absolute, nor are they to be relied upon when more important evidence is obtainable. But when the other evidence leaves the question between organic and functional disease in doubt, these considerations must be taken into account, and may help in securing a correct solution of otherwise obscure clinical riddles.

Few phases of this subject are more interesting than the relation between neurasthenia and hysteria. Undoubtedly neurasthenic patients may exhibit manifestations of hysteria, but the two diseases can generally be distinguished without great difficulty. For instance, the sudden and violent convulsive attacks of hysteria do not belong to neurasthenia, although in the latter disease slight muscular

twitching and subjective quivering and throbbing are not uncommon. The globus hystericus is common in and characteristic of the disease whose name the symptom bears, but is rare in neurasthenia. The symptoms of hysteria are characterized by violence and activity. Those of neurasthenia are of a less obtrusive character. They are more quiet and subdued. Hysteria is seen in individuals of emotional temperament, whose mental organization is not well balanced, while neurasthenia very commonly affects the intelligent and intellectual. Finally the symptoms of hysteria very frequently disappear early and completely, leaving the patient in usual health, while neurasthenics recover slowly and gradually.

Hypochondriasis somewhat resembles neurasthenia, but differs from it in that the attention is concentrated on a single part or organ of the body, and that there is not present as a rule such extreme mental and physical weakness. If a patient with the former disease can be led to relinquish the persistent apprehension of disease in a particular organ, he will generally be found to be strong and vigorous. Hypochondriasis frequently lasts for years; the patient is irritable and fault-finding, and changes physicians and medicines with unreasonable frequency.

One of the most important questions—from both a diagnostic and prognostic point of view—in connection with the study of neurasthenia, is its relation to insanity.

The fact that morbid fears were described by Beard as symptomatic of neurasthenia has led some writers to assert that many of the patients whom he considered to be neurasthenics were in reality insane, and should be regarded as victims of that form of mental disease distinguished as monomania, paranoia or primary delusional insanity. There is a great difference between paranoia and neurasthenia with reference to the prospect of ultimate recovery. For most patients with the latter disease practically recover, so that they become able to do a fair amount of physical and intellectual work, if they recognize and regard their individual limitations. The prognosis of paranoia—on the other hand—is generally regarded as bad. But it should be remembered that comparatively little is definitely known

in regard to the prognosis of insanity, and it is highly probable that a larger proportion than is now generally realized, of paranoiacs would recover under suitable treatment commenced at the appearance of the earliest symptoms. In this direction seems to me to lie one of the most important and most fruitful fields for further observation and study.

The morbid fears of neurasthenia have a much less firm hold upon the patient than the delusions of paranoia. The former are more transient, being frequently speedily removed by appropriate treatment. Their lack of reasonableness is also more easily recognized by the patient. The delusions of paranoia are not incompatible with considerable physical vigor and intellectual activity.

The diagnosis between melancholia and neurasthenia is of great importance, on account of the danger that the melancholic patient will commit suicide; and, as the late Dr. Landon Carter Gray has pointed out, it is extremely unfortunate to wait until this has happened before making a diagnosis. The most important points to be considered are the fixed and persistent depressive delusions, the mental sluggishness, the bodily restlessness, and the tendency to self-destruction, which are so characteristic of melancholia.

Lithemia is often accompanied by considerable depression of spirits, and an indisposition for physical or mental exertion, and in these particulars resembles neurasthenia; but it differs from the latter disease by the greater irritability of the patient, and by the beneficial effect of exercise, which, unless limited within a very narrow range, is detrimental to most neurasthenics.

Abstract generalizations on diagnosis are not likely to arouse very active interest in the listeners at a medical meeting. For this reason, I have made my paper brief. I have attempted to emphasize the great importance of distinguishing neurasthenia from the diseases which resemble it, or which may be associated with it. I believe that what I have said has been sufficient to convince you that often the diagnosis is not easy, but must be made with great care, and after a thorough investigation of the symptoms, and a careful consideration of their especial significance in each individual case.

BRONCHIAL ASTHMA, ITS RELATION TO NASAL DISEASE.

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NEW HAVEN.

Those who would explain the phenomena of bronchial asthma have been divided into three camps. No one of these explains all of the features of the spasmodic attack, and each explains best some of the weakest points in the views of the other.

The oldest, most widely accepted, and even at the present time most satisfactory explanation, is that of bronchial spasm, but this did not explain the enormous blowing up of the chest, the difficulty in expiring, so another school made clear this point by the theory of spasm of the diaphragm, making the latter responsible for all of the trouble from which the patients suffered. It, however, as is readily perceived, does not concern itself with the narrowing of the bronchial tubes. The third purported not to be satisfied with the theory of the narrowing of the bronchial tubes being due to contraction of the muscular fibers, but preferred to call in the vasomotor system to explain the diminished caliber, ingeniously using two lines of defence, actual distension of the blood-vessels in the walls of the smaller bronchi, thereby producing swelling sufficient to narrow the lumen as takes place in the nose, and furthermore added to this the idea that there might be in the smaller tubes, as there has been known to be in the larger, an actual edematous swelling of the membrane to help the narrowing process. This third, seemed to be a most plausible view, and, on account of the large number of nasal phases in these cases, it seemed to its defenders to present a final settlement of the question, as it made clear both the nasal and pulmonary phenomena.

However, it did not explain any better than did the theory of bronchial spasm, why at the climax of the asthmatic paroxysm the sufferer finds himself with chest-walls distended, with shoulders elevated, with supra-clavicular depression obliterated, with the practical impossibility of expelling enough air to satisfy the need for breath, and with every inspiration but adding to the discomforture.

Apparently to the impartial observer if an elastic tube becomes narrower, it would act to impede the air entering it in whichever direction the air moved. Whether the tube therefore was narrowed by bronchial spasm, or by swelling of the membrane lining it, it should be no more of an impediment to air being expired than air being inspired.

There are many kinds of asthmatics, in some of whom there seems to be but little difference in expiratory or inspiratory dyspnea, but in the classic attack which we are describing, we have to account in some way for the distension of the chest and the difficulty in expiring. Hence as far as this point alone goes, the theory of vasomotor distension or edematous swelling fails as signally as does its older brother, that of bronchial spasm.

Recent anatomical and histological studies, furthermore, make the vasomotor theory as based upon the morphological makeup of the tubes, almost an absolute impossibility.

When we contemplate the mucous membrane in the upper air passages where distension of the blood-vessels occurs sufficiently great to cause thereby a visible thickening of the membrane, as for example in the nose, on the turbinal tissues, septum, and in various portions of the throat, or at the base of the tongue, there exists in the submucosa a very distinct plexus of vessels. In the nose on the turbinal bones and the septum it amounts to erectile tissue, as it is called. At the base of the tongue and other portions of the throat it amounts to a very rich plexus of venous trunks whose distension is sufficient to add distinctly to the thickness of the membrane in question.

Now in the bronchial tubes the bronchial arteries run down along the walls of the tubes to the very finer ramifications, and as they branch off to supply the mucous membrane, penetrate the outer coats and disperse immediately

beneath the tunica propria into capillaries which gather themselves together in venous trunks which are located entirely outside of the muscular walls. Consequently, there lies in the lumen of the tubes themselves almost no venous trunks whatever. So much is this so, that it practically makes it impossible for the distension of these vessels to produce any swelling whatever, let alone, in a moment, as it were, in the twinkling of an eye, to so narrow the bronchial tubes as to induce the intense dyspnea to which the typical asthmatic is so liable.

Furthermore, as the plexus which supplies the bronchial mucous membrane with blood is made up of only capillaries, and by no means richer than that which is immediately under the surface of any other mucous membrane, it would be scarcely possible that there could be by any possible means such edema of the mucous membrane as would cause it to swell at all markedly in the smaller bronchi, and even if we admit that such swelling is possible by slow degrees, it is impossible for it to come and go with the tremendous suddenness with which the asthmatic may start and may stop his attack of asthma.

These statements that are made concerning the circulation in the bronchial tubes, are based upon the researches of Dr. W. S. Miller, of the University of Wisconsin, who is probably one of the best versed men in the knowledge of the finer anatomy of the lungs in the country. He cordially agrees with the idea of the impossibility of the supporters of this theory finding in the anatomical conditions present in the lung, any sort of proof of their apparently plausible ideas. I am also indebted to him for the excellent pictures which are presented with this article.

It might be added that for the sake of argument, it is rather too bad that this is so, because the theory fitted in so beautifully with the idea of the close relationship existing between the diseased conditions in the nose and the bronchial tubes.

The prominent believers in the close, almost causative connection between the nasal disease and the bronchial, almost to a man supported this idea. It was so clear that a spasmodic narrowing of the various venous trunks leading

from the nose, surrounded as they are by large sphincters of muscular fibers, would cause, by the setting back of the blood, a sudden swelling of the mucous membrane in the nose, causing the sensitive nerves lying therein or nearby to be pressed upon. Immediately through the reflex action there would be caused a corresponding distension in the venous trunks of the mucous membrane of the bronchial tubes with exosmosis and soaking of the tissues leading to narrowing of the tube and then the complex of symptoms known as asthma.

This was the most ingenious, as before stated, the most satisfactory and simplest explanation that had ever been given to the whole question. Especially was this so when the removal of the nasal disease removed the over sensitive out-posts, and thereby caused the more distant parts within to be free from alarms from without. So that the theory did explain cause, effect and cure, and yet was based, as regards the bronchial tubes at least, apparently upon a wrong idea of the distribution of the blood-vessels in the smaller bronchial tubes.

There are other objections which might be urged upon this theory, but it seems to me that we have practically disposed of it.

Now what is to be said for the theory of the diaphragmatic spasm? If, as it was believed, spasm of the diaphragm does exist during these violent spasmodic seizures, it would certainly account in a measure for the difficulty in expiring, but if we take our analogy from other cases or general tetanus where together with the spasm of all the other muscles there finally comes spasm of the diaphragm, as Dr. W. H. Thompson* says he has had occasion to actually observe, the chest does not assume, even when death is near, the shape, nor is the breathing of the character of that which troubles the asthmatic, and furthermore Dr. Thompson says there is none of the whistling and disturbed bronchial sounds which are always present with the asthmatic.

One thing more as I know by positive observation myself, and as any of you may be able to ascertain in the next

*Asthma. Buck's Handbook of Medical Sciences.

asthmatic you see, sometimes the diaphragm is the only part of the respiratory mechanism which seems capable of supplying any air to the victim, which it does by a jerky up and down movement, the rest of the chest being rigidly held by the apparent tremendous effort of the inspiratory muscles. So that the theory has at present very few adherents, and has always seemed to me to be a long way from the truth.

This would, then, leave us with but the one older theory upon which to base our hopes of clearing up the well-nigh inexplicable features of the asthmatic sufferings.

First there is bronchial spasm in all of these cases, using the word in the sense of a sudden narrowing of the tube by virtue of the contraction of the muscular fibers surrounding it. Now it has been well stated that where the cartilages are present in the walls of the tube, the muscle fibers alone can produce no considerable narrowing, but as long ago as in the forties Dr. C. J. B. Williams proved that the smallest bronchial tubes in which nothing but muscular fiber exists in the wall could be contracted by a stimulation of the nerve supplies, i. e. the vagus, so that the tube would apparently be completely obliterated or be but the width of a line. Clinically, one hears the wheezing of the asthmatic in various portions of the chest before any actual difficulty in breathing has occurred, and can, as I have done time and again, find it to disappear or alter its position, the rales being louder in one part of the chest at one time and in another part at another, coming and going, disappearing and reappearing in a manner which seems to other observers as well as to myself only explicable on the theory of the sudden spasmodic narrowing of the tube.

We have, therefore, on the clinical and on the physiological side absolute proof that a spasm or a sudden narrowing of the tube can, and does take place.

Now, then, is there any way, when we come to accept of the theory of the bronchial spasm, by which we can explain this much discussed point of why there is difficulty in expiration greater than difficulty in inspiration? We certainly have all seen narrowing of the larger tubes in those sad cases of diphtheria, of which we used to see more in

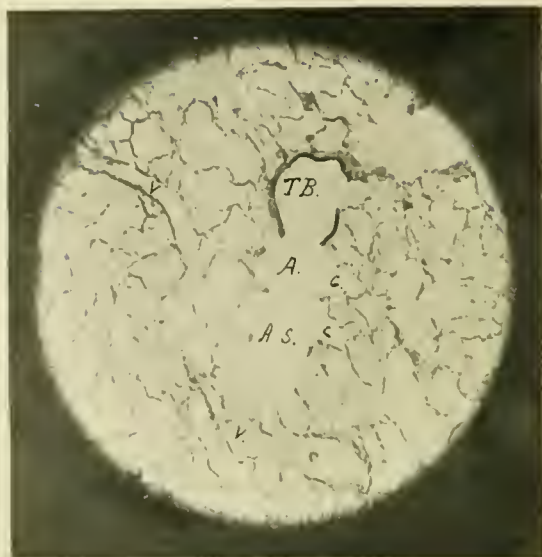
times gone by than at present, thanks to antitoxin, in fibrinous bronchitis, or, even in the smallest tubes, as in capillary bronchitis, where through large parts of or almost the entire bronchial tract narrowing of the tubes takes place due to the actual existence of the mechanical obstructions in the tubes. Yet in all of these how different is the picture from that of the asthmatic, especially in the diphtherias of the larynx, trachea and larger bronchi. There seems to be no difficulty in getting the air out, but in getting the air in, we have just the reverse of what we find in the asthmatic, and frequently apparently the same amount of trouble both in inspiration and expiration.

Hence there seems to be something different necessary to explain why the asthmatic when he is dyspneic, when his whole system craves oxygen so that he is cyanotic, instead of finding himself with sunken chest wall, with intercostal and supra-clavicular spaces drawn in, and the muscles of the neck standing out, is forced to struggle for breath, with his chest fairly blown out, and with everything distended. It must be that air has gone into the lungs which finds no easy exit.

A careful review of Dr. Miller's work together with considerable discussion with him on this very point, has convinced me that there exists in the anatomical conditions present in the lung explanation for just this sort of dyspnea.

The bronchial mucous membrane has ciliated epithelium down to about the same point in the tubes as the cartilages, perhaps a little lower. At this same point or thereabouts the mucous glands, which have gradually been diminishing in number as the tubes grow smaller, disappear entirely. The tubes then consist of the circular muscular coats, even better developed in proportion to the size of the tubes than exists higher up, lined by a thin layer of tissue directly between a thin basement membrane, covered in by a thin layer of cells which gradually come down in height from the columnar, ciliated epithelium to a lower order of cuboid epithelium, to, in the terminal bronchi, be replaced by practically a pavement epithelium which merges into the absolute flat squamous epithelium of the atria and air-cells. The blood-

Fig. 1. Human Lung.



- T.B. Terminal Bronchus.
- A. Atrium.
- A.S. Air Sac
- C. Air Cell.
- V. Pulmonary Vein.

vessels, as before stated, penetrate through the muscular coat from the artery, distribute themselves as a capillary net work in a thin layer directly beneath the epithelium, then gather themselves into small trunks just outside of the muscular coat and by very short intervening trunks enter into the tributaries of the pulmonary vein.

You have, therefore, in the terminal bronchus and in the next larger sub-divisions these conditions prevailing which are practically that of a very thin walled tube resembling an artery as much as anything on cross section except that it has an epithelium lining it. When the terminal bronchus ends and opens out into the atrium as will be seen in the accompanying illustrations (Figs. 1 and 2,) the muscular fibers suddenly stop, and at the point of cessation develop into a distinct sphincter-like ring the contraction of which would very naturally diminish the size of the tube, so much so that air could move to and fro through it with extreme difficulty.

Now the terminal bronchus is the door-way or the opening into a comparatively large sac composed of atria, air sacs and cells. So that if one considers that each terminal bronchus has from three to five atria, each atrium has from three to five air sacs, and then from the wall of the air sacs, the atria themselves, and the terminal bronchus there bud forth air cells, each terminal bronchus supplies an elastic sac, the lobule, which is many times greater in cubic contents than its own narrow lumen. Diagrammatically it may be illustrated as follows. (Fig. 3).

Now suppose that this already narrow opening into this larger sac is suddenly contracted by a spasm; the air which the cavity then contains cannot get out at all or with difficulty. The oxygen which is contained in this residual air is readily exhausted. There being now but a lessened supply of air to the given lobule, and to lobules all over the chest, deficient oxygen sends the demand to the respiratory centers for more air and a strong inspiratory is made. A little more air is sucked into the already distended cavity, but as expiration is usually more or less of a passive act, inspiration having been greater than expiration, through the narrowed outlet less air goes out than comes in. Now if you

contemplate the sizes of the space to which each respiratory terminal bronchus is tributary, you will see how easy it is to picture, theoretically at least, that, with inspiration forced, intense, urged to its utmost capacity by the need for oxygen and the demand sent down by the respiratory centers, little by little the respiratory space beyond the terminal bronchus becomes more and more stretched. Soon this space is distended to its utmost capacity, and the crowding of one lobule upon the other causes it to be more difficult for air to get out, and the greater efforts on the part of the inspiratory muscles not only still further distend, but prevent the collapse of the chest walls which might be made by great effort to come down a little.

We have been taught by physiologists to consider that the inspiratory muscles from their number, size and attachment were more powerful than the expiratory muscles. Perhaps the strongest instinct toward the preservation of life is the necessity of supplying enough air, and in cases of sudden death by chloroform by paralysis of the heart, it is well known that the respiratory muscles will continue to work after the individual is really in fact dead. Now with this inherent purpose, this strong impulse of nature to stimulate the inspiratory muscles to their utmost capacity when air is needed, it would almost seem that the inspiratory muscles could in a case like this suck in more air than could be forced out were the muscular development, inspiratory and expiratory, equally great. As it is, the inspiratory muscles being physiologically stronger, and with the before mentioned great impulse, one might almost say inherited from generation to generation of ancestry, it seems little wonder that given the exact conditions mentioned, more air must be sucked in through an opening of this kind than could be breathed out. Every lobule is a closed sac and does not communicate with its fellows, but simply with the terminal bronchus. If, therefore, each of these lobules, and a very large number of them, become thus distended, the volume of the lung is bound to be increased. Hence the thorax would gradually be blown up, as it were, into a position of full, forced, inspiration, which is exactly what we have.

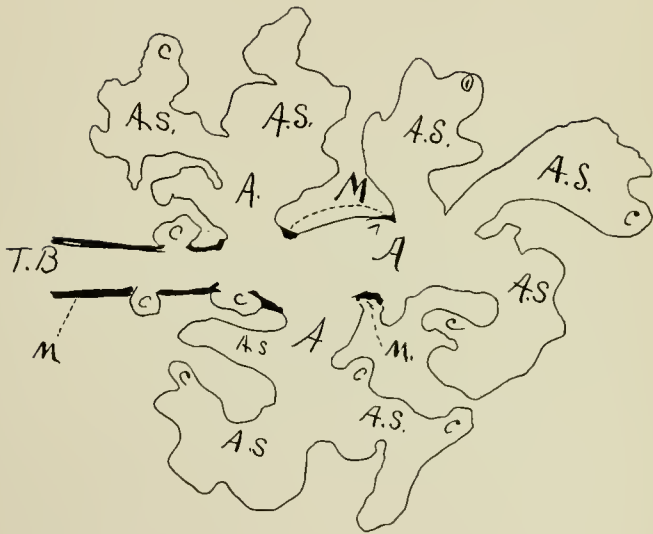
Fig. 2. Lung of Cat x 20.



Photograph of a camera lucida tracing.

- B. Bronchus.
- B.R. Bronchiolus respiratorius.
- T.B. Terminal Bronchus.
- A. Atrium.
- A.S. Air Sac.
- Art. Pulmonary Artery.
- V. Pulmonary Vein.

Fig. 3. Diagram of Lobule.



T.B. Terminal Bronchus.

A. Atrium.

A.S. Air Sac.

C. Air Cells, which spring from air sacs, atria, terminal bronchi, and even from the next larger bronchiolus respiratorius.

The deep black line M indicates muscle fibres.

It might be asked, what parallel have we of such a phenomenon? I do not know that we have any in the human body under normal circumstances. We have the reverse existing in the middle ear constantly, where the forces which suck the air out of the middle ear when the tube is narrowed are greater than those which ordinarily force the air into the cavity. Hence the air is sucked out and the drum becomes forced into the concave position. We can reverse the procedure by taking a Politzer bag and blowing the ear up, when the more powerful inspiration inflates the ear to its fullest capacity, and it may be a question of minutes or even hours before the swallowing process with a very narrow tube will have sucked the air out again. Similar reasoning has also been used to explain the collapse of lung lobules in capillary bronchitis where the tremendous expiratory impulse caused by coughing has forced the air out of the lobule and before inspiration could refill it the lobule has collapsed. Here is a case where expiration being greater than inspiration, causes the collapse, why is it not good reasoning to suppose that inspiration being greater than expiration, the lobule should be blown up?

Then when the attack clears up the phenomenon seems to support the line of reason that we are following, for how often have we all seen the subsidence of one of these attacks, when many times suddenly, or gradually, the patient's chest seems to fall. You can see it go down, and after the fall he takes his first long breath. But it falls first, before he inspires, being to my mind proof positive that the lung had all the air it could hold, and had to let it out before new air could come in.

This particular explanation of the inflation of the lobules, each by itself, would have as a natural result by continual repetition and stretching, an enlargement of the cavity and we would have exactly what we find in our old asthma cases, namely, vesicular emphysema. An emphysematous lung, if emphysematous all over, would, for the reasons indicated in the above explanation, cause the thorax to clinically assume the inflated position, or one similar to that of inspiration. The chest walls would cease to rise and fall much and the breathing would be more or less diaphragmatic.

Are not these just the conditions which we find in chronic emphysema?

Apparently therefore, bronchial spasm, with special stress laid upon the contraction of the terminal bronchi and the next larger ones with the sphincter-like ring surrounding the entrance into each lobule, explains, when rightly interpreted, every one of the phenomena which are exhibited in the case of the asthmatic. Certainly it may be said that the theory of bronchial spasm explains better at the present time as it always has, the major part of the symptoms of the classic attack.

A word should be said right here regarding the finer histopathological changes which occur in bronchitis of the asthmatic as these sometimes serve to further intensify the narrowing of the tubes.

It will be remembered that Curschman's "spiralen" and Leyden's crystals are more or less constantly present in the sputum of asthmatics. The latter come in other conditions and seem simply to signify that we have a chronic bronchitis. The former are much more pathognomonic of asthma.

Recently a very careful study of these "spiralen" and also of the lungs of a patient who died in an asthmatic attack, has been published by A. Fraenkel,* who finds that the spirals are composed of an inner core which is very firm in consistence around which there are wrapped coatings of mucus, the latter being more fluid toward the outside. In hardening these clumps and making cross sections for microscopical study, he has been able to differentiate the inner core as being morphologically something entirely different from the outer coatings of mucus, and seems to give weight to the opinion that the core itself is probably made up of more or less disintegrated cells which have been squeezed and compressed into this shape, and that then on the way out of the position where they were formed, they have received these coatings of mucus.

This would seem to fit in very nicely with what we know

**Deutsch Med. Wochens*, No. 17, Vol. XXVI, p. 269; (Apr. 26, 1900).

of the anatomy, and we would conclude that this inner core was formed in the finer bronchial tubes below where the mucous glands were present. During the spasm of the smaller tubes, the epithelial cells and other products of the existing bronchitis are squeezed by the contraction of the muscular fibers into the center, and we could readily conceive that if the spasm existed for any length of time, that they would be compressed into a fairly firm mass.

Now if this was forced later when the tubes relaxed into the larger ones, and so on up, it would naturally assume the spiral shape, and would receive as it went along coatings of mucus like that found in the larger tubes, and we would have just the picture which we find.

Fraenkel also found in his study of the lung that there was not much mucus ever got down into the terminal bronchus and almost never into the atria and air sacs. Frequently there seemed to be also a sort of loosening of the cells in the outer coats of the epithelium in the finer bronchial tubes as well as in some of the larger ones, so that he found the very conditions to exist which reason had deduced from the study of the spirals themselves.

We may therefore accept that it is fairly certain that these spirals are the result of the squeezing together of the inflammatory exfoliations, and we cannot but contemplate how much of an obstruction such a column of matter would be lying in the lumen of an already contracted tube. It certainly would intensify the difficulty in getting air either in or out of the asthmatic's lungs.

These grosser pathological changes in the walls of the tubes, however, probably are only present in the lung of the sufferers from prolonged and severe attacks of asthma, or rather of chronic bronchitis and asthma and might be said to be indicative of the chronic bronchitis which we have assumed in the course of our argument as always present in those people who suffer through years from asthmatic paroxysms.

A good deal more might be related of the changes which are found in the bronchial tubes of those suffering from asthmatic bronchitis, but the matters that have been mentioned are those which refer especially to the part of the

study of the subject to which we have devoted ourselves in this paper.

Having then gotten some sort of a conception of what asthma is, and without wishing to weary you by a long consideration of some of the side issues such as the effect of the spasm upon the circulation and the damming back of the blood upon the heart, or the long line of argument which might be brought forward showing that when all is said, the asthmatic paroxysm is but one of the erratic phenomena of a neurosis, let us consider asthma in its relation to other factors, especially the nose.

Some asthma cases are distinctly nasal in type, some not. In the former frequently nasal disease is pronounced, self-evident, and precedes the development of the asthma, as for instance when after years of suffering from hay fever, the patient later develops more or less perennial asthma. In other cases the nasal disease is not so evident, and only discovered after the asthma exists for some time, frequently the connection being recognized when the treatment of the nasal condition benefits the asthma.

By far the majority of all asthmatics have distinctly diseased nasal organs, but, I hear some of you say, nearly everyone in this particular climate has some catarrhal difficulty, i. e., a diseased nose, but I may conscientiously go still further and be more precise, saying that there are certain lesions which are almost invariably present in these cases.

Where there is any trouble at all present in the nose, it is extremely rare not to find it in the middle turbinal region and usually of the edematous type, frequently actual polypus.

Now that the same type of nasal disease is always present in by far the majority of all asthmatics, would seem not to be merely accidental, hence there are suggested three possibilities; that the nasal condition causes the asthma, that the asthma causes a perverted condition of the system and that the nasal disease, or some inherent difficulty, some deeply seated systemic condition causes both the nasal and the bronchial disease and without which cause neither could act upon the other. This latter would seem obviously so, for asthma can exist in the same body with an extremely healthy

nose, or a most radically diseased nostril may exist without asthma, and may present the most exquisite reproductions of the classical picture of the asthmatic lesions of the nose.

These facts being accepted as correct, the next inquiry would be does there exist any condition of the system which could produce on the one hand these typical lesions in the nose, and on the other hand be guilty of inducing bronchial disease of the asthmatic type? I think this may be answered affirmatively.

On another occasion* the writer has attempted to prove that in the production of the nasal diseased tissues which may be called characteristic of the asthmatic, we must revert to a final first cause why under precisely similar conditions of inflammation, habit and environment, a certain set of individuals become afflicted with edematous nasal hypertrophies and with polypus, and others never have them.

This final first cause seemed to lie in the inherent peculiarities of the tissue affected, the actual morphological constituents of the mucous membranes in the different types of individuals being different.

It was then suggested that as hay fever, hyperesthetic rhinitis, and the edematous hypertrophies always occur in a certain class of individuals which might be called neurotic, might there not be about all neurotics certain peculiar conditions inherent to many of the tissues of the body? Certainly we could always find clinical similarities, hyperesthesia, nervous neuralgias, headaches, with vasomotor disturbances mentioned as being perhaps the most evident of all. It might even be said of these people that certain mental conditions and irregularities of the vasomotor nerves produced diseased organs, for certainly when a given set of vessels have been distended off and on for years, organic changes are almost bound to occur.

There would seem to follow to explain the local lesions in the nose that we might conclude that the vessel walls were flabby, deficient in muscular and elastic tissue, and we found by microscopic study at least in the mucous mem-

**N. Y. Med. Journal*, Oct. 28, 1899.

brane of the turbinates of these individuals, that this certainly occurred.

Following this line of argument, it seemed that given explosive nerves, lack of vasomotor control, and thin-walled veins, and we had on hand all that were necessary to explain many of the phenomena of the neurotic individual.

Applying this same train of thought which is fairly well supported in the premises, and what we have found as seemingly true in the nose can be observed in the case of the bronchial tissues. What is in most people a simple trifling bronchitis and slight congestion of the bronchial mucous membrane, produces very different results in our explosive, neurotic patient, and without going into wearying detail, we readily see the spasmodic element brought to the front and the bronchial muscular fibers begin to play a most prominent part in the barked cough and in the oppressed breathing. Frequent congestion brings about more or less thickening, organic changes, and the existence of irritability of the nerves freely supplying the bronchial membrane. These become in turn as sensitive to various substances and conditions of their environment as does the nasal mucous membrane, and of a sudden our patient has as a result of an over-dose of pollen the sneezing and the bronchial spasm, coming on together.

When this line of argument is being followed out, it is usually assumed that to have asthma we ought to have previously existing bronchial, as well as nasal disease. This we have been often able to deduce from patients some of whom can tell you as is instanced by a number of writers, notably Thorowgood, how the first attack of asthma is brought on by a fright or some other sudden shock when the patient was suffering from an ordinary simple bronchitis. This also surely indicates that some asthmas, therefore, are probably nervous in origin.

Other asthmatics have the history of their first attack, as well as subsequent ones through the nose as when suddenly disturbed by certain odors or by irritants, as smoke or dust, or perhaps even more directly nasal in origin when, as happened in a case of my own, the patient was afflicted with his first attack of asthma as a result of the treatment

to which his nose had been subjected for subduing an ordinary hypertrophy. Or, not with the wish to weary you with needless detail, but to illustrate how purely nasal some cases of asthma are, when the attack of asthma in one case may be made to come on and in another case may be made to cease by simply tickling certain sensitive areas of the nose with a probe.

However much we may believe the nose to figure in the asthmatic complex, I think it will be plain from the nature of the argument which has been followed out in the latter part of the paper that I wish to be understood as believing that the nose is only one of the factors, or what might be called the initiator of the bronchial spasm.

Asthma is a bronchial spasm brought on usually by the intermediary of certain exciting causes which have to connect the two, the explosive neurotic condition of the nervous system. If this is true, it would follow that there could be other organs or conditions which could operate to produce an asthmatic attack other than the nose, and so we all know how, when there occurs in certain individuals a disturbance of the equilibrium of the kidneys and their work, immediately there results prolonged and aggravated seizures of asthma. How many an asthmatic will relate to you that he cannot enjoy too late a dinner, too heavy a smoke, cannot catch cold, in the strict sense of the word, without having to repent at leisure through the medium and penance of an asthmatic attack, and as already mentioned, many of these victims avoid sudden shock, blinding light, odors, and disagreeable things of all classes, because they know that if these things cross their pathway, they are immediately put into the toils of the asthmatic attack.

Hence I think I may conclude by saying that in these days of the end of one century and the beginning of the other, no thorough rhinologist or no considerate general practitioner will fail to consider the nose as one of the organs whose diseases lead to the production of asthma, neither shall we find either of these groups of medical men as looking to the nose, or any other one single organ, as the sole cause of this most distressing complaint.

THE ELECTRICAL TREATMENT OF UTERINE FIBROIDS.

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By the electrical treatment I mean the application of the galvanic current. Its application is indicated in cases of uterine fibroids in which the symptoms of pain and hemorrhage, one or both, are pronounced, and may be used when they are absent for the purpose of promoting absorption and thus reducing the size.

I use a battery consisting of forty-five Leclanche cells, with a cell selector, whereby any one or more of the cells can be connected in the current; a switch by means of which the poles can be changed; a current controller, by means of which the current can be gradually increased or diminished without shock; a milliamperemeter to register the exact dosage; a large clay electrode 6x8 inches, which is usually applied to the abdomen attached to the positive pole, and a series of amalgamated or steel uterine electrodes of various sizes.

I have had no experience with the dry-cell batteries in these cases, but after a discussion of the matter with Dr. E. F. Parsons of Thompsonville, he gave it a trial and reports:

"Have treated two cases with dry-cell batteries and very satisfactorily for the purpose desired viz: arrest or decrease of hemorrhage during the menstrual periods and the tiding over the patient in comfortable health until after the menopause.

"The treatments were not very frequent nor were they instituted vigorously enough to reduce the size of the growths, but only to keep periodical hemorrhage in abeyance. This so far has been accomplished. The strength of current was limited to 20 to 40 milliamperes."

There is nothing in the armamentarium, or in its application but that can be readily learned by an intelligent physician.

As early as 1871, the treatment of uterine fibroids by galvanism was begun by Ephraim Cutter; the application being made with electrodes consisting of two small needles introduced into the uterus per vaginam, in his first case, August 21, 1871. In other cases one needle in the uterus and a sponge electrode placed over the pubis. Most of his cases, however, of which he reported fifty in 1887, were treated by puncturing with both electrodes, attacking the most prominent portions.

Improvements in application were devised by Apostoli early in the eighties, as a result of a careful study of the subject, and consisted in the intra-uterine application of the negative pole and a large, close-fitting, external, positive pole, for which sculptor's clay afforded the best material. It is not necessary to even attempt to review the experiences with this method of treatment, of the many conscientious practitioners, notably Thomas and Skene, Keith of London, A. Laphorn Smith of Montreal, A. J. C. Skene, Augustin Goelet, G. Betton Massey, E. H. Grandin and many others of this country who have been successfully using it in their practice for years. While the ordinary physician lacks the confidence and skill requisite to perform the necessary surgical operation for the extirpation of these growths, he can at comparatively slight expense, place himself in a position to at least symptomatically cure a very large percentage of these cases.

It requires time and patience to keep the appliances in perfect order, and to make the necessary applications. These are the principal objections, if objections they be, to its use.

The usual care and attention to asepsis which is given by the painstaking surgeon, should apply in this treatment. An antiseptic douche should precede the seance, and it has been my custom to introduce a speculum and thoroughly cleanse the vagina with Dobell's solution and also the canal before introducing the electrode, which should also be aseptic. I prefer to introduce the electrode through the

speculum before removing the latter which can be again inserted before the electrode is removed, the condition noted and suitable applications made. Where the os is very sensitive, an application of cocaine can be made rendering the introduction of the electrode painless.

By means of the Bailey improved rheostat, the current can be increased so gradually as to produce no shock (usually no sensation within the uterus, a feeling of warmth upon the abdomen under the positive electrode,) until the patient experiences a sensation of tension within the uterus and a burning sensation under the abdominal pad, when a rest can be taken. Tolerance will soon prevail, and an increased amount of electricity can be applied depending upon the strength, disposition, and nervousness of the patient. The amperage will vary from 40 to 60 milliamperes. My experience has been, that a stronger current can be borne but for a very few minutes, and causes extreme exhaustion, oftentimes dizziness and faintness, so that I never now push the current above that dosage which the patient can tolerate without too much effort, but continue its application for a considerable period, often as long as thirty minutes.

I believe that by this method of application, as good results have been achieved as by the use of a stronger current for a shorter period. Nearly as much care is necessary in diminishing the current at the close of the seance to avoid shock and I often employ five minutes, reducing from sixty milliamperes.

Joseph Taber Johnson says: "The great surgeon in Gynecology *has been* the man who removed the most organs; *now*, it is the man who saves the most."

Dr. A. J. C. Skene in his Diseases of Women says "fibromata of the uterus while the most frequently seen of all neoplasms of the sexual organs, are the most harmless so far as their tendency to destroy life."

He further states concerning electrolysis: "this method takes the highest rank in treating fibroma of the uterus.

"Hysterectomy is adapted to large, rapidly growing tumors which do not yield to less heroic treatment, but render the patient useless and threaten her life."

Dr. Laphorn Smith, in an address upon this subject before the American Medical Association at Baltimore in 1895, stated: "the greatest claim for the electric treatment of fibroids that can be made, is, that it has no mortality and that it is absolutely safe:

"The action of the electric current as applied to fibroids is three fold. The first is not mysterious; it is but the arrest of circulation in dilated capillaries by the electrochemic cauterly.

"The second is no more difficult to understand than the action of ergot or strychnine. It not only tones up the vasomotor system, making the caliber of the arteries less, but it calls into play the special and remarkable power which the uterus possesses of controlling its own circulation, when it has the strength to contract.

"The third effect of the current, its electrolytic action, is, I admit, as mysterious as it has ever been, but not more so than the invariable absorption of syphilitic gummatous deposits following the administration of iodide of potassium.

"The electric treatment of fibroids reduced to the simple equation, and stripped of all the claims which were at first made for it, stands to-day upon a foundation so strong and true, that it will find an honorable place in the treatment of fibroids so long as women shall dread to die by the surgeon's knife, which I believe will be as long as the world shall last."

G. Betton Massey says—(Conservative Gynecology p. 125). "Any uterus suspected of being the seat of this neoplasm should be promptly placed under the Apostoli treatment therefor, the treatment being continued until the diagnosis is either cleared up negatively by the restoration of the uterus to its normal dimensions, and the disappearance of symptoms with the cure of the simple hyperplasia that existed, or until a nodule can be made out of the shrinkage of the uterine wall surrounding it. In the latter case, we are enabled to make a diagnosis of an incipient fibroid with certainty and should continue the applications for a longer period to bring about a still farther retrogression, or a possible disappearance of the tumor itself.

"Fibroid tumors are essentially and strictly benign and

have no connection whatever with malignant growths, though in very rare instances they have been known to become the seat of malignant degeneration late in their history. Such a termination is, however, so rare as to be a curiosity. The life of the patient is never threatened, but by some form of degeneration, and it has only recently been appreciated by the profession that the deaths after efforts at removal by the knife represent almost the entire mortality of these growths."

The most ardent advocates of the electrical treatment of uterine fibroids do not claim that it will cure every case of a fibroid nature, although the conviction is strong that it will do so in uncomplicated cases, viz: that where it does not succeed, there is some degenerative process present, such as a cyst or an abscess within the tumor or a breaking down of the epithelium, from some cause, in which the application does not have a curative, but sometimes an irritative effect. In these cases the application does no harm, but really good in that it assists in the formulation of a correct diagnosis and points the way to a more radical and serious method of treatment.

In Dr. Keith's publication reporting the details of one hundred and six cases treated he says:

"No large uterine tumor has, with us, entirely disappeared under the electric treatment, but in four cases of small fibroids, three of which come into the present series, there is not now a trace to be found.

"The carrying out of this treatment faithfully to the end is not an easy matter, and old tumors that are large and have bled for many years, take a long time to improve. The treatment runs away with time and it requires care and thought. To the surgeon, by far the simpler plan is hysterectomy and the removal of the ovaries; but Dr. Apostoli's treatment saves our patient from risk of life by operation and saves them also from a horrid mutilation, the one thing that they all dread. We believe it to be the right treatment and our patients must get it, however great the inconvenience and monotony it may be to ourselves.

"Though our result after hysterectomy shows the lowest mortality of any yet recorded, and though we have had but

a single death after removal of the ovaries for fibroid, in almost one hundred operations, we reject even the minor operation in favor of Dr. Apostoli's treatment, and we reject hysterectomy altogether on account of the mortality that has hitherto attended it all over the world. The method given us by Dr. Apostoli is good, and it will endure.

"Hysterectomy is a hazardous operation for the removal of a tumor that, of itself, rarely shortens life. The minor operation, on the other hand, the removal of the ovaries, requires no surgical skill for its performance. It is a great mutilation to a woman, being simply castration; and women are beginning to find this out. It is not always successful in attaining its purpose, for you will find in these pages some cases narrated that were cured by electricity, where operations on the ovaries had failed to give any relief."

I have selected three cases from my records to illustrate my experience with this treatment.

Case 1. Mrs. K. P. (B.) aet. 32, was treated in March, 1889, for chronic metritis, retroflexion, and dysmenorrhea, before and during the entire period. The retroflexion was overcome and the inflammation readily yielded.

November 18, 1890, she returned, complaining of menorrhagia since the last menses, October 10th; before that time, her flowing had been scanty; smothered feeling and shortness of breath; abdomen bloated; constipation; urine, light colored and frequent, very free and ammoniacal; appetite, voracious; left temporal and occipital headache, and pain in sacral region.

Examination—Uterus enlarged, sound passed readily 3 1-2 inches. Posterior and to the right, is a mass associated with the uterus as large as a turkey's egg, and somewhat sensitive. Local treatment consisting of douches, applications of iodine and tampons medicated with belladonna, iodoform and glycerine were used and ergot one quarter dram t.i.d., after meals.

Early in December she had a severe cold following exposure and developed a peritonitis which confined her to her bed for several days, and aggravated her condition. She grew steadily worse, the tumor increasing in size and an-

other developing upon the right side extending anteriorly.

An application of galvanism was made first, February 7, 1891, a large clay positive electrode applied to the sacrum and a large sponge (negative) in left inguinal region. The current was gradually carried to twenty milliamperes, as gradually reduced, the poles changed and the same process repeated; Iodine to cervix and vault, belladonna and iodoform tampons; potassium iodide gr. xxx internally three times a day.

Treatment February 13th: No pain after last treatment; intra-uterine negative (3 1-2 inches); sacral positive ten milliamperes for ten minutes, local applications repeated.

Third treatment, February 28. Menses February 16th to 20th—not very free, only a little pain. Has been feeling good. Intra-uterine negative from ten to twenty-five milliamperes for ten minutes—iodine, etc.

Fourth treatment, March 7th. Has had pain since March 2d inside, low on left, no discharge; intra-uterine negative twenty-five milliamperes fifteen minutes.

Fifth treatment, March 24th. Menses 10th to 17th, considerable pain and flowed freely; since 17th has had much lameness in arms and legs. Intra-uterine positive (ten milliamperes five minutes) followed by negative twenty-five milliamperes for ten minutes, also faradism, from feet to hands; potassium iodide gr. v, t.i.d.

Sixth treatment, March 31st.—Pains all over still continue, and feels lame and aches. Not much discharge after last treatment. Intra-uterine negative to thirty milliamperes for twenty minutes; faradism from feet to hands. Continue potassium iodide, increasing 1 gr. daily till taking gr. x, t.i.d.

Was not seen again till June 4, when she reported that she had not felt so well in five years. Uterus very mobile, and very little sensitive, tumor about as large as my fist posteriorly and to the right; sound passed three inches.

July 25—Has been regular with menses, less free, no pain, little leucorrhœa. No inflammation of uterus, continue potassium iodide gr. xx, t.i.d.

November 6, 1891.—Regular menses each month—about five days—usual amount, no pain; stopped potassium iodide

in September. Notices enlarged abdomen, but has no inconvenience; this month some leucorrhœa. An examination shows fibroid smaller, depth of canal 2 1-2 inches, no sensitiveness.

In this case the pain was relieved by the electricity upon its first application, the electrodes being applied externally and the current only carried to 10 milliamperes.

The intra-uterine positive application, (10 milliamperes 5 minutes), March 24, at time of fifth treatment, controlled the memorrhagia, and after the sixth treatment, there being no more pain or hemorrhage, and the tumor having largely diminished in size the electrical treatment was discontinued and the iodide continued which being well tolerated, she was enabled to take for two months.

May 22, 1900.—Says she has never had any trouble since her treatment in 1891, is perfectly well. Examination shows no tumor, uterus retroverted, the fundus being attached to the sacrum, no sensitiveness.

Case II. Mrs. D. W. C., aet. 40, married fifteen years. (March 23, 1898).—Housewife—one labor, six years ago. I first saw her at boarding-place writhing with abdominal and lumbar pain with which she had been suffering for several days. The abdomen was tense and sensitive. There was some slight bloody discharge, pelvis by digital examination seemed filled with dense, hard inflammatory exudate. Perfect quiet in bed, Hg. Cl., douches and suppositories of aristol (gr. iij), opium (gr. j), and belladonna (gr. 1-4), enabled her to come to my office March 30.

She had been suffering from pain in lumbar region, down back to right knee for years, but much worse the past month, and extended to left side and across abdomen, incapacitating her for her household duties. Bowels usually irritated by cathartics; movements light and thin like a child's. Feels tired and has no ambition, appetite poor, nothing tastes good, very nervous, easily excited and sensitive. Has much headache, frontal or occipital, sometimes with nausea and vomiting. Restless and cannot sleep; sometimes lies awake three or four hours. Catamenia began at thirteen; last occurred March 5, to March 7, recurs every four weeks; amount always small lasting three or

four days. For a week before period, has severe pains "all around" diminishing after flow is established. Has a thick, light colored leucorrhœal discharge most of time, for which has used douches more or less.

Examination—Fistulous opening at left and anterior to anus; passed probe four inches. Large uterine fibroids filling pelvis making a dense, hard, irregular-shaped mass with indications of intra-uterine breaking down. A palliative treatment of iodine with glycerine tampons was given, and she returned in one week for an electrical treatment.

This treatment was intra-uterine negative, sacral positive to 15 milliamperes for six minutes. No pain was caused, slight bloody discharge followed removal of electrode. The positive external electrode was placed upon the sacrum because of localized pain there.

April 13—Second treatment of 20 milliamperes for eight minutes was given, with the same application of the electrodes.

April 21—Third treatment of 40 milliamperes for ten minutes was given vagino negative, sacral positive, the position of the tumor being so changed as to make it impossible to enter the cervical canal.

May 5—Fourth treatment of 40 milliamperes for ten minutes was given vagino negative, abdominal positive, and borne nicely. Her menses April 26 to May 1, were attended with much pain, but were more free than usual; says she is feeling finely.

May 12—Upon inquiry as to how she was feeling said "I am dancing all the day"; "Free from pain."

The fifth treatment similar to the last, was given to 50 milliamperes.

Eleven treatments in all were given, the last being upon August 11.

June 2.—The tumor has so diminished in size as to enable me to rotate it sufficiently to bring the cervix forward and to stretch it with graduated dilators so that the intra-uterine electrode could be inserted one and one-half inches.

Case III. Miss C. O. B., aet. 40, housekeeper, was brought by her family physician for consultation February 26, 1891. For five years her menses had been increasing

in duration and amount until there was only one week's respite each month, and large amounts of blood in hemorrhages, which came on suddenly and recurred frequently so that she was obliged to keep very quiet and in bed much of the time; much pain in sacral and left inguinal regions and left leg from which she is seldom free. Is very much concerned about herself, fearing she will never get any better without an operation and dreading that. The left side of the pelvis was filled with a fibrous growth which was irregular in outline and extended upward to a level with the umbilicus; another growth was attached to the fundus.

She willingly acceded to my advice to try what electricity would do for her (while awaiting the menopause) and treatment was given at once, consisting of an intra-uterine negative application carried to 25 milliamperes and lasting 10 minutes. These treatments were repeated March 5, and 25, April 1, 8 and 23. When she came for her sixth treatment April 29, she reported: "No pain in back." "Am able to go up and down stairs, stepping with each foot for the first time in five years."

I will not enter into detail respecting her treatment at this time, but will summarize it by stating that her treatment continued over a period of five years during which eighty applications of electricity were made (the last being given January 17, 1896), the highest amperage being 60 milliamperes, tolerance being the guide, and the time of treatment being from twenty to thirty minutes.

Several times, dilatation of the cervix, once under ether was performed and several times vagino-abdominal applications were made. There were times when the tumor seemed to grow rapidly and there would be a recurrence of the old symptoms to some extent but a few treatments would again reduce the size and relieve the distressing symptoms and we would both be encouraged. She entered heartily into co-operation with me in her treatment, and to that fact is due the beneficent results.

Her physician informed me that: "She is well and strong. Her abdomen has diminished in size during the last few years. Has had no hemorrhage during the past five or six years, is perfectly satisfied that her treatment

was by means of electricity and not with the knife, and would recommend it for conditions such as her's was ten years ago."

In the discussion of this subject which it has been my privilege to present to your attention, I have been fortunate in securing the co-operation of some of the most experienced Gynecologists who have given special attention to this method of treatment.

First. I would present Dr. Howard A. Kelly who reports May 12, 1900:

"I have had one most interesting case of a fibroid uterus treated for years most thoroughly by Apostoli in Paris.

"The patient continued to have excessive hemorrhages and I this winter did an abdominal hysterectomy.

"Macroscopically there was no evidence of the electrical applications.

"This is my only recent experience."

Respecting this treatment Dr. Kelly tells us (Operative Gynecology, vol. II., p. 354.) "The galvanic electric current is probably the most efficient means of controlling hemorrhage and producing such permanent surface changes in the uterine mucosa as will tend to prevent its return."

Augustin H. Goelet under date of May 12, 1900, says:

"That after most diligent and painstaking trial of this treatment, I have come to the following conclusions, viz:

"First. It is applicable only in interstitial growths of moderate size and has better effect upon myomatous growths.

"Second. I have never seen a tumor of this kind (fibroid) disappear under its use.

"Third. It does in some cases effect considerable reduction in the size of the tumor.

"Fourth. It will relieve the symptoms produced by these growths, when it is used appropriately. It will relieve pain, congestion and pressure symptoms, and will arrest hemorrhage. The relief, however, is not always permanent.

"Fifth. Coincident with the local improvement, there is always a marked improvement in the general condition of the patient.

"Sixth. It does not *per se*. produce adhesions, but on the contrary, with the shrinkage of the growth, adhesions

which had existed previously, are stretched and in some instances torn loose. It is a mistake to suppose that electricity will produce adhesions when it is used in a proper manner.

"When numerous adhesions are examined in these cases, on opening the abdomen after electricity has been used, they have either existed previous to its use or it has been used improperly.

"The introduction of unclean electrodes or the carrying of infection into the uterus from the vagina, would certainly set up inflammatory action and tend to produce adhesions, but that would be no fault of the agent employed."

G. Betton Massey, who has without doubt had the largest experience in this treatment of any practitioner in the country, writes May 13, 1900:

"Am applying the methods daily with but slight modification. The only comment called for by me is one of regret that so many surgeons should still persistently ignore the facts that have been marshaled in favor of this treatment in their published papers, many of them dismissing the subject in a line of mere condemnation. It is a satisfaction to know that many others are quietly using this method, and getting excellent results, even though they write little for the journals, so that, on the whole, I feel confident that the Apostoli treatment is steadily on the increase amongst those physicians who are willing to give it a patient trial in suitable cases.

"Those surgeons who wish to use the knife only, will of course condemn it, and we ask too much of average human nature to expect them to act differently.

"The slight modification that I said I now make in the method, refers to the use of an amalgamated gold or copper electrode whenever the bare intra-uterine pole is positive. I now use this invariably, securing a diffusion of antiseptic mercurials coincident with the electric action *per se*."

Dr. A. Laphorn Smith of Montreal, an early pupil of Apostoli who was largely instrumental in introducing his treatment into this country, writes under date of May 19, 1900:

"First. Owing to the great improvements in technique, my last ten hysterectomies for fibroid all recovered; seven in 1899 and three in 1900. Some of them were very large tumors.

"Second. I am gynecologist at three hospitals and one very large dispensary so that I am very much pressed for time, being also a professor in the college here and having my private practice besides. For these two reasons I am using electricity much less; but I have just as much faith in it as ever. And I have good reasons for believing in it, for I meet many patients in the streets of this city, who were invalids from fibroid tumors and who were cured by electricity and are now well. Out of one hundred and two patients who came to me with fibroids from all over this continent, sixty-five have been completely cured of their symptoms so that they have not required to consult a physician for them since; and several of the others were benefited, although not cured. While the failures were all those who could not bear a high current, some of these were afterwards operated on and found to have badly diseased tubes and ovaries.

"So that, while circumstances prevent me from giving it the preference, I can still strongly recommend it to those who are not compelled or enabled to make themselves abdominal surgeons, as I am obliged to be."

CONCLUSIONS.

1. Electricity properly applied may be considered a specific for the treatment of uterine fibroids.
2. A moderate dosage, 40 to 50 milliamperes, applied for twenty to thirty minutes relieves pain and influences a diminution in size.
3. There are no dangers to be feared from its use if carefully conducted.
4. Puncture is not necessary in order to obtain practical results.
5. No serious operation should be undertaken until after electricity has been tried.

If, upon this imperfect presentation of the subject, I have enlisted your interest sufficiently to cause you to entertain

a desire for a more full knowledge, I would refer you to the publications of A. Laphorn Smith, Doctors Thomas and Skene, Smith on Electricity in the Treatment of Uterine Tumors, the International System of Electro Therapeutics, Grandin and Gunning on Electricity in Gynecology, but especially to the last edition of Conservative Gynecology and Electro Therapeutics by G. Betton Massey.

Dr. Wiggin said that his experience was limited in the line of Dr. Segur's paper, but he was very much interested. However, it was no longer necessary in case of fibroids, to remove the ovaries and perform hysterectomy. Cut into the uterine tissue, shell out the fibroid and close up the wound with sutures. It is better and takes less time than hysterectomy in serious cases. The best surgeons now say, if there is a neoplasm remove it. Fibroids seldom undergo malignant change but carcinoma have appeared, caused by irritation of such tissue.

HYSTERECTOMY.

P. H. INGALLS, M. D.,

HARTFORD.

I was rather forcibly impressed with the change in the attitude we are now taking towards fibroid growths of the uterus by the reply made to me only a few weeks ago by a patient who came to my office to consult me concerning a large fibroid which was gradually increasing in size and was making her considerable trouble from weight pressure and too free menstrual hemorrhage. I did not recognize the patient and when after making an examination I advised her to submit to a hysterectomy she replied, "Why, when I saw you six years ago you said that operations were not advisable for cases like mine." I have no doubt but that at the date she mentioned I had given just such advice for it is probably within the knowledge and experience of every practitioner here that a very few years ago we were prone to tell patients with fibroids that surgery offered little hope and that the chances were if they could stand the pressure and loss of blood until nature kindly interposed with the Menopause that then the hemorrhages would cease and that in the process of senile atrophy which takes place in the pelvic organs with that period they might hope for some diminution in the size of their fibroids and thereby obtain a slight measure of relief.

I do not think that in any of the branches of operative surgery has there been made more rapid progress than in the surgical treatment of uterine fibroid and the development of the work is most interesting. Several factors contribute largely to this end and first, of course, must be acknowledged the growth and perfection of surgical technique in general, and the gradual growth of aseptic work as an outcome of the perfect detail carried out which renders field of operation, the operator himself and every instrument and all surgical material absolutely beyond bacterial cultivation

before an operation is undertaken. It is owing to the state of perfection to which this method has been carried that the operator feels not the slightest hesitation in invading the abdominal cavity for the prosecution of his work whether it be slight or extensive. Again the simplification of the technique of the operation itself is a most potent factor, as it has shortened the time of the operation, reduced the amount of manipulation, done away with numerous and complicated mechanical devices, and thereby lessened greatly the danger from shock and subsequent wound infection.

The history of the progress of hysterectomy makes most interesting reading.

If the information which I have at hand is correct the first operation for the removal of the uterus for a fibroid was performed by Gilman Kimball of Lowell, Mass., September 1, 1853. The historian does not claim, as I understand it, that the uterus had not previously been removed in part, and when fibroids had complicated rather diseased conditions rendering it necessary to do partial hysterectomy in order to complete the operation undertaken, but this case of Kimball's is the first case deliberately undertaken after a diagnosis had been made. This woman lived. The operation which Dr. Kimball performed was not unlike the supra-vaginal amputation as practiced nowadays; long ligatures were left however which were brought out at the lower angle of the wound.

In these early years of operating the mortality from the operation was great and in the hands of many operators was over fifty per cent. This can be attributed to several causes. In the first place the operations were not undertaken except as a last resort and in cases of fibroids of large size which were already exerting a powerful influence on the patients and had so reduced them in general condition that they were in no condition to stand the shock of the procedure. In the second place antiseptic and aseptic surgery were unknown and the mortality from septic peritonitis was enormous in all cases of abdominal section, and in the third place the technique of the operation was crude as compared with the work of to-day. These facts rather led the surgeons of that day to deny operations except to such pa-

tients as they felt were doomed unless the growths were removed and many attempted myomectomies with bad results were substituted for the operation of hysterectomy.

In the seventies the attention of all operators was directed towards the best method of caring for the pedicle and the conclusion was almost universal that the pedicle must be made extra-peritoneal, and various devices came into use for the carrying out of the idea. The Serrenoed of Koeberte and the Clamp of Thomas as well as the stitching of the pedicle into the abdominal wound were used by various operators with a fair measure of success, yet the statistics while improving, did not prove good enough to allow the operation of hysterectomy to have a very general following.

It was the privilege of the writer of this paper to spend the greater part of the years 1880 and 1881 as an intern in the Woman's Hospital of the State of New York which at that time was the center of advancement in gynecological surgery. He well remembers the treatment accorded cases of fibroid at that time. The old routine of hypodermic injections of Ergot was quite generally practiced and the only cases submitted to operation were those in which degeneration in the substance of the tumor or pressure symptoms were so worked that the operation seemed one of actual demand and not of election.

The treatment of the pedicle was then the main object of consideration and the concensus of opinion was that the pedicle must be brought out of or at least into the abdominal wound and after trying various devices the cumbersome clamp of Thomas was the general method adopted. The period of sloughing was slow and tedious and in spite of the greatest possible care septic absorption frequently occurred and this, too, while we were working with the carbolic acid details of Listerism. In spite of our care the mortality was great enough to have a very discouraging effect upon hysterectomy and the operation was always approached with a feeling of dread.

About 1887 Joseph Eastman of Indianapolis, added very much to the technique of the operation by making sort of an excavator stump at the site of the amputation and using heavy silk cobbler's stitches to bring the part of the exca-

vation together, having passed drainage through the cervix. Eastman also was the first to dissect off flaps of peritoneum from the anterior and posterior surfaces of the mass to be amputated and utilize them for a cover to his stump.

In 1888 total hysterectomy began to receive consideration and in that year various operations are reported, the most frequent method being the combined abdominal and vaginal method, the hemorrhage being controlled by the application of clamps per vaginam, and the mass being removed through the abdominal incision.

In 1889 Dr. Lewis A. Stimson published in the *New York Medical Journal* his method of controlling the hemorrhage in the operation of hysterectomy which I think all operators admit was the step which has revolutionized the whole operation, and from that time it took a great step forward. It was the preliminary ligation of the uterine and ovarian arteries in their course thus obtaining a complete control of the blood-supply to the uterus before the removal of the organ was done. Dr. Stimson reported five hysterectomies in which this method had proven successful.

In the three years that followed this paper of Dr. Stimson's the prominent operators all over the country began to pay more attention to their work in hysterectomy and various modifications in the detail of the operation were made by different men and the value of supravaginal amputation and total hysterectomy received much attention and discussion and in the year 1892 at the meeting of the American Gynecological Society both methods were hotly discussed and both methods had strong supporters. But leaving out the argument as to whether partial or total hysterectomy was the most desirable operation the most wonderful thing of all, and what was of the greatest value to the profession in general, was the published list of operations and the wonderful percentage resulting.

The mortality from supravaginal amputation of the uterus for fibroids in the hands of six of the leading operators of this country show a reduction of four and nine-tenths per cent. Such statistics make a deep impression and this year, 1892, and this very meeting of the American Gynecological Society marks an epoch in the history of

hysterectomy. The operation was placed upon a legitimate footing and became at once recognized as a necessary, valuable, safe and justifiable procedure.

It is the opinion of your speaker that in surgical work each operator must adopt that method to accomplish the desired ends which he finds most easily adaptable to his individual style of work, and it has been his idea in the treatment of uterine fibroids by hysterectomy to pick and cull from the various differences in technique which have been ably and strongly advocated by their inventors such items of detail as proved in his hands the easiest of carrying out, and which simplified the operation, shortened its time and left the patient in the best condition for her future. It is not the intention of the reader to introduce any new and original ideas of operating or to furnish any new statistics but as a matter of local interest to describe briefly what in his hands has seemed the best course to pursue and to outline the technique which an experience much more limited than falls to the surgeons of the larger cities has taught him to be the easiest and simplest method of dealing with the operation.

The patient having been prepared with the same attention to detail as is practiced for every laparotomy is placed on the table in Trendelenberg's position and an incision in the median line made sufficiently long to permit the delivery of the tumor. Any adhesions which may be present are freed by the hand when possible, such as are of any size being tied off with fine catgut and the bulk of the uterine mass is seized with strong volsellum forceps and brought out of the abdominal wound. The intestines which have gravitated towards the diaphragm are protected by broad handkerchiefs of sterile gauze. A ligature is then passed external to the ovary and includes a portion of the broad ligament and the ovarian ligaments to control reflex hemorrhage and the ligament divided. A second ligature is then placed to include the sound ligament and vessels, and after placing a clamp the tissues thus included are divided and the same procedure is gone through with on the opposite side. The next step is to dissect off with the nail or handle of the scalpel a flap of peritoneum from the anterior

surface of the uterus the boundaries of flap being marked by an incision carried from the ligation of the round ligament to its fellow on the opposite side, care being observed in this step not to interfere with the bladder which is sometimes drawn up on the face of the tumor. A like flap is then made on the posterior surface of the uterus. We now can feel the cervix between the thumb and finger and can generally detect the pulsations of the uterine artery as it turns and passes upwards along the cervix. A ligature is placed on either side close to the cervix so as to include the uterine artery, and the uterus amputated just below the cervicocorporeal junction. Any small branches of the uterine artery which may appear can easily be seized in the forceps and ligated separately with fine catgut. The edges of the anterior and posterior peritoneal flaps are then carefully in-folded and stitched together with a running catgut suture thus burying below the peritoneum all ligatures and leaving the general peritoneal cavity absolutely shut off from the field of the operation. Formerly it was considered necessary to pass a small gauze wicking through the cervical canal for drainage but of late this has seemed unnecessary. The patient is now lowered from the Trendelenberg position, and the protecting gauze removed from the intestines, the cavity thoroughly flushed with normal salt solution, and the abdominal wound closed tight and treated thereafter as any other abdominal section. In uncomplicated cases thirty-five to fifty minutes are all that is required for the completion of the entire operation, and the after treatment is carried out upon the general ideas now in use for all laparotomies.

So much for the operation. Of course, it is understood that the description is for uncomplicated cases. Various anomalies and complications will of necessity present themselves in different cases and these must be met in accordance with the skill and ingenuity of each operator.

What does this mean? From the meagre historical facts, and from the figures given showing the improved results, it is plain to be seen that we are able to make far different offers to our patients who are carrying large fibroids than we could seven years ago. We can offer to the poor woman

who has a rapidly increasing fibroid, which is making her a miserable sufferer, and reducing her strength by the exhausting hemorrhages a promise that she has ninety-five chances out of a hundred that she can be made a well woman by an operation and not be obliged to wait for the uncertain results expected at the Menopause.

It is not to be inferred from what has been said that every case of fibroid of the uterus needs an operation, for it is a fact that many cases of small and even good-sized fibroids may by their peculiar location in the walls of the uterus do no harm, create no troublesome hemorrhage and remain stationary as far as growth is concerned and may be carried by patients for a life-time and do no harm. Yet there are operators who claim that because often fibroids degenerate and become malignant, every case should be operated on. This argument does not appeal to the conservative surgeon for it is a simple matter to keep such cases under observation and an operation can easily be advised and executed at the first appearance of deleterious symptoms, and as it is not always the bad cases which go to make up the less than five percents of deaths, it is proper conservatism not to advise operation unless indicated.

The writer has purposely avoided introducing into this short theme any consideration of hysterectomy, abdominal or vaginal, for cancer, as that subject should be considered by itself and treated from an entirely different standpoint. He has also avoided the relation of any personal cases or the repetition of prolonged histories, or the giving of any personal statistics, preferring not to take up the valuable time which you so kindly placed at his disposal with such material but desiring to bring before your attention in as brief a manner as possible a few of the most prominent facts showing the progress of the operation, the good results obtained in the past few years with the hope that, your attention having been called to the matter, more cases will receive careful examination and attention and in growing fibroids an operation may be advised before the patient's general health becomes undermined and before the growth reach such size and form, such dense adhesions, that the operation becomes transferred from a simple surgical procedure to one of great hazard.

AN UNUSUAL CASE OF POST-PARTUM HEM- ORRHAGE.

PAUL PLUMMER, M. D.,

COLLINSVILLE.

I was called June 4, 1899, about 3 A. M., to attend Mrs. H. F., twenty-nine years old, in her third confinement. She at that time had been in labor fifteen hours, pains being light and non-progressive.

Her first labor had been instrumental and was followed by a severe hemorrhage which nearly cost her life, and from which she was months in recovering. The second labor was normal. The pains she was then having were of the nagging, painful but non-progressive variety. To remedy this I gave her a combination of strychnia arseniate, gr. 1-60, digitalin, gr. 1-35 and amorphous heyoscyamine, gr. 1-125, a combination that has given me many happy results, allaying the pain, strengthening the contractions and decreasing the tendency to hemorrhage.

I remained with her till 3 P. M., when no progress being made and the patient being in danger of exhaustion and hence hemorrhage, I advised instrumental delivery and sent for Dr. Ida R. Gridley-Case to give chloroform. Examination at this time showed the cervix dilated to a little larger than a dime, the membranes unruptured, and head in the L. O. A. position. The anesthetic was begun about 4 P. M. The cervix was dilated by the method of Dr. P. A. Harris, described in the January, 1894 number of the American Journal of Obstetrics, forceps were applied and a living child was delivered at 4:35 P. M. She bore the anesthetic, chloroform, nicely and came out from under its influence rapidly.

I immediately removed the placenta and gave an intra-uterine injection of hot water and directed Dr. Case to give a hypodermic of 1-4 of ergotin, which she did. In a few

minutes we noticed a general cyanotic condition of her whole body. The pulse became feeble and rapid, one hundred and over, the extremities were cold and the face purple.

She vomited three times and complained bitterly of cramps and pains in her limbs and a peculiar sensation in her head. Hypodermic injections of morphine, gr. 1-4, atropine, gr. 1-150, and nitroglycerine, gr. 1-100 were given with stimulants, hot water bottles were packed around her and she gradually rallied from this condition, her color became good and she dropped into a quiet sleep.

About 6:15 P. M., 1 1-2 hours after delivery, she suddenly awoke and said she was flowing. On examination we found the blood pouring from the vulva like water from a pump. I at once introduced my right hand into the vagina and applied my left hand to the fundus to exert bimanual compression while Dr. Case compressed the abdominal aorta.

I wiped out the uterus with gauze soaked in vinegar and alum. This did no good. I then applied ice to the fundus externally and introduced a piece into the uterus itself. This did no good. I then introduced my whole hand into the uterus to remove clots; but there were none to remove. I also tried to stimulate the womb to contract by vigorous friction with one hand externally and the other internally, but it did about as much good as rubbing the bed-post. The child had been carried to a distant part of the house, or we would have applied it to the breast.

All this time the blood would gush at every move I made, and in spite of any pressure I could make I could feel it escaping internally. An intra-uterine douche of vinegar and hot water was spoken of, but there was no time for it, and we decided that firm tamponing to the fundus offered the best chance of saving her life. This we could not do in the regulation way with speculum, tenacula, and forceps; but I packed the uterus with gauze bandages, using two fingers of my right hand as a guide inserted in the cervix and sliding the gauze by a small blunt instrument along the palm of my hand and gradually filling the womb. It was slow work, but the most available under the circumstances. While

one of the bystanders exerted pressure on the abdominal aorta and fundus Dr. Case gave normal salt solution subcutaneously. We could not work rapidly, and the patient hindered our attempts to help her by being very refractory, so that in spite of our best efforts she kept losing blood until her pulse became one hundred and fifty and for a few minutes was imperceptible at the wrist. Fortunately by this time, 9 P. M., we had firmly packed both the uterus and vagina and active hemorrhage had ceased. I had already been giving her during this time, strychnia, digitalin and ergotin in small broken and frequent doses, and now we added brandy and aromatic spirits of ammonia and continued the normal salt solution with bovine subcutaneously. At this time all had been done that we could do and we were both exhausted and Dr. William H. Crowley was summoned, that we might have a little rest and the patient proper attention while we rested. He thought it might be wise to remove the tampon and give an intra-uterine douche; but in this we did not concur. He suggested the use of oil of erigeron, which we tried. At his suggestion we gave a rectal injection of normal salt solution of about two quarts to which we added bovine. At this time, 10 P. M., her pulse was one hundred and thirty. We rested until 11:30 P. M., when the other physician returned to his home. At 12 Dr. Case catheterized the patient, and withdrew four ounces of urine consisting principally of disintegrated blood. I then recalled the fact that the waters were distinctly bloody, and Dr. Case remembered that the baby had vomited a material presenting the same appearance. We also recollected that in all the blood lost there was no trace of a clot. We then decided that an abnormal blood condition was present, due probably to the retention in the system of urinary products. The patient gave a history for the month previous, of slight edema and deficient excretion of urine.

The patient suffered greatly from thirst and was allowed frequent small drinks of water, milk and bovine, both hot and cold. At 4 A. M. more normal salt solution was given by the rectum, but was not well retained. Later in the day we gave frequent drinks of a weak solution of dilute sulphuric acid, which the patient seemed especially to enjoy. Slight

oozing in spite of the firm tampon still continued; still at 5 A. M. her pulse had become much fuller and stronger, and was only a little above one hundred and her color was good considering the amount of blood lost.

There had been considerable oozing during the night and as we were far from sure of the aseptic condition of the packing we decided to remove the tampon and if necessary repack. As we were both still pretty tired we called Dr. John L. North of Avon, to our assistance. He removed the tampon about 10 A. M., June 5, and gave an intra-uterine douche of creolin solution, introduced a Micajah's uterine tablet to the fundus and as there was then some little bleeding, repacked thoroughly with iodoform gauze, with instruments and the patient in Sim's position. Repacking he found a difficult matter, on account of the strongly anteverted condition of the uterus, and its very spongy texture, the cervix being very friable and tearing upon the slightest tension. About four ounces of urine were then withdrawn, at first coming clear, then followed by disintegrated blood. On examining this urine it was found to be 1026 in sp. gr., reaction alkaline, and loaded with albumin.

We allowed the packing to remain about thirty-six hours. When it was withdrawn, Wednesday, June 7, there was no sign of hemorrhage and no odor and after pains began. I should add also that from first to last there was no sign of any clot. The after-pains continued for nearly a week.

At the time of removing the last tampon there was some slight puffiness of the eyelids and hands; but the urine had become very clear, and at this time showed a sp. gr. of 1006, and a mere trace of albumin. The amount of urine averaged four to five pints daily. This slowly decreased, while the specific gravity increased until both became normal.

A slight fever, ranging from 99 degrees to 102 degrees, existed for two weeks and yielded to nothing until local applications of boroglyceride tampons were used.

Since then improvement has been steady and in two months the patient has gained perfect health and now weighs more than ever before.

This case shows:—

First. The futility of half-way measures in checking severe hemorrhage; for I am convinced that nothing but complete uterine tamponade would have saved this woman.

Second. The importance of instructing our families in the necessity of more or less attendance throughout pregnancy and analysis of urine. Until called to attend this patient I had never seen her professionally. Had I seen her during pregnancy and discovered the faulty action of the kidneys, I am convinced the patient might have been spared this severe hemorrhage.

Third. That a hemorrhage may sometimes take the place of an eclamptic seizure. For nearly one hour after delivery her symptoms apparently indicated threatening eclampsia, and treatment was used to avert it. After the hemorrhage began there was not the slightest indication of a convulsion.

A FEW FACTS ABOUT MILK.

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In any comprehensive view of the subject of milk as a food, two facts stand prominently and conspicuously before all others, and to which all other facts bear only a subordinate relation.

First, milk is the most important, most valuable and most indispensable single article of food known to civilized man.

Second, milk as an article of food, and as it has generally been used, has been more destructive of human life, and therefore more dangerous than any other single article of food consumed by man.

These are very strong assertions, and will probably strike persons who have not given the subject due attention as unwarrantably exaggerated.

Milk is the most indispensable single food-product we possess. Its value to the infant, to the sick, to the convalescent and to the aged, is known and utilized the world over. Any other one article of food, could be at once wholly obliterated and expunged from the earth with less loss and suffering than would be caused by the loss of milk ; because for everything else there is an adequate substitute. If all the wheat in the world should be suddenly destroyed there would still be many other grains to take its place. If beef-cattle were to be exterminated there would still be the flesh of other animals equally nutritious. And so of every other eatable product. The superior value of milk lies in the fact that it combines in itself in a digestible and assimilable form every element needed to nourish the tissues of the human body. No other available product of nature possesses this quality to the degree that milk does. Hence there is no one kind of food which can be substituted for it for the many special and peculiar uses to which

milk is adapted. Therefore milk is the most valuable single article of food known.

My second proposition is, that milk has been a more potent agent in the destruction of human life than any other one thing offered to the digestive organs.

It would seem to be a law of nature that those things which are most essential to man's comfort and happiness, are also the most powerful instruments of his injury and suffering. Roses and thorns grow on the same bush.

Fire is almost essential to man's existence. Without it destitution and wretchedness would soon take the place of the comforts and luxuries which by means of fire he now enjoys; not merely in warming and illuminating his house and in cooking his food, but in developing the motive power of the innumerable factories which produce such countless thousands of necessities and luxuries that could not be produced without fire. Yet fire is a most unrelenting and destructive foe when it gets the mastery of us. It keeps us all constantly on the alert to hold it in subjection. Electricity with its many and constantly increasing applications, even water and the very air we breathe, without which we would all speedily perish, all these possess, and at times exert irresistible energies of destruction which illustrate the same law, that those things which are most essential to our happiness are also sometimes the most destructive.

Milk as a food follows this law, the most valuable of nutrients and again the most fatal to life of any food consumed by man.

When milk is harmful as a food it is always because there is incorporated with it some noxious ingredient, which is not a normal part of it; or some natural element has been removed from it; or it has become changed from its best condition as food by the influence of time or other causes. Milk is more excessively sensitive to damaging changes than any other article of food in common use. It is in consequence of such changes on very slight exposure that it is liable to become the medium of conveyance of very dangerous infections.

In evidence of this it is a fact that more than twenty-four per cent., almost one quarter, of all the deaths that have occurred in Connecticut in the last ten years, were attributed to diseases that are readily, easily and frequently transmitted by milk taken as food. There is nothing else in the dietary list of which this can be said.

Let us hastily pass in view the well known epidemics which have been caused by milk. Scarlet Fever and Diphtheria are often so disseminated, and the origin so surely traced to that source, that the conclusion is fully justified, that milk has been the medium of communication in many other epidemics the source of which was not investigated.

The demonstration has been made upon the lower animals that the whole family of tuberculous diseases can be communicated by feeding infected milk. No approximate estimate has been made or can be made of the danger to which we are exposed in this direction.

It is within the knowledge of most here present, that four disastrous epidemics of Typhoid Fever have occurred within a few years in Connecticut, and have been traced by the State Board of Health unmistakably to milk as the agent in disseminating the infection.

In 1890 an outbreak occurred in Waterbury, happening in thirty-five houses. This was distinctly traced to milk infected by a farm hand at the dairy-house of the milkman.

In 1895 the worst outbreak of recent times in Connecticut occurred in Stamford, almost wholly confined to the customers of one milk dealer. The same year was another with sadly fatal results in New Milford, due to infected milk by one recently convalescent from Typhoid Fever. Again in 1896 in the fourth ward of this city was still another of upwards of fifty cases, unerringly traced by Dr. Wright, the Health Officer, to an infected milk supply. But all these milk infected pestilences, serious as they are and frequent as they have been, become of inconsiderable importance, when compared with the annual Herodian slaughter of the innocents, of the two-years-old and younger, caused by feeding them with

poisoned milk. The vast majority of the various forms of infantile diarrhea occurs among the bottle-fed babies. Dr. F. W. Hope writes in "Public Health," July 1899, that he has during the past few years investigated over 1000 fatal cases of autumnal diarrhea. Of 233 infants under three months old, only sixteen had been exclusively breast-fed. The other 217 had received other food in addition to or instead of breast-milk. As the almost universal "other food" for babies is cows' milk the inference is that the milk was responsible for the 217 deaths out of 233. These two facts—the utility of milk as a food on the one hand, and the peril of milk on the other, stand in such direct antagonism to each other that it becomes a matter of paramount importance to learn what changes in the milk can occur to produce these diverse effects. This study leads us to a number of facts about milk that are not enough known. One important fact is, that subjecting a cow to violent driving, stoning and beating, causing her to be excited and frightened, will so change the quality of her milk as to make very ill the infants that are fed upon it. Instances are on record where even nursing mothers when in a rage of passion have so altered their milk that their babies have been made dangerously ill. A sick cow cannot give normal milk. Other facts relate to the cow stable.

Milk has great absorbent powers. If the atmosphere about the cow at the time of milking is heavily charged with dust and offensive effluvia, if the milker has dirty hands and dirty clothes and if the cow's teats are besmeared with dirt, the milk receives a portion of all these elements, and no amount of straining through a cloth will eliminate them.

Milk is a most fertile culture-fluid and the implantation of germs from these various sources will yield crops more abundant than can be produced in any other article of food.

What do the bacteriologists tell us on this point? They say that while milk in the udder of the cow is free from bacteria, yet the utmost care possible will not prevent their presence in some degree immediately on exposure to the air. Some years ago Prof. Sedgewick of the School of Technology at

Boston, made some very careful experiments on this question.

In twenty samples of milk carefully drawn in bottles specially prepared, there appeared at once the average presence of lactic acid bacteria in amount represented by the figures 1.66; that is it would neutralize the amount of alkali indicated by that number. By the same rule a sour milk would be indicated by the figures 7.9. Hence the freshest milk is slightly sour; not appreciably so to the taste. The sourness is caused by the presence of the acid forming bacteria. The same fresh milk may contain also other bacteria to the extent of dozens or hundreds to the c. c.

In commercial milk sourness is the test of its marketable value. It is the chief aim of the dealer to get his milk to the consumer before it gets sour. In cities the distance from the place of production is an important factor in the business. It cannot be delivered on the same day it is taken from the cow. Every hour, particularly in hot weather, endangers the change. People will not buy sour milk. They will buy any kind of milk, however dirty, so long as it is not sour. That is the popular test of good milk. Now milk can be kept a long time from souring by means of ice. The milk whose acidity was indicated by only 1.6 at the dairy, was found to have increased to only 1.7 when it arrived in Boston. But the milk was not yet sour chemically, though sanitarily it had become very aged and unwholesome. The ice had not stopped the growth of other germs. The notable fact developed here is, that milk transported long distances under refrigerating appliances, does not become appreciably sour and is still marketable although changed otherwise to an unwholesome degree. These observations were made upon the milk as sold from the milk wagons on the streets. But there is a grade of milk much lower than that.

The producer sells the milk to the dealer. He takes it to the ice-house and prepares it for transportation to the retailers. They dispose of it partly to consumers without delay, and partly to the grocers, who in turn deal it out to the laboring people in the tenement districts, some hours later. An

examination of the grocer's supply will show it in a still more damaged condition from the slovenly and often filthy exposure to which it is subjected. By the application of ice, milk can be prevented from becoming perceptibly sour for nine or ten days. In one sample the acidity had increased in twelve days from 1.6 to only 1.8, yet the other bacteria had increased from 11,000 per c. c. to 8,000,000,000, and though not yet sour, it was simply rotten and wholly unfit for use.

Thus the fact is established, that while refrigeration prevents the souring of milk, it does not prevent the growth of other bacteria which may be very dangerous in a sanitary sense. Bear in mind that these changes in the character of the milk occur under the most careful and experienced management, and are due entirely to the effects of time and the least possible exposure. Hence it is evident that as an article of commerce milk is of a very perishable nature. It is likewise quite evident that Dame Nature intended that it should be used at the fountain.

I have made no mention of the natural constitution of milk and the sophistication of its constituents by dilution, by skimming, by adulteration and other artifices employed to increase the profits of the dealer. It is against such practices that legislation is chiefly directed. But the limits of this paper will not permit a discussion of the many facts connected with that branch of the subject.

What more I have to say will relate to the infectious diseases liable to be disseminated through the medium of milk. Of these the four already mentioned are the most important, to wit:—Typhoid Fever, Scarlet Fever, Diphtheria and Tuberculosis. The first of these is not a disease to which the cow is subject, but nevertheless we are all familiar with the various ways in which the milk may become infected. But as Typhoid Fever is not a bovine disorder, the infection must in all instances come from human sources. The lower animals are immune to Typhoid Fever.

Therefore, all that is necessary is to guard the dairy products so that there be no chance of contamination by the

excretions from a typhoid fever patient. Several important considerations enter into the problem of the safe guarding of milk from typhoid fever infection. One is the enduring vitality of the typhoid bacilli, under a variety of possible favorable conditions; but especially the liability of its presence in water, and the absolute necessity of a liberal use of water in the management of a dairy. Another is, the impossibility of always recognizing the presence of a typhoid fever patient, from the incipient stage of the fever until he has so far passed convalescence that he is no longer a source of infection. It may be still more difficult to diagnose the "walking case." Consequently the utmost vigilance will sometimes be evaded.

When in addition to such possible exposure, we remember the wonderful rapidity with which typhoid germs are reproduced and multiplied in milk, because of its fertility as a culture fluid, it does not seem remarkable that occasional typhoid epidemics should be caused by infected milk.

The other diseases are natural to both man and cow. Scarlet Fever is a bovine disease, and a human epidemic may originate from a scarlatinal cow, by means of her infected milk. Such epidemics have occurred in England under conditions which excluded every chance of a human source of infection.

At Herndon, England, the cows whose milk spread the Scarlet Fever, had an eruptive disease which was proved to be communicable to calves both by inoculating them with the serum of the vesicles and by feeding them with the infected milk. The proof that it was Scarlatina had preceded these experiments by causing the epidemic.

The disease is not usually severe in the cow, not diminishing the milk or impairing her appetite. It may easily escape the attention of the dairymen. Ordinarily, except to a close observer, the only symptom noticed is the eruption on the teats and udder. That it is a natural disease of the cow seems to be well proven. It adds another opportunity of danger by milk infection which has not heretofore been regarded.

Diphtheria is another of the diseases often disseminated by

infected milk. The occurrence of this fatal malady, in a natural way, among some of the lower animals has been so often and so unmistakably observed, that doubt of it no longer exists. Circumstances, too, have on several occasions demonstrated the communicability of the disorder from cats to the human subject and vice versa. Severe epidemics have been traced to milk under conditions that seemingly wholly excluded a human source of infection. Assuming that some of our domestic animals are subject to Diphtheria, it becomes a question of paramount importance whether a human epidemic might originate from them.

In England, where public provision is made for investigations of this kind, and where a larger experience and practice have developed a superior class of sanitary detectives than are often found elsewhere, this question has been carefully studied. Pursuing the same system of enquiry that was employed in Scarlet Fever, it has been determined that Diphtheria is also a bovine disease and that the cow may be liable to it in a natural way. That when so affected, the milk has been found to contain the specific germ. It is also in evidence that the natural disease in the cow is of a mild type, and disturbs so little the general health of the animal that her illness escapes the attention of the persons accustomed to her care and treatment. The liability of the cow to entertain Diphtheria was proven by Dr. Klein of England.

I can only state the prominent points of the experiments. Two cows selected for their excellent health had injected into their left foreshoulder a c. c. of the culture bacillus diphtheriae derived from a human diphtheritic membrane. Severe local inflammation resulted, followed by disturbance of the general system. In a few days an eruption on the udders and teats was observed similar to the eruption noticed on the cows at the farm from which the infected milk was taken. Careful clinical observations were made throughout the course of the disease, and equally exact pathological notes taken at the autopsies. The condition of the organs involved showed a close parallel to that in cat diphtheria. The thing however of

practical importance to our present purpose is, that neither the heart's blood, the inflamed lungs nor the liver contained any diphtheritic microbes. But the eruption on the udders and teats was proved to have the germs, because by inoculation of the matter from these eruptions, both in the vesicular and postular forms, into the groin and abdomen of calves, the typical symptoms and eruptions of the cow were reproduced. Their presence was also demonstrated by the microscope and by culture. By the same means their presence was demonstrated in the milk.

The results of these experiments are exceedingly interesting. They show that the cow is susceptible to the infection of diphtheria; that it is communicable to other animals, and what is of very practical importance, that when the cow is the subject of Diphtheria, the germs of the disease are eliminated from her system with her milk. It also appeared that the germs were multiplied in her milk as in a culture fluid. So that the milk by standing became more and more infected.

We still have to consider some other facts about milk in relation to the spread of Tuberculosis. This too is a bovine disease, the evidence of which need not be here considered as it is an accepted fact. Its chief connection with our subject is, to know under what circumstances is the milk of a tuberculous cow capable of affecting the consumer.

The numerous experiments which have been made to determine the relative power of communicability of bovine tuberculosis and human tuberculosis, have proven that guinea-pigs and rabbits are much more intensely and more rapidly affected, whether by feeding with tuberculous milk or by peritoneal injection, than they are with human tuberculous matter. In short it is the more active and stronger infection.

This is a very significant fact in regard to the infectivity of the human subject with bovine virus. It is specially important in connection with the widespread prevalence of bovine tuberculosis and the general belief among pathologists that the human subject is readily infected with the milk from tuberculous cows.

The chief unsettled point at present is, whether a milch cow having a healthy udder, but with tuberculous lungs, can communicate the disease through her milk. Upon this point the evidence upon either side cannot at present be considered conclusive. Observation so far seems to show that calves fed upon milk from tuberculous cows, but with still healthy udders, do not incur the disease, though they do readily from udders having tuberculous deposits. On the other hand Herschberger finds that "milk from tuberculous cows is often not different from that of normal cows, yet the same milk injected into the peritoneal cavity of guinea-pigs produces miliary tuberculosis in the peritoneum, spleen and liver. Of twenty experiments, in ten of which the milk did not show tubercle bacilli, it nevertheless produced tuberculosis on intraperitoneal injection."

He explains these results by assuming that although tubercle bacilli were not present in the milk as bacilli, their spores must have been present. And having been planted in tissues of a proper temperature and other favorable conditions, the said spores germinated. Quite similar conditions as to temperature, etc., exist in the stomach and intestines of the human subject, hence the possible risk of drinking even spore-bearing milk, although neither the microscope nor the laboratory can detect their presence.

Milk, like every other one of God's greatest blessings, can only be safely utilized by the exercise of prudence, judgment and skill, guided by knowledge.

Dr. Barber of Bristol would like the experience and advice of Dr. Lindsley, whether milk from one cow was better for bottle-fed babies and also whether condensed milk is advisable when good milk can be had?

Dr. Lindsley—There is difference of opinion. Some would say the milk of a herd was better than that from one cow, because one cow may be diseased and the milk of the others may dilute it sufficiently. But milk from one cow is all right,

if we can be assured that the cow is safe. Condensed milk is not milk. Parts of the milk have been removed. It is not a good substitute for good milk.

Dr. Daggart—If milk contains spores why do not these spores develop in the laboratory?

Dr. Lindsley replied that he was only quoting Dr. Klein who says that the bacilli in milk do not develop in the laboratory. Spores found in the milk taken from a cow, seen by the microscope, have been injected into a guinea pig and have caused its death.

At this point further discussion was declared out of order, inasmuch as the time for the President's address had arrived.

AMERICAN INTENSITY AS SHOWN IN THE DIET.

FRANK K. HALLOCK, M.D.,

CROMWELL.

Intensity in thought and action is a well-recognized characteristic of the American people. No other nation exhibits such extreme and varied activity in all the phases of life. Upon this attribute of the national character depends much of the success and material advancement which have made the country famous.

Enthusiasm and all-absorbing interest are the two qualities which tend to develop intensity. These qualities are absolutely required in some degree to accomplish any positive purpose, and they are especially necessary for a new country to possess, if its civilization is to progress. Desirable as this power of intense devotion certainly is, it nevertheless is attended by some danger, viz., the liability to go to extremes and the failure to maintain a proper balance between the several acts and objects of life. Thus in business, the final success and its pecuniary reward are all-important. What is truly best for the health and higher development of the individual is entirely secondary and to be sacrificed, if necessary, to the attainment of the one ambition. Another phase of the danger alluded to consists in the formation of a chronic habit of intensity.

We are not content to become intense over certain special and worthy objects; we rush and strain over the simplest matter, until finally our whole life is tense. In every sphere of activity this lack of poise is noticeable, and comparing our life with that led by Europeans, the degree to which we overdo is strikingly evident. We attain greater success, perhaps, but sacrifice the best of our life in gaining it. They are content with less, and as they go along, live by the way.

In studying the American dietary, particularly as seen in the Northern States, it is possible, I think, to notice the

effect of the habit of intensity upon its development. Such a study must of necessity be essentially of the nature of a comparison. In the general remarks that are to follow the American habits in regard to diet are compared with the corresponding practices of European countries. While suggesting that the element of intensity in our temperament is a factor in the evolution of our dietary, I do not mean to disregard the effect of other forces and conditions which have been equally operative. These other factors may, in some instances, be the more important, but the present task allows the consideration of only the one factor, intensity. I shall endeavor to show that the habits and articles of diet to which reference is made, may, to a certain extent, trace their origin directly or indirectly to this characteristic.

Let us first consider the American breakfast and order of meals. Intense devotion to work, according to the prevailing idea, calls for a long, unbroken forenoon. To stand this strain a substantial breakfast is necessary. Hence cereal, meat and potato or its equivalent, coffee, butter and some form of bread are usually consumed. The European custom of coffee and roll, with a second breakfast in the forenoon, or an early lunch or dinner, does not appeal to the American. It means too much interruption of business, devoting time to the unimportant detail of eating, and in general taking life too easily. When one, however, has become thoroughly accustomed to a light breakfast he will never willingly go back to the heavy one, the former with its routine simplicity possesses such manifest advantages. The morning meal is apt to be hurried, hence the simple breakfast is preferable on the score of health. Experience has also shown that a man can do better work on a comparatively light stomach. One of the chief advantages to the household is the ease of preparation. No hard work is required at this early hour, and being always the same, no thought is expended in ordering. This routine is thus a blessing to the housewife and allows greater variety in the choice of food articles for the other meals.

The extreme to which our intensity may carry us is well illustrated by people in certain sections of the country who, realizing that a heavy morning meal is unadvisable, have

gone to the absurdity of having no breakfast at all. The conditions under which we live should be the guide and a medium course is best. For the average American a breakfast midway between the coffee and roll of Continental Europe and the meat and potato ration will prove most satisfactory. This may consist of coffee, crisp water roll or toast, cereal with cream and one soft-boiled egg. To this fruit may be added preferably at the end of the meal.

In regard to the order of the meals it would seem that the practice of having a full breakfast, dinner in the middle of the day and supper at night, was in keeping with the idea of doing both the hardest work and the heaviest eating in the forepart of the day. A light breakfast, lunch at noon and dinner at night is certainly the most rational and hygienic method. The heaviest meal then comes after work is over and there is time and leisure to thoroughly enjoy and digest it. In certain conditions a light meal at night is necessary. Also, if the housewife herself does the cooking for the family, it may be justified; or otherwise, the American supper, including as it commonly does, cold meat and that undesirable combination of two sweets, cake and preserves, is eminently unsatisfactory. Habit is such a force in our organization that a man in sound health is apparently unaffected by the time of day at which food is ingested. Considering the whole twenty-four hours, however, it must be granted that the tendency to crowd and overdo is certainly reduced by moving the time of the principal meals to the latter part of the working portion of this cycle.

The manner of eating as evidenced by the rapidity and incompleteness of mastication are the altogether too well-known characteristics which play so important a part in causing the proverbial American dyspepsia. The influence of these characteristics upon the diet is plainly seen in the development of a superabundance of articles which can be easily chewed and quickly swallowed. A full list of these culinary productions which save time, but menace digestion, would astonish the student of dietetics in the other countries. Pies and griddle cakes are conspicuous examples of this class of foods.

Cereals: The various grain preparations under the name of cereals are also in this category but they deserve special mention. Their addition by Americans to the modern dietary is to be greatly commended, as they provide a superior quality of nourishment at comparatively small cost. The criticism that is sometimes made to the effect that they cause digestive disturbance is due in a large measure to their imperfect cooking. The printed directions that only three minutes are necessary to prepare them for use is positively wrong. Several hours exposure to the action of heat is required to render the starch element of the grain digestible. If this precaution is taken a most acceptable dish is the result, particularly if served with cream. The addition of sugar is not only unnecessary, but evinces a common, undeveloped taste. The artificial sweetening increases the possibility of indigestion and impairs the fine grain flavor.

In connection with these soft foods another habit common to many Americans, especially of the lower classes, may be mentioned, viz., moistening solid food with liquid, thus hastening the ability to swallow it rapidly and without prolonged chewing. For instance, a bit of bread is taken and then almost immediately a sip of tea or the bread is dipped in the beverage before receiving it in the mouth. This practice is a prolific source of stomach and intestinal disorder. From the standpoint of health and good form, it is permissible only to toothless individuals.

Breadstuffs: The extent to which fresh bread is used corroborates the truth of the statements just made. Many American families will even apologize for stale bread on their table, not realizing that the cultivated taste prefers this to the fresh article. Newly baked bread and the numerous soft rolls, biscuits and muffins all allow a rapid spreading of butter and require little chewing in order to swallow. This is one of their advantages. Certainly it is not wholly a matter of taste which makes them so popular in our country. The hot roll which is crisp, crusty and porous, such as the water-bread type, is entirely proper both as to taste and digestion. Its hardness is an advantage for it necessitates thorough mastication and thereby is

elicited the true bread taste, the wholesome, grainy flavor which never tires the palate.

Meat: There is no question that Americans eat too much meat and neglect the vegetable foods. This form of nourishment is concentrated and sustaining and provides an easy and quick means of satisfying hunger. In many families three hearty meals with meat are served daily and it is certain that many general symptoms, especially nervous, are the result of toxic conditions due to an over supply of the proteid element in the diet. Meat has a strong and attractive flavor and the ordinary American, uneducated to the simpler and more delicate tastes of the various vegetables, naturally turns to the food which most appeals to him. The development of not too extreme vegetarian lunches is to be recommended to students of the culinary art.

Sugar: The use of sugar, candy and sweet articles of diet is a striking commentary on the extremes to which our intensity can carry us. No country can show the number of candy-shops or exhibit a trade in this commodity which will equal ours. The list of sweet cakes, puddings and desserts is also great. Very noticeable too, is the degree with which the food is sugared. The cereals, coffee, tea, etc., are often sweetened to the point of completely obscuring the true taste of the article. The country style of using sugar on lettuce and tomatoes is another instance of the perversion of the sweet taste. It does not seem to be realized how undeveloped and childish, nay even vulgar, this sugar habit is. The education of the sense of taste leads away from this primitive method of tickling the palate and seeks to discover and enjoy the peculiar, subtle flavor characteristic of each dietetic substance.

Vinegar: The tendency to produce a keen and decided impression upon the gustatory sense inclines to frequent abuse of the acid element in food. The number and variety of our pickles and sour relishes is remarkable. They are often so strongly impregnated with vinegar that the sharp acid taste is the only perceptible flavor. The salt pickle of the German is quite too tame for the American unless by chance he has learned to appreciate its more moderate and

wholesome property. The use of vinegar on spinach and other greens lowers these valuable vegetables almost to the level of pickles. It seems positively crude to damage or obscure their fresh, green flavor in this manner. Eaten with butter the true quality of these foods is properly developed, and no one becoming accustomed to this method of preparation will care to apply vinegar. Butter should also be used on cooked cabbage, not vinegar. I believe much of the disrepute in which this vegetable is held, likewise the cucumber, is due to the addition of the strong acid element coupled with the failure to thoroughly masticate the pulpy substance.

Salt: At every American table it is a common occurrence to see this article sprinkled on food which is already sufficiently seasoned. That a salt habit truly exists can be easily proved by the individual omitting its use for a time. As a rule, it is freely employed in ordinary cooking and if one will seek for the natural flavor of each food, he will find no further salting is necessary. Even the radish and celery, which seem entirely fit subjects for salt, actually require no such addition. It will be found that they relish just as well and that unless care is taken the fresh pungency of the one and the nutty flavor of the other is impaired rather than enhanced by the touch of salt. Fresh butter is insipid to the average American, yet once truly habituated to it, he will be reluctant to diminish its freshness, sweetness and fragrance by mixing it with salt. It is well established that this element is present in all foods and is sufficiently supplied to the body in natural ways. Its additional use, therefore, is desirable only when it truly develops flavors. In certain conditions salt is medicinally indicated but it is by no means needed in the body economy to the extent that is popularly supposed.

Drink and Beverages: In this department of dietetics American intensity is fully demonstrated. The addition of ice to water, the development of the soda fountain and temperance beverages and the concoction of mixed alcoholic drinks attest our intense ingenuity in searching for new and striking means to please and stimulate the palate. The American saloon bar and its eager, gulping patron

contrasts forcibly with the Continental garden-restaurant and its quiet occupant leisurely sipping beer or light wine.

Other and perhaps better, illustrations could be given to show how the characteristic intensity has had an effect upon the diet and habit of eating and drinking. It certainly would be possible to elaborate the argument much further if it was necessary. The great practical point is the fact that we live too much in a hurry and our eating and drinking has essentially only the one object, viz., to appease our appetite. The easiest and quickest way to do this is too commonly the only thought in mind. The art of dining, or the pleasantest and most profitable way to perform this truly important function in our daily life requires thought, a certain amount of leisure and the cultivation of the sense of taste. In due time our countrymen will realize the importance of this subject and great improvements in our methods will follow.

In the above remarks I do not wish to be understood as entirely disparaging the American diet. Tastes, it is to be hoped, will always differ, and the only thing that really need concern us is to see that our guiding principle is the most enlightened. The constant thought should be to endeavor to interpret everything optimistically and there is no doubt that this very intensity of which I have been complaining has produced much that is good in the field of dietetics. Of the desirable contributions it is not now the time to speak. A word in passing, however, may be permitted upon the subject of our most renowned and most condemned product. Like Emerson, I believe in the American pie. If one has a good digestion, and it is properly prepared and properly eaten, at suitable times, it is a worthy and delicious article.

The subject of taste requires consideration on account of its bearing upon dietary habits. Unless attention is called to it comparatively few people seem to appreciate that the taste, like the other senses, is capable of development and cultivation. The habit of being intense is noticeable in the limitations of taste exhibited by many people. Thus, in a large number of American families it is positively painful to witness the expressions of extreme fondness or extreme dislike for this or that article of food. Ridiculous

as it may seem, men and women go through life totally unable to enjoy and derive benefit from a variety of wholesome foods. The dislike has been formed in youth and they have never taken pains to enlarge their sense and learned to eat the given article.

For instance, it is very common to see persons carefully trim off the fat from meat. They say when questioned, they dislike it and never could eat it. The chances are, especially if neurotic, as they are apt to be, that this is one of the elements of food which they most need. In my experience the bigotry in religion is quite a feeble affair compared to the bigotry in tastes and foods. If one has an optimistic faith it seems almost criminal not to teach children to like everything that mankind has proved to be desirable as food. This can be done by quiet determination and persistence, unless the individual is distinctly neuropathic and the aversion assumes a morbid intensity.

The education of the taste in this manner has a general, liberalizing effect and tends to inculcate a spirit of being hearty, whole-souled, taking things as they come and loving everything. Thus is eliminated the miserable, narrow, finicky habits and feelings which, if people realized it, hint at degeneration. This principle of branching out and enlarging the horizon leads us to seek new and strange flavors. We leave the common, sweet taste of childhood and learn to enjoy the peculiar and really attractive sensations of bitter substances.

The true sweet taste, that lingers sweet in the mouth, comes not from sugar artificially added to food, but from the simplest substances in nature, such as grains, nuts and fruit, in which the saccharine element is blended in minute proportion. This fact emphasizes a second principle in the cultivation of the taste, namely, the art of deriving pleasure from simple things. To do this, it is necessary to think, analyze, create sentiment and try to discover the hidden flavor that has heretofore escaped our perception. Proceeding in this way one will be surprised to find the degrees of pleasure that can be derived from the most common foods. A bite of bread and butter will prove, on analysis

of the gustatory sensation, one of the sweetest, most delicious morsels imaginable. The aroma of food is no small part of the delight that comes from its use. It has been well said that the best part of a cup of coffee is the smell. Peeling an orange and staining the hands thereby has a point of preference over the modern spoon method of eating this fruit. The exquisite, pungent odor of the oil from the broken peel atones for the soiled hands. It is worth all the trouble of paring a cucumber to catch the evanescent, indescribable, fresh and cool aroma, that comes from the green rind.

A third principle in taste development is that we should not yield too rapidly to the impulse that urges us to appease the sense of hunger. The difference between the ordinary man and the epicure is this: the former has little thought except to eat steadily until he is sated, the latter holds his hunger at bay, takes plenty of time, relishes each separate dish and lingers over the flavors and aromas that stimulate his sense of the enjoyable. Our Puritanical training may not allow us to accept such teaching but it surely is a false idea not to study how to get the best out of all the phases of life.

From the foregoing considerations it will be seen, therefore, that the American characteristic, intensity, has had an effect upon the diet in two ways. One is in the direction of omission, the other in that of commission. On the one hand we are too hurried and busy with other pursuits to give proper attention to the character of our food and manner of eating; on the other hand, yielding to the intensity of our nature, we go to extremes in following the dictates of an uneducated taste. These two faults supplement each other. They will disappear, or be modified, when our general conduct in all the acts of life becomes more moderate and better balanced.

THE DIAGNOSIS OF ECZEMA.

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NEW HAVEN.

What is easier? Just as our Biblical forefathers, with a generous contempt for petty distinctions, labeled most of the skin diseases, from scabies to ingrowing toe-nails "Leprosy," and cast their unhappy possessors into the wilderness, so not a few of our living confreres, the minute they lay eyes on any form of cutaneous disease, solemnly shake their heads and pronounce it eczema, or, more commonly "Eczema."

Only the other day the opinion was freely expressed by a medical gentleman that there was no sense in diagnosing skin diseases, anyway, a stimulant, a sedative, an antiseptic and an antipruritic would cure them all. Such is the buoyancy and hopefulness of some.

But there are those who are not content to call a cow a horse, nor a Psoriasis an Eczema. Thanks to men like Willan, Kaposi, Alibert and Duhring, the lines have now been drawn about eczema with such exactness that when that disease is mentioned, a definite idea is presented to the minds of those acquainted with it.

One of the most difficult problems in criminology is the description of individuals so that they may be recognized by others. Photography alone is insufficient, because people appear differently at different times; measurements, color, lines of the thumb, temperament, and all imaginable traits are recorded with the greatest exactness, and even then mistakes are made. So it is with a disease of the skin. Though difficult to describe, if seen a sufficient number of times, all details become merged into one well-remembered whole, and a person acquainted with the subject needs only to clap eyes upon the case to recognize its nature. In Brecht's clinic in Berlin, great stress is laid upon this faculty. Patients are ushered into the room naked, and the students are encouraged to make a provisional diagnosis

immediately. It is wonderful how soon this knack is acquired, and I wish to emphasize the importance, in skin diseases, of a "snap diagnosis."

Of course no case should be treated without a careful, painstaking, minute examination, but it will often happen here, as in spelling a difficult word, that the more we think about it the more mixed up we get, and the first impulse is generally correct, provided our elementary education is good.

But the possibility of making accurate and prompt diagnoses all depends upon an intimate acquaintance with the subject. It is distinctly a fallacy, I believe, when treating of the diagnosis of a disease, to put in more time on the description of other affections with which it may be confounded than upon the disease in question. One must know the history of a disease from beginning to end before one is competent to recognize it in any part of its course.

In such a diverse disease as eczema, the value of experimental cases is obvious. Hebra rubbed croton oil into the skin, and obtained a series of effects indistinguishable from an attack of eczema.

The first thing noticeable is a burning, tingling sensation, accompanied by a diffuse redness with some swelling, and presently fine red points may be seen, corresponding with the openings of the hair follicles, sweat and sebaceous glands. The finger passed over such a surface will detect some irregularity and unevenness, which very soon becomes recognizable as small papules on the diffusely red base. But the disease having reached this point, quickly passes through a variety of phases which totally change its appearance. Each little papule, and they are very thickly scattered over the inflamed surface, becomes filled with serum, and the vesicular stage is here. For some mysterious reason, this stage has won the distinction of being the characteristic type of eczema; whereas, in actual practice, it is probably the most rarely seen.

Because the roofs of the vesicles are very thin, the constantly increasing supply of serum within quickly bursts them, and then the really characteristic, diagnostic appearance of an acute eczema is seen.

Such a case would present a patch, big or small, without any definite outline, worst in the middle and fading gradually and imperceptibly into the sound skin beyond. The border of the patch would be simply red; a little further in some few vesicles, still unruptured, might be seen, but the main picture would be made up of an irregular surface, covered with some straw-colored crusts, some glossy, sticky serum, and possibly, though this is not characteristic, pus and pus crusts. All this is very superficial. There is no ulceration, as nothing deeper than the outer layers of skin is involved. This stage may last indefinitely, and is usually, though not always, present in every case, at some stage of its progress.

The very height of the process is reached when the patch becomes moist, and after that the tendency is toward repair.

Serum is usually poured forth for days, sometimes for weeks. When it is copious, no crusts are formed. But sooner or later the amount of discharge is lessened, and then a chance is given for nature to attempt protection of the diseased area by the formation of crusts. Usually, or very frequently, infection of the exuding patch has taken place, and the crusts are typical pus scabs; but in some instances they preserve their serous character, being straw-colored and translucent, instead of cloudy and yellow.

In either case, beneath the protecting crust, feeble and imperfect attempts are made at the formation of new epithelium. But it is only after a considerable time that the struggle between the serum trying to get out and the feeble young epithelium trying to keep it in, is terminated by a victory for the latter. When finally this result is attained, the patch is well on the way toward recovery. The center is still the worst part of the patch, being covered perhaps by some of the old crusts, and certainly by the scales which represent imperfectly developed epithelium. This scaling stage may be indefinitely prolonged, and then we have the chronic condition known as a squamous eczema. It is notoriously unpleasant, because the nerve endings in the skin are continually being disturbed by the imperfectly formed epithelium, and the result is almost intolerable itching. A man may grit his teeth and bear pain, but when he itches he

has got to scratch, so it comes about that the marks of nails may frequently be seen, and in many places a recurrence of the exudation is brought about. But at length—it may be after years—the epithelium becomes perfectly formed, and only a slowly fading redness or a black stain is left. Such is the type of an eczema brought about by local irritation. And if all cases conformed to this type, the diagnosis would be simple. But this, unfortunately, is not so.

When the disease has progressed as far as the papular type, passing through the stage of reddening, it may reach a standstill, and continue indefinitely to be papular. The finger passed over such a patch would discover the skin to be thicker than normal, and to have an uneven, irregular surface. This, too, would be moist in the center, would flatten down toward the borders, where the color would also be less red, until at the limit of the patch it would be hard telling where the disease stopped and sound skin began.

The papular stage, like the squamous, stirs up an intolerable itching, so that scratch-marks adorn the affected region, and possibly bloody crusts, if the patient has been enthusiastic enough in his efforts. The more the insults such a patch receives, the better it flourishes. Finally, all the papules seem merged into a leathery whole, the skin is thickened so that it can scarcely be pinched up at all between the fingers, the surface is shiny and edematous-looking, and dusky red in color. If the patch happens to involve the skin over a joint, which is in frequent motion, like the knuckles or popliteal space, then the terse, thickened, unyielding skin often cracks under the frequent bending, and deep fissures are formed, extending down to the sensitive parts beneath. This is the eczema fissum which is so hard to cure.

Or such a thickened patch may receive a slight bruise, which rapidly produces a breaking down of the skin in the form of an ulcer. The circulation in such a patch is so poor that these ulcers are very hard to heal.

There are two or three types of eczema which deserve a special description, since a recognition of their nature offers the best clue to their successful treatment. Such a type is a nervous eczema, one dependent on some definite reflex,

or due to an unstable element in the nervous system somewhere. These eczemas are apt to be symmetrical on the opposite sides of the body; to come exceedingly rapidly and to go as fast; to have a sharp outline, differing thereby from all other types, and to itch either most furiously or not at all. Such a case has recently occurred in the practice of the writer, in the person of a lawyer, who, following every sexual act, has a sharply defined, round exuding patch as large as a trade dollar appear on the back of each hand. This appears regularly within ten hours after its exciting cause, and lasts something less than a week. It dries up of itself, crusts forming and falling off, leaving a transitory redness. Another instance of this type is seen in the facial eczema of teething children.

Still a different type of eczema is the variety known as eczema seborrheum. This occurs upon the parts most bounteously supplied with sebaceous glands—the scalp, face, ears, chest and back. It is a secondary inflammation of the skin, produced by the irritating qualities of decomposing serum. Yellowish greasy sebaceous crusts are formed first, but it is only after the skin beneath them begins to itch and become inflamed, that the disease is properly called seborrheic eczema. The eczema patch rarely goes beyond the stage of erythema, but sometimes the vesicular stage is reached, and the usual sticky exudate of eczema mingles with the greasy serum of the original disease, forming a very characteristic discharge. The location and greasy character of the crusts are the chief diagnostic points in this type of eczema.

Now what are the earmarks by which one may recognize this manifold disease?

First—The statement of the patient himself is more reliable here than in most other diseases. He will say that the wind chaps his face, or that his hat band irritates his forehead, or that his hands can't bear soap without getting inflamed. In short, there will be some history of local irritation, generally.

Second—Eczema may be said to occur practically always in the shape of a patch—never in separate little spots. A definite area is involved in every case.

Third—Such a patch is worse in the center than at the border. Oftentimes the boundary line between the eczema and the sound skin is so indefinite that it is difficult to tell where one begins and the other leaves off.

Fourth—An eczema usually itches, but not always. For instance, when the patch is moist and exuding copiously, the itching frequently subsides temporarily. It is most severe in the papular and squamous stages. Therefore, scratch marks will generally be found to aid the diagnosis in these stages.

Fifth—The presence of a glairy, sticky discharge may usually be noticed at some stage of the disease. So remarkable a feature will rarely be overlooked by even the most obtuse patient. But it must never be forgotten that an eczema may run its course without any sign of a discharge, going through the stages of erythema, papules, thickening, fissures, scales, erythema (again) and cure. And so, while a history of moisture from the patch is valuable evidence of eczema, its absence is not very weighty.

Sixth—The location of a patch may be suggestive. Eczema may occur upon any part of the skin, but has special sites of predilection. The nervous type, as exemplified in the reflex eczema of teething children, occurs by preference upon the cheeks. The nervous eczema of adults affects most frequently the face and hands. The seborrheic type occurs where the sebaceous glands are best developed—the scalp, face, ears, chest and middle of the back. The symptomatic eczemas, produced by scratching induced by other itching skin diseases, are found where the other diseases are located. But the plain, ordinary, everyday eczema attacks by preference the most delicate parts of the skin—the flexures of the elbows and knees, the places where adjacent skin surfaces rub together—the buttocks, interdigital spaces, the thighs and scrotum. Finally, the type known as varicose eczema, due to blood stasis, is commonly found on the legs.

Seventh—Two or three kinds of elements are ordinarily present in every case of eczema. In the vesicular stage, erythema, crusts and scales may usually be found. In the papular stage erythema, fissures, and scales, with scratch

marks, make up the composite picture. And in general, the disease is rarely of a pure, unmixed type.

- Eighth—Most eczemas are worse in the winter. Cold air will irritate any kind of an eczema. The seborrheic eczemas, on the other hand, and the intertriginous eczemas are worse in the summer, because the perspiration is an element in their production. Finally, it must be emphasized that the duties of the diagnostician are not ended with the recognition of a disease as eczema. For the eczema is very often secondary to another complaint, which must be recognized if the eczema is to be cured. Thus, a pustular eczema of the occipital region of the scalp is pathognomonic of pediculosis. Eczemas between the fingers, in the preaxillary folds, upon the penis or over the malleoli are suggestive of scabies. Pudendal eczema suggests diabetes.

And so the statement may be truthfully made that a thorough knowledge of eczema is the key to the study of dermatology.

THE TREATMENT OF ECZEMA.

T. M. BULL, M.D.,

NAUGATUCK.

The treatment of Eczema is probably the most important subject for the dermatologist inasmuch as about thirty-three and one-third per cent. of all dermatological cases belong to that class. It is also of considerable interest to the general practitioner inasmuch as the vast majority of the cases consult him first and are treated by him with more or less success.

I have somewhere heard the law formulated that when a disease was especially uncertain in its reaction of treatment you would be sure to find many remedies for it; for instance, whooping cough, bronchitis, headache, asthma, epilepsy, etc.

This rule certainly holds in the case of Eczema as may be easily proved by consulting any work on Dermatology, even the most elementary.

The various measures proposed are certainly enough to cure anything—but the ability to make the punishment fit the crime in every case is certainly very rare.

In many cases of Eczema the eruption is by no means the most important thing to treat. Like the eruption of measles or scarlet fever it will soon subside if nothing is done to aggravate it and the dermatological aspect of the case is of very little more importance than in these diseases.

One can use to advantage some soothing oil, ointment or lotion in each of them—perhaps with more benefit in Eczema than in the others, but the external treatment so long as no injury is done is of comparatively little importance.

In subacute and chronic Eczema, however, often the external treatment is of the utmost value and it is almost impossible to cure without it.

Inasmuch as it will be impossible in the limited time at my command to treat the subject thoroughly I have thought best to pay but little attention to the external and internal medical treatment of the disease knowing that the general practitioner of the present day is tolerably familiar with its details.

I can see a great change in the knowledge of doctors in this respect in the thirteen years since I entered the New York Skin and Cancer Hospital. For instance in those days the general practitioner gave arsenic without stint—(I heard one say he divided all skin diseases into two classes eczematous and non-eczematous—and the diagnosis was not of much account because the remedy was the same in both cases, viz. arsenic)—at the present time I am sure that the amount of arsenic given is much less and the cases in which it is used are much better selected.

In those days almost every doctor advised washing with soap and water—now I seldom see a case coming from a regular doctor in which the patient has not been cautioned against this most pernicious practice as far as the Eczema is concerned.

In those days the patient was frequently warned by his family doctor against the disease being cured lest it be "driven in"—I have not heard that expression used now in years in such a connection. Polypharmaceutical blood-purifiers were then given in large doses. At present I believe the practice is much less or nearly extinct.

Since then the general practitioner is tolerably well informed in regard to the successful treatment of the ordinary case of Eczema quickly, safely and pleasantly, I wish to confine my remarks to a few special points in therapeutics and some general considerations affecting the hygiene of the patients.

In the first place, don't use too strong external treatment for Eczema. I believe this is one of the most frequent mistakes made by doctors in the treatment of this disease. An acute eczema in a child or a lady will hardly stand any-

thing at all and nothing but the most bland mixtures of cold cream, simple ointment, oxide of zinc, bismuth, starch, bland oils, etc., should ever be applied to it. If you commence with tar, oil of cade, Ol. Rusci, salicylic, pyrogallic or carbolic acids, sulphur or resorcin in large percentages you are very apt to make the disease worse at once. In time it may be cured but it will be at the expense of much pain and delay. If in doubt in regard to the strength or preparation try it for a limited space of time and if successful extend its application.

In the Skin and Cancer Hospital I have often seen several ointments on the same patient at the same time. One arm in one kind, the other in a second and the lower limbs in others; after a while one could tell which part was recovering the faster and so choose the better application. I am sure that the text-books are sometimes at fault in this matter for I often see prescriptions which I can not use on patients in this locality. I have a theory that the skins of persons living in the comparatively cool moist and still air of New England are more tender than in the dry, dusty and windy climate of the Western and Southern States. The skins of those living where dust, wind and sun are rampant all the time are often tanned until they resemble leather. And certainly if one undertakes to apply to Eczema many of the prescriptions of the text-books he will frequently over-stimulate. The best plan is to use a weak application first even if a little time is lost rather than to lose the patient.

A very common form of Eczema or at any rate one which is often on the border line of Eczema is frequently seen in those whose hands are exposed to the wintry weather—especially if in addition to the cold and wind they are often moist or in solutions. This condition known as chapped hands is often exceedingly troublesome and is very dangerous to the surgeon, for if one is handling septic wounds the danger of infection is very much increased—and if one has ever passed through the terrible experience of a personal case of septic poisoning he will certainly wish never again to become infected.

The condition may be greatly relieved by rubbing in Las-

ser's paste or by the use of the following formula which I believe is original:

Benzoinol,
Campo phenique,
Glycerine,
Listerine.

M. S.—Rub in thoroughly after each washing of the hands.

Where the Eczema has been of long duration and the parts are much thickened, cracked and fissured I have sometimes secured wonderful results by the application of pure or fifty per cent. unguentum picis. Cover it with a layer of gutta percha tissue and bind it on. This tissue is very valuable as it prevents the ointment being dissipated in the bandages—you can produce very much better results with the ointment applied in this way than any other. I would especially recommend this treatment to any one who has not tried it as having given me more satisfaction than almost any other. I have varied it by rubbing in Ol. Cadini, Ol. Picis, Ol. Rusci, either pure or diluted with olive oil—then covering with Lasser's paste and laying the tissue over that; finish with a bandage or pair of light cotton gloves. In bad cases this method often produces the most satisfactory results.

In seborrheic Eczema which is a very common form although apparently not as yet very well understood by the profession, the sheet-anchors of treatment are now as they have been for years, resorcin and sulphur.

An Eczema characterized by greasy scales appearing on the face, chest or genitals is very apt to be a seborrheic Eczema and the application of an ointment of ten per cent. precipitated sulphur will often cause its rapid disappearance although the cure is apt not to be lasting unless the remedy is continued.

The hygienic treatment of Eczema may be summed up in one sentence, "Have your patients do everything to raise the bodily health as high as possible—the same as if they had no Eczema at all." I do not understand that there is any hygiene or diet applicable to Eczema which is not almost equally applicable to many other diseases.

Practically the hygienic treatment falls into a series of directions and prohibitions and often the two mean only that the patient shall take a middle ground between two extremes—in other words, don't eat too much nor too little; don't overtrain nor take too little exercise.

In the first place eat the things that are healthful and digestible and avoid those things which are the contrary. "We are what we eat" and many of our patients are accustomed to eat the most indigestible foods the market affords, and often in very large quantities—foods which the alimentary canal is utterly unable to digest and assimilate. Such foods should certainly be eradicated from the dietary of any patient with Eczema. I will not undertake to particularize, it would take too long; but the above general rule I believe to be the best possible.

In the second place drink plenty of water and avoid very much of any other kind of drink. I believe that this point is one too often neglected by the profession as I find many patients who do not drink enough daily to carry on their economy properly. If a person takes a part of a cup of tea or coffee thrice daily at meals and no more fluid he does not take enough liquid to dissolve and carry off the excrementitious matters—the ashes—from the system. The principal excretory organs—the kidneys, bowels, skin and lungs all require large quantities of water and while the system will become accustomed to almost any kind of deprivation the organs can not do their best work without a proper amount of diluent. From three pints to two quarts of water daily is generally enough for the average man, but I have seen Prof. Fox prescribe at least three quarts daily with good results. If you find a patient unwilling to drink that amount, sometimes the subterfuge of a small pill of *Saccharum Lactis* in a glass of water every two hours will accomplish the same result.

When you have a patient who has not been accustomed to more than a pint or so of water daily and the amount is suddenly raised to two quarts the changes are often very remarkable; the obstinate constipation which such patients nearly always have generally relaxes, the urine becomes freer and clearer, the breath purer and the digestion better

while the skin and especially the complexion often becomes clear and fair with surprising rapidity.

In children with Eczema very often if the pruritus and the consequent scratching could be relieved the Eczema would be recovered from very rapidly. But the factors work in a bad sequence—the more the child scratches the worse the Eczema and the worse the Eczema the worse the child scratches. If you can stop the child scratching for a few days the Eczema will recover and the child be well. This may be accomplished by putting the child into a sort of a straight jacket made of stout muslin or denim. If a bag like a pillow-case with a hole cut for the head is drawn down over the patient and quilted under the arms you have the child where it can do little harm to itself with its nails. While this measure seems cruel at first sight it is really a great kindness to the child, as when the sequence of scratching and itching is broken up the skin will often recover in an astonishingly short time.

There is another measure for the relief of pruritus which in my hands has been of service a few times and which should the proper cases come up I wish to try more thoroughly. This measure is venesection. I had as a patient, a stout middle-aged man of a full florid type suffering with universal Eczema. He had grown worse for several weeks and was prevented from recovering by the intense pruritus which I was unable to relieve. I finally abstracted about twelve ounces of blood with the most happy results—the pruritus stopped at once and the Eczema disappeared like magic. If any one has used this measure I would like very much to hear the results as I find very little about it in the text-books.

In the opening chapter of a new work on dermatology by Prof. Fox occurs the following sentence: "All therapeutic measures which equalize the circulation, strengthen the digestion, induce refreshing sleep and improve the nutrition of the body will be found powerful factors in the cure of cutaneous disease." Inasmuch as exercise is one of the most powerful means of doing each of these things, it follows that exercise must be of much importance in the treatment of Eczema, and so we find it in fact. I believe there

is no means of overcoming the inherent tendency to Eczema better than properly regulated physical exercise. I say properly regulated because a patient simply told to exercise is like a sick boy taken into an apothecary shop and told "Here are the medicines to cure you—help yourself!" He would be apt to take too much, too little or not the right kind of medicine. In proof of this I have several times seen intractable cases of Eczema in trained athletes—but their faces showed that they were over-exercising or being confined too closely to the indoor air of the gymnasium—the opposite extreme of too little exercise we see daily.

A well-regulated gymnasium is in my opinion one of the very best means of exercise—the outdoor sports of bicycling, golf, tennis, rowing, walking, etc., are very good but most of them cannot be followed the whole year; on pleasant days, however, I believe they are better than the gymnasium.

In regard to the amount, I believe that an hour of hard gymnasium work thrice weekly is enough to secure good results but if you wish the best effect an hour daily is better.

A question often asked and of a great deal of importance to patients is "What can I do to prevent a relapse?" This is almost equivalent to asking "What can I do to keep well?" And the answer to one is much the same as to the other with the addition of a few points directed to the particular disease.

To be brief in answering this I would say, avoid every cause possible, whether thermic, traumatic, parasitic, atmospheric, or constitutional. Warn your patients against extremes of heat and cold and especially winds as they will undoubtedly cause and keep up an Eczema. If possible, don't allow them to work around engines, boilers or ovens. See that the skin is not irritated by the use of tools or chemicals. Warn against wearing unsuitable underwear—quite often we see patients on whom woolen or coarse underwear will cause an irritation which is easily developed into a full-fledged Eczema. A few times I have found a badly laundered shirt-band causing an Eczema in this way. It is hardly necessary to warn against parasites in polite society—but among the very poor who are often very careless in

regard to their persons sometimes the determining factor is the presence of pediculi or scabies.

See that the bowels move once daily—better by fruit and exercise than by laxatives. See that there is always plenty of water for the emunctories of the body to use, keep the skin fairly clean but avoid the over-use of soap and water as one can develop a very respectable Eczema by simply washing the part enough. Keep reasonable hours and get enough sleep, avoid all preventable causes of nerve tension. When you see a business man, a school-teacher, a housewife or a clerk half frantic with the numerous details of their work it is certain that their bodies are in a condition to take in or develop an Eczema to good advantage. Avoid all forms of dissipation, smoking, chewing and drinking of spirits beyond the extreme of moderation.

Keep the finger nails cut short and smooth as in a predisposed person a few minutes' vigorous scratching when the person is half asleep will cause a severe erythema or Eczema. I want especially to emphasize this point as I have often seen a marked improvement follow when the irritation was reduced to rubbing with the tips of the fingers. I have seen many finger nails, especially in elderly people, which very much resemble a carpenter's gouge or chisel and were capable of making a large patch raw in a minute's time when vigorously applied. Often a sly scratch when changing dressings will perpetuate an Eczema indefinitely. Look out for this.

If these simple and reasonable directions are followed an Eczema will not be very liable to relapse and if it does it will almost certainly cure easily on the application of some soothing ointment or other proper measure.

In conclusion I would say, never consider even the worst case of Eczema incurable. I have many times seen terrible cases of universal Eczema which had persisted for many years relieved and cured in a short time on the application of proper measures. Where it has involved the face of a child and its nose, eyes, mouth and ears are a hideous mass of inflammation, crusts, scabs, pus and debris, it is about as unpromising a disease as one ever sees. But it is surprising how little destruction of tissue there is and what a thor-

ough recovery one is often able to make in a short time. So it is proper to always undertake to cure even the worst cases.

It is possible that I have made a mistake in spending the time on the corollaries instead of the main proposition. But realizing that the permanent cure of many cases of Eczema requires more than arsenic, oxide of zinc and tar, I have attempted to touch on those things rather than pursue the beaten track and confine myself to the strict text of the program.

SKIN DISEASES DEPENDENT ON BOWEL DISTURBANCES.

R. A. McDONNELL, M.D.,

NEW HAVEN.

More or less mystery has always surrounded the connection between intestinal derangements and eruptions on the skin. In the time of Augustus Caesar, one author went so far as to describe what is now known as scabies as a disease in which winged insects arise in the belly and work outward, finally to be found emerging from the skin. On the other hand, books issued very recently warn against the too speedy cure of chronic ulcers of the leg, giving one the impression that if quickly cured, they would throw the elimination of the poison upon the bowels and kidneys. This view should, like the other, be obsolete. But that a connection does really exist between the functions of the bowels and the functions of the skin can not for a moment be denied. The ease afforded to the youthful belly-aches by the application of a mustard plaster was too decided to admit of doubt. Indeed, a great mass of isolated facts is known which illustrate a very direct connection; all we need is a clear correlation of these facts. Let us mention a few of the data.

(a)—Extensive burns of the skin give rise not infrequently to duodenal ulcer.

(b)—Certain mineral poisons applied repeatedly to the skin excite gastro-intestinal irritation—such as lead, antimony and arsenic.

(c)—An attack of diarrhea is quite likely to follow a sudden chilling of the surface of the body, particularly in children, but also in adults. These examples may serve to illustrate the influence of the skin on the bowels.

On the other hand:—

(a)—A warm water enema has given rise to a scarlatini-form rash.

(b)—The ingestion of lobster salad has been promptly followed by an attack of hives.

(c)—Typhoid fever is accompanied by a rash on the abdomen.

(d)—Patients with chronic appendicitis often suffer from tubercular acne.

A considerable list of diseases of the skin may now be adduced, which are admitted by all to be sometimes dependent on intestinal disturbances. Many others probably are produced by the same causation, but the following are beyond dispute: (1) Urticaria; (2) Acne Vulgaris; (3) Acne Rosacea; (4) Erythema simplex; (5) Hyperesthesia cutis; (6) Dermatitis Medicamentosa.

It may, then, be assumed that a more or less direct connection between skin and bowels has been proved.

Now what is the nature of this connection, and how may an improperly acting intestine give rise to a skin disease?

The following considerations will serve to illustrate three different ways in which the skin becomes affected:

A perfectly well man eats some lobster about ten o'clock of an evening, and retiring at twelve, finds himself scratching furiously. At two A. M. he awakens, to find his body covered with wheals. These may torment him for a few hours, and then subside, or continuous crops of wheals may appear, and by the next day he may suffer from nausea, diarrhea, and fever, and be covered with the eruption known as erythema exudativum multiforme, destined to last for a week or more. Now, why does he in the one instance recover in a few hours, and in the other suffer for weeks? And what has happened to him, anyway? Lobster becomes poisonous on account of the action upon it of bacteria. These in their growth break down its structure into various components, some of which are poisonous. Now Brieger has isolated from fish four different poisonous bodies, crystallizing in the form of needles. These are called neuridine, ethelendiamine, muscarine and gadinin. Each of these, injected into an artery or vein, will give rise quickly to certain nervous symptoms, prominent among which are circulatory disturbances, and among others, urticaria. The symptoms follow rapidly after the introduction of these poisons into

the circulation, and their severity is in direct proportion to the amount of poison introduced. In many respects, these poisons are analogous to the alkaloids, morphine, atropine, etc. The patient, then, may be moderately or very severely intoxicated by these ready-made poisons introduced with the lobster, or he may suffer from a much more serious and uncontrollable intoxication, produced within his own body. The bacteria which caused the poisonous compounds in the lobster may attack the patient's intestine, and split up some of the cells into bodies which are actively destructive to the tissues, and are known as toxalbumins. These take hours or days to develop, and are much less controllable than the ready-made poisons, or ptomaines. And circulating in the blood, the toxalbumins attack the most highly organizing tissues first,—notably the nervous system. Fever, circulatory disturbances, spasm and relaxation of the muscular coats of the small vessels, and the eruption known as erythema multiforme, result. In the case of the ptomaine poisoning, it is proper to use drugs which will counteract the symptoms,—atropia and antipyrine to relax spasm of the muscular coats of the vessels, and local anesthetics to relieve the itching. But where fresh poison is being formed in the bowel, and poison which is actively destructive, the source of supply should be eliminated by a brisk cathartic, and then the blood put into a condition to fight the poison floating in it. I have no doubt that the treatment for erythema multiforme, and for several other skin diseases, will before long be similar to that for diphtheria, namely an anti-toxin, injected into the blood.

Here, then, is a disease of the skin, resulting from the absorption into the circulation of poisonous substances introduced into the alimentary tract, or manufactured there. This poison affects the nervous system, particularly the sympathetic, and the skin disease is brought about by a spasm and relaxation of the muscular coats of small blood-vessels, in response to impulses brought down the vaso-motor nerves from the sympathetic.

In the case of an Acne Rosacea, due to abuse of alcohol, the disease is brought about in a different way. How? The patient may commence with beer, containing only a small

percentage of alcohol. If he stuck to this in moderation, he never would get his red nose. A small amount of alcohol, properly diluted and not too frequently repeated, is undoubtedly good, not only as St. Paul says, for the stomach's sake, but the liver's sake, and the heart's, and the skin's. But the patient gets into the habit of taking his alcohol more and more concentrated, and oftener. It gets into the circulation, it stimulates the heart's action, blood is pumped with greater force through the capillaries, and the face flushes. The next most noticeable physiological action of alcohol is that upon the higher nerve functions. It paralyzes the vasomotor centers, and permits relaxation of the small vessels. After a time their average condition is one of relaxation, and we have a case of *Acne Rosacea*. This disease, unlike the first, has been brought about primarily through the circulatory system, and only secondarily through the nervous. And all through its course, it will be found that practically all the causes which aggravate the *rosacea* are heart stimulants, producing often distressing palpitation.

A third type of skin disease exists, brought about through gastro intestinal disturbances, in a different way from either of the others. I refer to things ingested, which are eliminated through the skin—either in the form in which they are taken into the economy, or chemically changed. It is well known that lead lotions must not be used on the face when sulphur or ichthyol has been taken internally, since the black lead sulphide is formed at the mouths of the sebaceous glands. Potassium Iodide solution applied to the skin may soon be detected in the urine, and conversely, Potassium Iodide taken internally produces inflammation of the sebaceous glands, part of it undoubtedly escaping through these glands, though most of it leaves the economy through mucous surfaces. Certain articles of food, in predisposed individuals, produce a crop of acne pustules with such regularity as to make it very probable that some part of them is seeking an outlet through the sebaceous glands, and irritating them as it escapes.

The writer, then, assumes, with what probability he hopes will be brought out in the discussion, that in three distinct

ways a skin disease may be brought about through the bowel; and the following groups will indicate, more or less accurately the *modus operandi* in the several diseases:

First—Those due to poisons absorbed from the digestive tract, and working mainly on the nervous system.

(a) Undoubted.

Urticaria.

Erythema Exudativum Multiforme.

Erythema Simplex.

Herpes Zoster (Arsenic).

Hyperesthesia Cutis.

(b) Probable or possible.

Eczema.

Pityriasis Maculata et Circinata.

Hyperidrosis (Jaborandi).

Second—Those due to poisons absorbed from the digestive tract, and working mainly on the circulatory system, direct.

(a) Undoubted.

Acne Rosacea.

Eczema (Alcoholic).

Cyanosis (Antipyrin, Phenacetin).

(b) Probable or possible.

Erythema (due to Belladonna or Quinine).

Third—Those due to substances absorbed from the digestive tract, and influencing the skin directly while being eliminated through it.

(a) Undoubted.

Chromidrosis, Green (Copper), Blue (Protosulphate of Iron).

Phosphorescent Sweat.

Acne (Iodine and Bromine).

(b) Probable or possible.

Acne Vulgaris.

Eczema.

Miliaria Rubra.

Seborrhea.

Furunculosis.

Besides the three distinct methods of producing skin diseases mentioned above, faulty digestion undoubtedly exerts an influence on the skin which, while not easily defined, is none the less evident. The clear, transparent skin which accompanies perfect digestion, and the muddy, sallow complexion seen in dyspeptics, will illustrate this point.

Reference might here be made also to several other facts, more or less intimately connected with our subject. For instance—argyria, or the deposition of silver in the skin in such quantity as to produce discoloration, following its long continued use: or to the effect on the skin of the Thyroid extract, taken internally. But my invitation to this gathering included the privilege of reading a short paper, so, with many thanks for your undeserved hospitality, I have finished.

SOME SUGGESTIONS AS TO SANITATION.

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NEW HAVEN.

Sanitation may be defined as public hygiene, or an observance of the laws of health as affected by external and preventable causes.

Ill-health is the greatest impediment in the progress of the human race. It is reasonable, then, to expend more effort in warding off this disability than in perfecting schemes for extending usefulness when the instruments of execution are to be imperfect. Of all the diseases reported to health boards over three-fourths are of zymotic character and are therefore preventable to a large extent. The ideal condition would be attained if three-fourths of the money now expended for physicians and drugs could be used to support the board of health in the care of the sanitation of the city. How would the Health Officer of New Haven feel if allowed \$500,000 annually to spend in improving the conditions of his city? Could he not have isolation hospitals and such general abatement of nuisances as would make this a healthier, happier and better city?

But it is profitable to spend only a small part of our time in Altruria. Sanitation, like charity, should begin at home. We must educate people to a higher conception of public duty. The politician urges every male citizen of proper age to vote early; the preacher urges him to pray early, but the physician should insist on his keeping clean premises early and late. Let us consider some of the ways in which the public should be instructed by physicians in sanitary observances:

First, The physician should constantly bear in mind that his duty to his clients lies along the line of removing causes of disease as well as in prescribing drugs for it. You all assent to this. A case of erysipelas should not be left in a surgical ward.

Second, Bacteria, or fungoid growths, and the products of bacterial life are in many cases actively hostile to human life—they are the determining causes of all the zymotic diseases.

Third, Those forms of monocellular life that are hostile to the human animal require some organic pabulum for propagation.

Fourth, All forms of putrefaction and decomposition that are not chemical are due to the growth of bacteria.

Fifth, The bodies or spores of monocellular types are exceedingly tenacious of life and in general are not destroyed by the cold or the heat of climate.

Sixth, All organic matter that is deprived of vitality is food for some forms of fungoid growth. Especially is this true of material that has had its cellular structure effaced by any process, as by cooking or digesting, the waste of organic living, etc.

It is plain therefore that sanitary cleanliness consists in the removal of all organic waste to a place favorable to its destruction by bacteria or oxygen without contaminating the air or water that is directly used by higher animals.

The problem of doing this is the problem of sewage and garbage removal. The matter of disposal is comparatively simple. Nature attends to this expeditiously when left alone, and art has also established rapid methods. Now, I believe we may, in the management of our households, leave out the more difficult process for the removal of garbage and directly oxidize all the solid waste in the furnace of the house or in the kitchen range when the furnace is not in operation and thus abate one of the greatest nuisances about our homes. This is not an original suggestion but I urge it on the attention of physicians as a satisfactory solution of the stink-tub problem that exists in their own back yard and that will if carried out purify the air in many a locality where good air is sadly needed to restore or maintain health.

This method is somewhat injurious to the fire-brick lining of the ranges, but where boilers are used for steam or hot water-heating absolutely no injurious effects can be observed and the expense of new fire-brick in a range once in

three or four years is not to be compared with the expense of the removal of garbage at such frequent intervals as is necessary for even a fair protection of health. I believe then we should urge this method of disposal of all such materials as will not readily drain from the sink into the sewer system of the city.

A second form of organic waste that is of special importance on account of its being the nidus for germs that are pathological is human excrement. In part, its removal, in the better part of our cities, is carried on directly by the water method in a satisfactory way where cities are located near large bodies of water and remote from towns that would naturally use this water for domestic purposes. But in the newer portions of cities and in the portions inhabited by the poorer population the outhouse, without connection with the sewer, but usually with a connection with the well, is still to be found. I need say nothing further about this method of disposal because it has already received the stamp of condemnation by the sanitary authorities and is becoming eliminated as fast as the courage of health officers and the machinations of politicians will permit. But, however satisfactory the better methods of disposal of fecal matter and urine may be, there is in this country an unfortunate and disgusting habit of scattering other forms of excrement around the sidewalks, halls of public buildings, carpets, and, occasionally, in cuspidors. This habit, that is national, and that allies the genus homo with the genus gallus, must be checked by the vigorous action of medical men, for no other influence is capable of grappling with the problem satisfactorily. I have recently visited the halls of the national Congress and neither body being in session I was permitted to go on the floor of both the Senate and the House and in each place the air was offensively laden with fumes of decomposing saliva, mingled with tobacco, that arose from many cuspidors and from many more stains on the carpet that indicated the presence of not only a representative of this liberty loving people, but of the animal that has been characterized by one of the great metropolitan dailies as the "American Hog." I need not say that the excrement voided from the respiratory tract is much more

likely to be laden with germs that are injurious to health than the excretions from the other eliminative tracts and it is not at all pleasant to contemplate the bacteriological condition of dust that may arise from floors that are the constant receptacles of tuberculous sputa, Klebs-Loeffler Bacilli and other active germs, to say nothing of those less readily recognized germs that produce Coryza and the varied forms of inflammation of the respiratory tract. This disgusting habit of spitting has undoubtedly become general here in this country because of the prevalence of tobacco chewing as a fine art early in the history of the country. It must now be consigned to the list of lost arts by the inculcation of ideas of personal cleanliness and public welfare, if not by the strong arm of legal enactment. We should personally undertake to distribute among our clients such excellent information as has been issued on this subject by the State Board of Health and that may be obtained from its Secretary. We must also uphold the health officers in their efforts to cure this disgusting habit.

In this connection we might speak of a matter in which the physician should make his influence felt and that is regarding the use of common drinking cups at public fountains and at church communion tables, for one is as bad as the other. Modern inventions have made it possible to supply drinking fountains with a device to enable the patron to drink from a running stream and there can be no possibility of the transference of the bacteria from one person to another. It is also possible for churches to avoid the disgustingly nasty use of a common drinking cup that is passed along from old tuberculous cases to young people whose resisting power to the invasion of that germ may be poor and a ruined life be the result of a praiseworthy sentiment. I have personally known of two cases where contagious diseases, not tuberculous in character, have been transmitted in this way and I have no doubt that it would be hard to parallel the actual danger of this practice. I know it is easy to say that this is an over-refinement and there is no practical danger in the matters I suggest, but I insist that this is not the case. That there is danger is shown by the fact that good authorities estimate that eleven

per cent. of our population is infected with tuberculosis, and that the most active and well informed physicians of the country are urging the isolation of all the severer forms of zymotic disease. A movement is on foot in Massachusetts to bring about this end. Michigan has already taken steps in legislation to abate the evil and other states are considering the problem seriously.

A STUDY OF DIABETES—ITS NATURE, CAUSE AND CURE.

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Doubtless we are more or less indebted to an advancing civilization, and the needs of protection from the effects of atmospheric changes, for the prevalence of many organic diseases, as well as functional disturbances, from which we suffer and die.

Civilization in every portion of the globe, more than any of the influences which modify human existence, has the effect to shorten the duration of life; while on the other hand it contributes largely to the sum of human happiness, and promotes in ways innumerable, the longevity and usefulness of the human family. At the same time, the all-pervading fact should be recognized, that through the widely varying influences of differing phases of civilization, disease has been made one of the great coördinate powers for preventing the over-population of the earth.

It remains, however, as the first specific duty of physicians, to relieve the race so far as may be possible, from some of the errors of an incomplete conception of civilized life, from which come so much misery and death, as the direct results of preventable disease.

Associations such as ours, and particularly those of which our medical organizations are the natural outgrowth, frequently tend by their unconscious influence, directly to impair, if not indeed to destroy, independence of thought and action.

A "consensus of opinion," as we sometimes like to term it, even now, is one of those conventional phrases that have come into use by hereditary transmission from the days of antiquity; it has often its controlling majorities, now upon this side and now upon that, of the most vitally important

public questions relating to medicine; and quite too often it has exerted a paralyzing influence upon judgments of the masses of mankind who do not care to think for themselves.

Among men of this mental constitution, the chief attraction toward this dangerous fallacy seems to have been the implied fact that, by this off-hand numerical method of deciding vital questions pertaining to practical medicine, they think to relieve themselves of all personal responsibility to the profession—as well as from all obligations to the community, to give to it the best information of which they are capable, touching questions of public concern, upon which they are presumed to be fully informed, and can speak with some authority.

But there is reason to fear, this high court of appeal of the olden time, came sometimes to regard their own opinions upon some of the great unsolved questions in practical medicine (upon which they themselves have bestowed no special attention,) as of greater value to the world, than the deliberate judgments of the few competent persons who, having studied these questions in a philosophic spirit of scientific inquiry, are prepared to offer satisfactory reasons for the faith that is in them, and to stand manfully by them.

I am not aware of any recorded information by which we can form even a proximate idea as to the precise historical period in which diabetes first became known to our race. Naturally, in tracing backward historical records of this nature to their initial point, we follow the lines of Hippocrates the Greek, who was the first physician who has left a record of his observations; but as we remember that we thus reach a point long anterior to the art of printing, and are recalled to the fact that, from what we already know of diabetes, as one of the diseases accompanying civilization, and as we believe, mainly dependent for its existence upon a very advanced state of social development, the reasons for our failure thus far, to reach that historical point, are apparent.

Civilization, as the Greeks knew it and cultivated it, in the pursuit of athletic excellence, promoted in the highest degree the physical development of man; but it was not until the early years of the sixteenth century that diabetes had

received the name it now bears, and was vaguely recognized as a fatal disease, of which nothing beyond, was certainly known.

Sydenham, born in England, 1624 and died in London, 1689, makes the first mention of it. What he says of it, however, consists of meager quotations of little importance, from the writings of contemporaries. He was appropriately surnamed the "English Hippocrates," on account of his acuteness of observation, and his great practical wisdom. But to what extent his teachings would be of value at the present day, can hardly be considered doubtful. On page 314, he says, "the same remedies that will cure a fluor albus," will cure a "diabetes," which he thinks is so common in the aged because they have become so very debilitated by "pernicious intermittent fevers," which he thinks hasten a fatal result in the "Fen countries."

The question will arise in many minds, as it has already done, why is it that, during the phenomenal advances in the knowledge of the medical sciences that have been witnessed within the last fifty years, or even less, when medicine in every department has received such a remarkable impetus, and has made such surprising progress, by leaps and bounds,—why is it, that in our knowledge of the fatal disease we are now considering, no additions seem to have been made to it for the last two hundred years? Can it be possible that the idea has ever prevailed that, the "ultima thule" of human knowledge of a disease so universally fatal, has ever been reached? That speculative theories, or scientific demonstrations have been pushed to a point beyond which they cannot go? I have recently read with both pleasure and profit, at a time when my own personal interest was wholly absorbed in the subject, a remarkable and valuable series of papers upon this topic, in the *Journal of the American Medical Association* for 1899, by Surgeon E. L. Munson, A. M., M. D., Yale, and now of the United States Army, which although not completed, go very far toward proving that the ultimate extent of our knowledge of this subject has not yet been, by any means, reached.

Surgeon Munson's clinical records of his daily observations made in a single case of diabetes, which unfortunately

for science, was terminated as they so frequently are, by intercurrent pneumonia, illustrated as well as need be, the complete inutility of a proteid or restricted dietary, so universally relied upon for the removal of diabetic sugar from the urine. This most important, and commanding fact has been noted several times, at intervals of years, by different observers, but has not been practically utilized by any; nor has it seemed to have made on the professional mind, any enduring impression; but now, when we come to examine critically its fundamental relations to all that which we know as the teachings of physiological science, we cannot fail to be of one accord as to its proper place in the very foundations of therapeutics, as that complex science becomes practically related to the treatment of diabetes. Dr. Munson's contribution, I can but regard as one of the most valuable ever made to the natural history of this obscure and generally fatal disease. I have already alluded to the surprising prevalence over the world, of the most erroneous opinions, unsupported by any facts,—positively asserted by the dogmatic school of philosophers, concerning the treatment of diabetes, and let loose centuries ago, as a "consensus of opinion," that required no proof, admitted of no question,—and tolerated no opposing opinions. This evil influence, strange to say, continues to "darken wisdom, by words without knowledge," and still has to-day its disciples, in every circle, both within and without professional lines.

When I was last in England about four years ago, I called on an eminent medical man whom I had known for more than thirty years, but had never seen.* He received me in his working room; and I enjoyed for half an hour, a delightful interview with him. I found him smoking cigarettes! and upon invitation I joined him.

Presently his noon-day luncheon was brought in, which afforded me opportunity to observe him more closely without offence, and I was shocked to perceive what a poor attenuated ptisan it was. Really, it seemed quite inadequate to keep a chicken alive.

The gentleman himself was very thin, white, and so

* Mr. Ernest Hart, late Secretary British Medical Association.

transparent that I did not fail quickly to recognize the features of "neurasthenia" with which at home, we are all so familiar. On returning to my hotel, I met another medical friend, and told him where I had been, and of the impressions that were made upon me. He threw up both hands, and exclaimed "Why, do you know, my dear doctor, that he is dying of diabetes"? Within a month after my arrival home, I was notified of his death by asthenia.

Thus passed suddenly out of life, a physician of the highest degree of professional culture—a man universally admired for his many accomplishments,—and standing, as he did, at the very central point of convergence of all the currents of medical knowledge and literature which encircled the earth, and falling a victim to that most pernicious of all the dogmas, and false notions that pervade our therapeutics; annually destroying thousands for whose deaths no visible cause can be assigned,—his death caused profound sorrow throughout the civilized world.

It is well known and susceptible of proof, that the objective symptoms of diabetes are not caused by any defects in the metabolism of the individual, by which I mean to refer to those chemical changes which food-stuffs undergo in living bodies, as is commonly believed to be true. But they are the results of some unknown change in the vital functions of all the organs of the body,—due to a general but profound functional disturbance of the nervous system. We can all understand the commonly observed fact that diabetes, which frequently, in its acute form, is the result of direct violence, and may be accompanied or followed by a more or less severe shock of the general nervous system, appears quite as often, in connection with, or as a sequence to some of our more common diseases, particularly neurasthenia.

My purpose in bringing before you such an outline of personal details, so commingled with scientific facts and principles is that they may so arrange themselves as a blackboard demonstration in geometry, that the problem may prove itself; but to complete the demonstration it seems needful here to add that the finale of the first and second stages of neurasthenia, constitutes what is properly

regarded as the curative stage of diabetes,—and this may be followed by the third or saccharine stage of the disease—in either one of which, death may occur by asthenia. This last incident of the tragedy, which has for an indefinite period been daily passing under your observation, is heralded by the appearance of glucose (commonly spoken of as sugar) in the urine. It is accompanied by an aggravation of all the symptoms that from the first initiatory indication of the invasion of asthenia, as we then called it, have marked its progress. And now, undoubtedly, if it were to be regarded from the period of invasion to that of its termination, as simply a neurosis, as I contend that it should be, and could have a new name given to it—even “neurasthenia,”—and provided further, that its investigation and treatment could be in future conducted as nearly upon a scientific basis as we think we have reached in the study of most other diseases, I cannot doubt it would soon be taken from the category of fatal and incurable disorders, and placed at the head of the list of curable constitutional affections.

Let us recall for a moment the impressions commonly made upon our own minds, at a first interview with a diabetic patient, who has perhaps been told that he cannot digest starch or sugar; and these foods are henceforth prohibited. If great thirst is a prominent symptom, fear and not knowledge becomes the guiding influence; and the assumption is at once made that the patient must undergo an entire change of diet; but on examination, no fault whatever can be found with the functions of digestion or assimilation; and possibly no better designation has been given to the case, than “nervous dyspepsia”—a term which without assignable reason, comes very near to expressing the actual fact, but no approach seems yet to have been generally made toward forming a clear idea of the existing condition, or of its cause.

Practitioners may never cease to disagree in their opinions of the nature and cause of the disease, but when the patient is deprived of his ordinary nutritious food, because sugar has been discovered in the urine, the last act in the tragedy begins—the curtain falls.

Inspections of the morbid anatomy in such cases, give

back to us no response; autopsies are silent; pathology is dumb; while the only verdict which can be rendered on a basis of credible evidence is, death from privation of food during the progress of neurasthenia terminating in diabetes. Not only is this fact demonstrably true, but it is also as true that the direct consequence of a removal of any of the nutritious, easily digested, ordinary articles of food or condiments from the dietary of diabetic patients is to invite—or to induce—or to hasten a fatal termination of the disease, notably by pneumonia or by tuberculosis.

In entering upon a more definite inquiry as to what cause we must attribute the occurrence of a disease so baffling as this has hitherto been to the best efforts of successive generations, and so uniformly fatal in its results, we are at once confronted by the striking fact that the most frequently operating exciting cause of diabetes will be found either in an asthenic condition of the nervous system as a consequence of chronic neurasthenia (more commonly known to us as "nervous prostration") or, it is caused by a more or less powerful shock of the general nervous system, as a consequence of the violently operating effects of an accidental traumatic cause.

The occurrence of nervous shock after an accident, is frequently too trifling to be long remembered; but when as a sequence, the presence of sugar in the urine is discovered, in connection with insatiable thirst, profuse flow of urine, rapid emaciation, a cool and dry skin, great mental despondency, with extreme and progressive debility, and a bloodless complexion are presented to the physician in such a frightful group, he can instantly form a correct diagnosis.

In studying the nature and causes of diabetes, from its early history, and subsequently, attention has often been directed without result, to the supposed functions of a disordered or diseased liver, to account for the presence of glucose in the urine; and in later years, the disturbed state of the functions of the pancreas has been, and is now assigned in some quarters, as the cause. But it is apparent and susceptible of proof that the objective symptoms of diabetes previous to the development of the saccharine stage, and later, are the results of some unknown change in the

vital functions of all the organs of the body, due to a general but profound disturbance of the nervous system from any adequate cause.

We can all appreciate the fact so commonly observed, that diabetes, which frequently in its acute form is the result of direct violence, and may be accompanied or followed by a more or less severe shock of the nervous system, appears quite as often in connection with, or as a sequence to, some of our more common diseases, particularly "neurasthenia." I believe the term *asthenia* to be the more proper one by which to designate what we now speak of as "diabetes"; it is a neurosis, and naturally divisible into three stages, during either one of which, death may occur.

The third and last stage is characterized by the presence of sugar (*glucose*) in the urine. As a rule, while there is much uniformity in the symptoms characteristic of diabetes, the constitutional symptoms accompanying it, may vary widely in each case; but not more so than do the vagaries of those who prescribe for them; and the treatment has varied from that by skimmed milk, to venesection, and all with the same fatal result,—death by *asthenia*—under any stereotyped treatment by means of drugs. I have no doubt that cases of recovery have occurred as stated, where no physician has attended, but this only shows what a vast difference there is between getting well of anything, and being cured of it.

But just here, however, we are compelled to admit that, owing to the strength of popular clamor, blind and ignorant prejudice, hereditary ideas, custom, and the prevailing fashion, the whims of people have possibly, in some cases, as much to do with the shaping of our therapeutics, as the tailor has with the cut of our garments; and nowhere is the fact more fully illustrated than in the history of the disease we are now considering.

As a rule, the pathologist pursuing an inquiry as to the cause of death in a person who has perished by *asthenia*, would expect to find some evidences of morbid action; some signs of structural change; or some products or deposit, indicative of the nature of the condition precedent to death; some pathological sign of value in the inquiry; but

the patient died, and left no sign—and 'tis always thus—autopsies are silent—pathology is dumb—and the victim leaves no record of the manner of his departure. Every known means of interrogating nature has in turn been exhausted; and as the last resource, the most powerful lenses of microscopy fail to reveal the slightest indication of structural change in any organ of the body. Each of these incidents indicates by positive and negative evidence, that the cause of this mysterious affection is the loss of functional vitality of the nervous system, and death by deprivation of food is the necessary result. Yet, we have here positive parol evidence, in the absence of all speech or sound, that your telephone instrument can no longer respond to your call—the battery is empty or the wires are no longer in working order. And so, our methods of gaining information of past events sink to a common level of harmless desuetude. The incident is closed.

As to the disease being due in any sense to organic, or structural alterations in the pancreas, it needs only to be suggested that, in such case, the evidences of pathologic change would be disclosed at the autopsy; and yet it should be remembered that the functional disturbance of a great gland like the pancreas, with so intimate relations to digestion, produces in the personal appearance of the patient, almost the same evidences of anemia as attends diabetes, but without the presence of sugar in the urine,—or of neurasthenia.

More than a dozen years ago, I broke down in health from excessive overwork, and gradually found myself disabled by extreme "nervous prostration" as we termed it, from attending to my ordinary duties. A short absence in England apparently restored my health, and for two or three years I was able to be actively engaged in my work, taking restful vacations by short sea-voyages in summer, and avoiding fatigue as much as possible at other times. I soon, however, became aware of a serious impairment of strength, and consulted medical friends. In 1891, I had a severe and protracted experience with the "grippe," but in July went again to England, returning in the early autumn, and so greatly improved that I hoped for complete recovery.

In September, 1894, although extremely weak, I ventured to answer a professional call to Norfolk, in Litchfield County, arriving at evening at the hotel. But within a few hours, I suffered a very severe perpendicular fall in the house, through an unguarded "shute" in the floor, striking on my feet; and causing the fractures of two or three ribs, with some contusions and scalp wounds, followed by complete unconsciousness for forty-eight hours, from concussion of the brain and spine. The severe and general shock of the nervous system, it was believed, would prove fatal. For more than a month I remained helpless in bed; sleeping most of the time, but delirious when awake; and during all the years of my invalidism, from the day of my first break down by neurasthenia, until the present (and I ask your special attention to this fact) took daily after my return to consciousness, my customary rations of full and varied diet.

In concluding for the present, what I wish to say of the nature of Diabetes, whether we speak of it as a recognizable disease,—or as a most grave and serious functional disturbance of vital organs, tending to terminate fatally, it may suffice now to say, that, whichever you prefer to call it, the disease is never epidemic, nor under any condition is it communicable,—but it may be acquired by any person; a patient who has been cured of diabetes, is not, so far as now appears, thereby rendered immune from subsequent attacks, but so far as we do know, a second seizure has never occurred. It has never been known to exist among barbarous peoples; but it has, throughout the world, the reputation of being almost peculiar to the civilization of the Anglo-Saxon race; and particularly to residents of the United States, and in other countries is known as the American Disease.

The theories, which for centuries have everywhere prevailed, with regard to its nature, as well as its proper treatment, have been confused and unintelligible, destitute of all philosophical basis, and contrary to some of the best known facts of science. By what false methods of observation, or by what illogical courses of reasoning such an erroneous and untenable view of a disease so very important, and so

fatal in its results, could have become so universally accepted, it would now be unprofitable to inquire. In order that the philosophy of the proper treatment of diabetes may be more fully comprehended, I invite your attention briefly to the circumstances which preceded its full development in my own person as indicating a much greater degree of danger from the accidental complications attending it.

The phenomena of physiological chemistry, by which we mean the knowledge of the chemical products and combinations resulting from the organic processes of animals in a state of perfect health, we all probably, more or less, understand; but for several years I have felt sure that the proper study of practical medicine required that a sub-division of chemistry should be broadly outlined to the extent of taking cognizance of the chemical changes which occur in living bodies, under the operation of organic or diseased functional disturbances of vital organs no longer capable of performing their functions according to nature's laws. Pathological chemistry should be as definitely taught in practical laboratory work as general chemistry; and while its facts and scientific principles, upon which its theories rest, may be to many unattractive, and perhaps not easily understood, they offer us a most interesting, and nearly unoccupied field for original scientific research.

In illustration of some of the foregoing observations, and particularly of the fact that the nervous system is the one pathologically involved in cases of diabetes, I mention a recent fatal case occurring in this city.

A physician driving with his family, a pair of vicious horses, a battle occurred between the animals, near the brink of a railway cut, down which they were in danger of plunging. Leaping from the carriage he seized the horses by their bridles, and held them by great exertion of strength while the family made their escape to the ground; suffering himself in the protracted struggle, a compound dislocation of the shoulder, downward, with laceration of the capsular ligament; besides a very great nervous shock from which he never fully recovered; but after many months he died, with all the fatal symptoms of "diabetes mellitus," and the final occurrence of tuberculosis.

I could name a number of other cases besides my own, in which nervous shock due to accidental traumatic causes, has been a prominent and constant factor. I recall instances, in which "asthenia,"—or, as we were accustomed to call it, "nervous prostration,"—was the beginning and the ending of diabetes; terminating after a long decline of many years, spent in the most complete and systematic deprivation of all foods that could by any possibility, continuously sustain life.

Another fatal case of diabetes comes to my mind, as the result of domestic affliction, privation and disappointments, incidental to the settlement of a new country, in which a lady who never was ill except with her two children, possessed of every comfort that money could purchase, wealthy enough to live in any city, but condemned to be entombed alive in a prairie sod-house, deprived of all female society, with no servant and no neighbor within many miles. Can any medical man wonder that in a few months she was brought back to New England a hopeless wreck, vainly seeking to be cured of diabetes?

So extremely varied are the exciting causes of this mysteriously fatal disease. But what uniformity in its progress, and in its termination!

I really know of no other affection at all resembling it, if we consider it from beginning to end, as I am persuaded that we must, as a neurosis, characterized by at least three distinct stages, in either of which death may occur.

At the time of the accident at Norfolk my ordinary weight was one hundred and seventy-five pounds, and I knew of no evidences of any organic disease, nor of any great functional disturbances other than some results of the fall; and but for the increasing debility of chronic neurasthenia, which was more confirmed, rather than lessened, I had almost ceased to be anxious with regard to it.

On the first day of June, 1898, the hottest of the year, I received a coup de soleil by insolation, with no direct exposure to the rays of the sun. The effect upon my greatly weakened nerve power was very severe and immediate, so that within three days, nervous prostration seemed to have nearly reached its utmost limit; the power of volun-

tary motion no longer came at my call. It was then that my friend of many years, Dr. John Nicoll, who had been my constant medical attendant, was again called in.

We each knew from sad and repeated experience, what it is to lose patients by diabetes; and moreover, we knew that our views of the results of all treatment hitherto were in perfect accord.

From the best information attainable from any and all possible sources, we also knew that only a fatal termination of my case could be looked for. We were, however, so strongly impressed by the great similarity of the symptoms of neurasthenia, with those of diabetes, before the saccharine stage was fully developed, that in order to study the subject more easily, the symptoms were arranged in columns, side by side for comparison; and the prompt conclusion was irresistible, that the two affections were simply different stages of the same progressive disease.

In order that the verisimilitude of apparent results might be demonstrated beyond a doubt, other parallel schedules of the prominent symptoms of neurasthenia and diabetes were prepared, with some attention to the order of succession, and conveniently arranged for comparison. It was at once evident, that no mistake had been made, and that a most striking and suggestive resemblance existed between these two affections, particularly before the full development of the saccharine stage of diabetes had been reached, that in both cases, "asthenia" was the prevailing and constant condition, and that in fatal cases, death occurs in precisely the same manner in both classes of cases, by "asthenia"; and we fully agreed in the opinion that these two distinctly named affections are but different stages of the same disease; and that each is a neurosis, and should be treated as such. I hope, that in view of the very great importance of the general subject, some repetitions may be pardoned. During this process of enlightenment, which occupied several days, and before any new line of treatment could be definitely adopted, treatment of some sort seemed to be required; and being as yet, unable to break away from the bondage under which the entire body of the profession was still struggling, we felt obliged to fall back

upon the objectionable method of treatment which has for so many generations received professional endorsement. Accordingly, a restricted proteid diet was adopted; but in about thirty-six hours it became evident that, if I were to live at all, I must be liberally fed with appetizing and easily digestible solid and liquid aliments in usual variety—together with alcoholic stimulants.

As to the Cure. The intelligent and successful treatment of any form of disease dangerous to life, requires not only that the physician in charge should possess an adequate knowledge of the patient's history, but that he also has a familiar knowledge of the natural history of the disease itself; for it is only from such data that he can really know the nature of diabetes and prescribe the proper treatment for its cure. Being a neurosis, it is plain that its curative treatment should be based upon general principles alone, and that the use of any so-called specific remedies is not only useless, but harmful; that the use or the disuse of ordinary or special articles of diet among all the food-products is not to be commended. But its curative treatment does require the exercise of the highest possible degree of skill, in the use of the widest range of therapeutic knowledge, guided by a mind free as possible in the nature of things, from all the narrowing influences of sects, or of personal prejudice. This necessity for freedom of opinion, judgment, and action, will render of the greatest importance a practical repudiation of all dogmas unsupported by scientific truth.

It is a matter of no consequence, what may be the weight of the "consensus of opinion," that may strive to convince us that any affection preceded or followed by nervous shock, with or without violence, in connection with intense thirst, polyuria, a cool and dry skin, progressive emaciation, with debility, and mental despondency, can be safely treated, and much less cured, by removing from the dietary of the patient any articles of food suitable for the support of human life.

Naturally, you will desire to ask of me, something more definite as to my reasons for believing in the reality of my cure of diabetes; and from the nature of the inquiries I

daily meet with you would infer that there exists for this deadly disease a specific remedy that I am supposed to have discovered, and am now illustrating its curative effects in my own person. Nothing could well be farther from the true statement of facts than this. The necessity for condensed statements in a paper like the present one, does not admit of full verbal explanations of every point, as it should do, if it were addressed to pupils, for only a glance, or an allusion, is required to convey to mature minds the contents of entire volumes in all their details.

First, then, I will say that, the symptoms in my own case, pathognomonic of diabetes, have all disappeared; and no new ones have taken their place; a comfortable sensation or a healthy performance of the organic functions is the only evidence that those organs exist. Sleep is continuous and refreshing. I have sufficient appetite for good foods, in all varieties accessible. I have no inordinate thirst; my weight increases, and my complexion is good.

Secondly. I attribute my improved condition primarily to the fact that, with the exception of the fifty or sixty hours already mentioned I have never known deprivation of food, as a means of reaching a desired result. I have always eaten with impunity every variety of starchy foods, excepting during the saccharine stage of neurasthenia; provided, they were thoroughly cooked, well prepared and not cut too early from the loaf.

During the last eighteen months I have, without any absolute reason that I can fully explain, used tablets of "saccharine," instead of cane sugar, with tea and coffee, but without noticeable difference.

In reporting a case so important and rare as this, I deem it important and appropriate that the report should be accompanied by names and dates in connection, sufficient for any desirable verification. Mr. Warren A. Spalding, Demonstrator of Pharmacy at Yale University, made frequent analysis of the secretion of the kidneys, from time to time, and kept a record of the specific gravity as long as he thought it needful to do so. Dr. J. C. Kendall of Norfolk, Prof. Dennis of Bellevue Hospital, and Dr. E. Welch of Winsted, were the physicians who attended me after my

injuries at Norfolk, and to whom I feel under great obligations. The earliest pathognomic symptom of diabetes that attracted my attention was a greatly increased flow of urine, and a notable increase in its specific gravity which was 1028 to 1030—and within a few days palpable evidence of sugar in the urine made its appearance in abundance, and all the other signs of diabetes, including insatiable thirst made rapid progress, seriatim, thirst being among the last; rapid emaciation, and extreme debility were constantly present.

I need not add, that to treat such a case upon general principles, would be to establish and maintain such an oversight of the patient along all those lines which connect him personally with the outside world, regulating and controlling all the elements constituting his ingesta. It would insure for him at proper times, sufficient supplies of nutritious food in variety; quiet sleep, and quiet days, freedom from all noise and annoyance; and sufficient gentle exercise in a pure air.

I can advise no medicine that would be useful in every case. At a time of great weakness, and much thirst, a solution of Bromide of Arsenic, was extremely beneficial to me; and during my entire illness, both mineral and vegetable tonics were of course always in order, and greatly contributed to my cure. For more than twelve months now, I have felt free from all signs or suggestions of neurasthenia, (or diabetes,) in any one of its three different stages; and when I compute the number of my days, I consider myself in excellent health.

In looking over these pages, and remembering some of their deficiencies, I am pleasantly reminded of a valuable sentiment by Buffon, the French naturalist of the last century who wrote, "I love as well, one who corrects an error of mine, as one who gives me a truth; for an error corrected is a truth."

SURGICAL PAPERS.

REPORT ON THE PROGRESS OF SURGERY.

N. R. HOTCHKISS, M.D.,

NEW HAVEN.

CYSTITIS.

The old operation of Kolpocystotomy for the cure of cystitis is condemned; the more scientific treatment of cystitis should be made upon the diagnosis of the bacteriological cause, which necessitates a more complete and thorough microscopical examination of the urine. Chronic cystitis can be treated surgically by means of the cystoscope. Curettage can be done if necessary. Vineberg claims that with Kelly's cystoscope a few applications of a 5 per cent. to a 10 per cent. solution of silver nitrate directly to the red patches of cystitis will almost invariably effect a cure.

CYSTOCELE.

In a series of twenty-five cases operated upon by Lowson, with every case resulting satisfactory, he has adopted a rather new procedure. He makes a medium abdominal incision and retracting the sides of the wound, he divides the peritoneum transversely about one and one-half inches midway between pubes and umbilicus, then cutting from above downward and outward a triangular flap of peritoneum is raised, which contains the urachus and hypogastric cords. Anteriorly the hand is passed down between the pubes and the front of the bladder, separating that organ freely. By pulling on the triangular flap, the bladder is readily raised and maintained in its new position by suturing the peritoneum to its neighboring structures.

BOUGIEING THE URETERS.

I believe that Kelly holds the reputation as the first man to successfully bougie or catheterize ureters for diagnostic purposes. He now claims one step more in the use of the catheter as to the differential diagnosis, particularly of the right side, between renal, hepatic, intestinal or hysterical cases, the location of pain given subjectively upon the bougie's entrance into the pelvis of the kidney or by the induction of artificial renal colic from Boracic acid injections into the kidney, thus localizing the pain and establishing the normal position of kidney. Kelly cites a case of a movable tumor in the right side, which he decided to be a floating kidney, but upon the use of the catheter the pain showed the kidney to be in proper position, and the pain was not felt in the tumor. A laparotomy revealed an enlarged gall-bladder, with the kidney normal.

VALUE OF X-RAY IN URETERAL AND RENAL CALCULI.

Among the interesting results in the use of the X-Ray in diagnosis, is that of accuracy in finding and locating calculi. Experiments have proven this in every case, not only locating single, but also multiple calculi. The necessity then, of using the Roentgen-Ray in suspected calculi cases, is obvious. In one case reported the skiagraph showed two calculi. On subsequent operation one weighing thirty-two grains was easily found, but the second one weighing ten grains, which was encysted, was found only by measurements derived from the skiagraph.

VESICOVAGINAL FISTULAE.

Dr. Kelly in one case of such wide extent and not granting of any operation from below, opened the abdomen from above the pubes intending to dissect the bladder away from the fistulous opening and sewing it up, but in attempting to do so the bladder tore so widely that he dropped the idea and, instead, cut widely through the top of the bladder to get at the fistula from the inside, in fact, splitting the bladder in

half, and finding the bladder in front of the fistula fairly movable, he continued the denudation directly down, starting with the bladder walls above and then passing some catgut sutures, bringing the wounds together, thus closing the fistula by diminishing the capacity of the bladder. In another case he opened the abdomen, separated the bladder, freed the fistula on both sides and brought the edges together with catgut. Both cases were perfect recoveries.

Lionvinoff has examined bacteriologically the so-called diphtheritic membrane that forms around the edges of these fistulae. In every instance he found the Bacterium of Leube and the Bacillus pyocyaneus and he infers that these may not only develop suppurating wounds, but can produce deep obstinate local infection. In the treatment of these fistulae, Noble advises the importance of closing the bladder without closure of the vaginal wall and the continuous prolonged use of the drainage catheter. The direction of the line of suture should be governed by the individual case. It is best after denudation, to close the fistula with a fine running catgut suture, reinforced by interrupted sutures of silkworm gut, or chromicized catgut. The edges should be approximated with the least possible tension.

IMPLANTATION OF THE URETER IN THE BLADDER.

Such a condition could become necessary from a variety of causes, viz., as in ureterovaginal and ureterouterine fistulae, provided the ureter is sufficiently long to permit of implantation; anomalous positions of the ureteral openings in incontinence cases; when operating on tumours of the bladder below the ureteral orifice; stenosis of the lower end of the ureter, congenital or acquired; or a calculus encysted in lower end of ureter. The button devised by Boari, an Italian surgeon, to establish a communication between the ureter and the intestine has recently been used in four cases with successful results. The technique is quite similar to that employed in uniting the ureter to the intestine by this button. The ureter is isolated by incising the overlying peritoneum for two or three centimetres, then a ligature is passed round the ureter above the site of the fistula and the ureter is then

cut across on the proximal side of the ligature. A Boari button of suitable calibre having been selected, the ureteral end is invaginated upon the tube and secured in place by a silk ligature, the movable plate is depressed until it comes in contact with the underlying plate and is kept in place by passing a stylet through the opening situated in the tube. Then with a fine intestinal needle a purse-string suture is inserted in the bladder at the site selected for implantation and in the area so mapped out an incision of suitable length is made for the introduction of the large part of the button. The purse-string is then drawn up and tied, bringing the suture line into close contact with the tube. The stylet is withdrawn, allowing the spring of the button to bring the vesical wall into contact with the ureter. Then reinforce this approximation by some sutures passed through the peri-vesical and peri-ureteral tissues. Or another method has been used by applying the original purse-string suture only to the vesical mucous membrane, and then attaching two flaps derived from the muscular coat over the ureter, giving a broader surface of contact and also obtaining an oblique incision in imitation of the natural anatomical arrangement. This anastomosis can also be made extra-peritoneal by stripping off the peritoneum from the pubes to the site of the implantation and packing with gauze. The button is easily removed by dilating urethra and catching the button or attached thread with forceps.

IMPLANTATION OF THE URETERS IN THE RECTUM.

F. H. Martin has suggested a new operation for this purpose to avoid the possibility of infection from rectum to kidney, as has been heretofore experienced. He advises burying the ureters longitudinally in the wall of the rectum for an inch or more, thus emptying in the long diameter of the rectum. In this way in the act of defecation, the fecal mass will squeeze the calibre of the ureters closed by the pressure on the mucous membrane, and the pressure being extended from above downward, in the direction of the onward flow of the urine, will empty the ureters by a milking process.

FLOATING KIDNEYS

While suspending the kidney by sutures is generally practiced, Senn advises a method without suturing, which he claims gives more promising results, although all methods of suspension are frequently followed by a relapse of floating kidney. Senn's method is, after exposing the kidney by Simon's vertical lumbar incision, it is pushed into the wound by pressure over the abdomen by an assistant. About one-half of the kidney should project below the lower margin of the last rib. The adipose capsule of the whole posterior surface of the kidney is then dissected off. The kidney is now brought well forward into the wound and the cut margins of the adipose capsule are pushed away from the kidney until the borders are freely exposed, when the fibrous capsule is thoroughly scarified with a long needle. At this stage the lower border of the kidney is grasped by its capsule with a volsella forceps and brought well forward into the wound, and the lower third of the kidney is then laid bare by dissection. Then a strip of Iodoform gauze about one inch wide and four layers thick is placed under the lower end of the kidney and each end brought out over the respective wound-margin. By making traction on the gauze, the lower end of the kidney is brought well into the lower angle of the external incision. With a long strip of Iodoform gauze the floor of the wound is then carefully packed in such a way as to force the perineal fat from the borders of the kidney, leaving the posterior scarified surface well exposed, when with the same strip of gauze this is covered and the whole wound well tamponed with another piece of gauze. The strip of gauze holding the kidney is then tied over the tampon, which forms a wedge and will thus prevent displacement until firm adhesion takes place. The two pieces of gauze are tied together and the wound dressed in the usual manner. None of the lumbar incision is sutured. The tampon is removed in five or six days.

VULVITIS AND VAGINITIS,

An interesting report is given by D. Robinson in his investigations on fifty cases of vulvitis and vaginitis in chil-

dren. In seventy-six per cent. of these cases, cocci resembling the gonococcus of Neisser were present. His deduction is, therefore, that the majority of such cases in children are gonorrhoeal in origin. Other investigators corroborate the reports of Robinson.

MENORRHAGIA AND METRORRHAGIA.

No new principle has been evolved in the treatment of such cases, except possibly in reference to the action of the new drug Stypticin, which is hydrochlorate carbonate obtained from the opium alkaloid narcotin, and appears in the form of yellow crystals, freely soluble in water. The action of this drug on the heart is something similar to that of Digitalis. In fungous endometritis and in advanced cancer, Stypticin is of no benefit, but is useful in hemorrhage, associated with inflammation after abortion and full term deliveries, and in other forms of uterine hemorrhage of obscure origin. No hypnotic effect or unpleasant results follow large doses, nor has it apparently any oxytoxic properties. By the mouth, maximum doses, four and one-half grains; twenty minims of a ten per cent. sterilized aqueous solution, given hypodermically. In cases of endometritis fungosa, curettage is first done, and then if hemorrhage continues, Stypticin is of positive benefit. Nassauer says that the drug acts upon the vasomotor nerves of the genital tract, and not upon the muscular fibres of the uterus as ergotin. Thyroidin is claimed to exert positive benefit on all forms of menorrhagia or metrorrhagia, even in cancerous hemorrhages.

THYROID AND OVARIAN THERAPY.

A few remarks may be made in reference to Thyroid and Ovarian therapy in Gynecology; the thyroid gland, in addition to its general effect upon the metabolism of the body, exerts an inhibitory action upon the pelvic genital organs and upon the uterus in particular, especially upon the epithelial elements of the endometrium. As a result of this inhibitory or vasoconstrictor action, there follows a lessened tendency to hemorrhages from the uterine mucosa. This action is directly antagonistic to that exerted upon the uterus by the ovarian secretion. In cases in which this con-

servative influence is deficient or absent, it may be restored by the ingestion of fresh thyroid gland or desiccations or extracts of that organ. As before stated, thyroid therapy is indicated in all hemorrhagic affections of the uterus as fibroma, hemorrhagic endometritis, menopause hemorrhage, and chronic tubal disease, and in any form of pelvic congestion. The more chronic the case, the more rebellious to the thyroid treatment.

In reference to ovarian therapy, it may be said that the ovaries, in common with the other glandular organs of the body, exert an occult, but very positive influence upon the general organism and where this influence is removed by natural, or pathological menopause there result certain nervous phenomena. The administration of ovarian extract or ovarian substance is followed usually by marked amelioration of these symptoms. The average dose is from two to five grains t. i. d. Larger or excessive doses are followed by cardiac and nervous manifestations. It has been shown that certain patients acquire a tolerance to the remedy. It is better to begin with small doses and increase as indicated.

OPERATIONS ON PERINEUM.

The difficulty of successful results in a small percentage of cases of perineorrhaphies has been in the inability to get proper union of the external and internal sphincter. Kelly, in Hopkins' reports, gives a series of cases wherein he shows the results of his method which, in some respects, differs from that of a good many operators, these cases having all been operated upon previously for closing the vaginal outlet, one of which had been done six times and still presenting trouble, at times of involuntary defecation and gases. His method is to make a semi-lunar or curved incision over the anatomical position of the external sphincter, the length determined by the amount of retraction of torn muscle which, in turn, is determined by the feeling as pitting at the torn ends, then freeing the ends for perhaps one-fourth of an inch and upon denuding the scarred ends are directly united by buried interrupted cat-gut sutures. Then he passes a silk-worm gut tension suture

directly through the substance of the sphincter muscle half way between its outer and inner borders, then through the skin. Its purpose is to take tension off buried catgut sutures. His operation upon ununited internal sphincters, the importance of which he considers as great, if not greater, than that of the external sphincters, is done by passing one or two fingers into the rectum and bringing the thin septum forward, denuding by knife or scissors upward and inward, separating the vagina and its column from the septum in such a way as to isolate the rectum in front and on the sides.

The bowel and the muscle is thus set free and the internal sphincter fibres can be clearly recognized on both sides. After removing the scar tissue, the internal sphincter is then united by a series of interrupted fine silk sutures entering and emerging on the mucous surfaces of the bowel about a millimetre from the edge of the cut. The sutures are passed and tied from above downward from one to one and one-half millimetres apart. It is his practice to open the bowels after such operations by giving every other day a warm oil injection through a soft catheter.

Baldy, in order to prevent infection in the wound from the rectal side, advises going high up in the vagina, splitting and turning down a flap, and by this mode of suturing, getting rid of the wound in the rectum. Hirst knots four of the septal stitches in the rectum. Above the rectal sutures a triangular stitch is inserted somewhat resembling the Emmet suture for securing the ends of the sphincter, but placed above the sphincter, which is brought together by the rectal stitches, and acting as a splint to the rectal wound, an additional support to the sphincter stitches and a barrier between the rectal and vaginal sutures. The vaginal wound is united by vaginal and perineal sutures as in Hegar's operation for lacerated perineum.

EXTENSIVE DESTRUCTION OF SPHINCTER.

Kelly reports a case of old syphilitic ulceration of the bowel in which the sphincter had been destroyed anteriorly entirely. Nineteen operations had been performed. In order to restore the function of the bowel, he divided the

septum freely with a pair of scissors, cut across the sphincter and turned it over as a flap, making a U-shaped incision with its convexity forward. Then he followed up the bowel, catching it with forceps and pulling it down and dissecting it out on all sides with scissors. Tying a great many small vessels, he dissected out the levator ani, opened the peritoneum and found that at a point opposite the middle of the cervix, the lumen of the bowel became normal. He cut the bowel at this point, brought it down and attached the posterior end just behind the sphincter; then, by a complicated plan of suturing, he attached the bowel anteriorly and at the sides to restore the sphincter. She recovered with entire control over the function of the bowel.

OPERATIVE TREATMENT OF PROLAPSUS UTERI.

Wertheim operated on two cases of prolapsus with good results. He made a transverse incision in the anterior fornix, then opened the vesico uterine fold of the peritoneum. The fundus uteri was then drawn down through the opening, each angle of the wound being sutured to the cervix. An oval denudation was then made in the anterior vaginal wall, extending from a point just above the meatus urinarius to one-half inch below the transverse incision. The posterior surface of the corpus uteri is then denuded and is united to the edges of the vaginal wound.

CERVICAL LACERATIONS.

In fresh cases, the consensus of opinion is not to sew up the laceration at the time of occurrence, because of the possible non-sterile condition of the parts, and from the fact that usually what appear to be large lacerations at the time eventually heal up under subsequent treatment without any trouble. Cases of lacerated cervix should be required to remain in the recumbent position until healing is completed, as the upright position tends to produce ectropium. H. P. Newman, in a recent paper, believes that in the majority of cases of old lacerated cervix amputation tracheoplasty of the cervix should be done, instead of trache-

lorrhaphy. He employs a specially devised knife with the cutting edges almost at right angles to the handle and removes the diseased tissue from the cervix, leaving flaps which, if properly made, fall together and inward, requiring very simple suturing.

SURGICAL TREATMENT OF FIBROIDS.

At present there are several general rules to be observed in the operative interference of fibroids. First—The younger the woman, the sooner the decision to operate. Second—Less objection to operate in a single fibroid than on multiple tumors, since there is a fairly good chance of preserving the uterus. Third—Ante-cervical or retro-cervical myomas should always be removed to prevent trouble in subsequent labors. Fourth—If a woman must work for her living, an operation should be done. In operative treatment different methods and ideas exist. Each and every one has its followers; viz.: Vaginal ligation of the uterine arteries is practiced in a certain number of cases, particularly those of obstinate hemorrhage and without disease of the adnexa; vaginal enucleation of the submucous variety; myomectomy by both vaginal, but preferable abdominal routes, particularly of the subserous variety and not multiple myomas; hysterectomies by both abdominal and vaginal routes. Different techniques are followed by different operators. Among the new methods of abdominal hysterectomy, which deserve consideration is that of B. Robinson. He makes a long median incision to allow the tumor to be brought out of the wound; with catgut, beginning at the angle of the wound above the umbilicus, the peritoneum is closed down to the posterior surface of the uterus, this practically closing the peritoneal cavity. Then the ovarian arteries at the uterine end of the Fallopian tubes are ligated with catgut, and a large clamp is placed on the uterine side of the broad ligaments on each side of the uterus as far down as the peritoneal cuff. The ovaries are left in situ and as much of the uterine ends of the oviducts as possible in order to prevent menopause symptoms. The broad ligament is then split down to the uterine arteries and ligated with cat-

gut. The peritoneal cuff is now stripped down, making it as ample as possible. The uterus is amputated just above the internal os. The upper edge of the peritoneal cuff is now sutured to the parietal peritoneal edge—which was produced by the median incision—and the peritoneum is entirely closed. The peritoneum is immediately closed after making the cuff, if desired, in which case the shock is similar to an exploratory laparotomy. The uterine stump closed to a cone by catgut, is drawn up in the abdominal wound and fixed there. The external layers of the abdominal wall, muscles, fascia and skin, are then closed by silkworm-gut sutures. The two sutures of the wound over the extraperitoneal stump are allowed to remain united for hours, to allow the escape of primary wound secretion. This procedure leaves no ligature in the abdominal cavity; all are extra-peritoneal.

An unusual method of performing Hystero-myomectomy upon fibroids when complicated by different posterior adhesions has been reported; that of separating the bladder from the uterus anteriorly and then to tie the uterine arteries on each side before any attempt is made to remove the adherent masses, thus obviating the danger from hemorrhage from the uterine arteries; then cutting across the cervix and then to free the tumor from the cul-de-sac, thus reversing the method frequently employed, of separating posteriorly first.

CARCINOMA UTERI.

There is no condition confronting the Gynecologist in which he is called upon to relieve more promptly and radically than that of malignant disease of the uterus, and yet with all the advancement in this branch of surgery, delay frequently happens until surrounding tissues are invaded so deeply that surgical procedure is often unavailable. Those cases which are inoperable and left to Nature's ravages have, within the past year, received a great deal of noteworthy attention. There are more cases which present probable radical cures in the disease during the past year than have been noted for several years before, the fact being due to

an early recognizance of the disease and to a wide cutting operation, and also to the fact of vaginal hysterectomies superceding the abdominal route. Tuffier reports twenty-seven cases of vaginal hysterectomy operated upon by the following method: The uterus, after being freed from adhesions, is bisected in the usual manner and one-half of it drawn out of the vulva. The finger is passed behind the upper part of the broad ligament and the included tissue is grasped between the jaws of a powerful clamp, called the angiotribe, which is then tightly screwed. The tissues are thus destroyed and the ovarian artery occluded. The lower portion of the ligament, including the uterine artery, is then seized with the instrument and similarly compressed. The same technique is done on opposite side. This is practically the clamp operation, except that the clamp is removed, no hemorrhage nor any accident occurring in any of the reported cases.

There is a tendency to the return of the old operation of fifteen years ago of vaginal hysterectomy in Carcinoma Uteri, but in somewhat of a different method. Kelly, after first bougicing the ureters, makes an incision in the vault of the vagina and begins by freeing the bladder from the vagina and separating it from the uterus, then catching the fundus uteri, pulls it down through the opening in the vaginal wall, then tying off the vessels of the broad ligament in the upper part, splits the uterus in two, turning the two portions down into the vagina, cutting as far as possible from the uterus, avoiding the bougied ureters.

OPERATIONS ON RECTUM BY VAGINAL ROUTE.

Prof. Rehn has recently shown the superiority of accepting the vaginal route for rectum operations, instead of the sacral route, the advantages claimed being that there is no sacrifice of adjoining structures as in the sacral method, and that the pathological changes have, in a measure, rendered the peritoncum immune, and the dependent situation favors drainage, and the larger size of the wound permits of quicker and more radical operating, since the uterus and vagina can be extirpated if involved. The technique is, lithotomy posi-

tion, tamponade of the rectum, division of the rectovaginal septum, then extensive lateral incisions invading the rectovaginal fossae, in order to free the rectum, and at a point about one and one-half inches above the anus the incision completely surrounds the rectum. The bowel is never opened until the final stage, unless the growth extends into the sigmoid, when it is divided and the central segment is drawn upward in order to render visible and accessible the peritoneal folds. The sigmoid is subsequently drawn down into the grasp of the sphincter through the anus, whose mucous membrane is freshened, first sufficiently dividing the mesentery of the sigmoid.

CANCER OF THE RECTUM.

Quenn, of Paris, divides rectal carcinomata into three classes, according to location—low, middle and high—the low class he operated by the perineal route, high class by the abdomino-perineal route. For the second, or middle class, Quenn formerly operated by the sacral route, Kraske's operation, but of late has completely renounced this, because the perineal route is only applicable in these cases, when the upper part of tumor lies within eight or ten centimetres of the anus and as it is necessary to go some distance beyond the tumor. All others he operates by the abdominoperineal route. While this leaves the patient with a permanent artificial anus in the iliac region, yet it admits of more radical cure. Modern asepsis, both during and after the operation, is necessary. He insures against hemorrhage by ligating both internal iliac arteries. He proceeds by incision in the median line with patient in pelvic position. Right iliac artery is exposed and ligated one centimetre below the bifurcation of the common iliac, carefully avoiding the ureter by incising the peritoneum internal to the vessels, and then palpating the artery. The left iliac is then reached, in case of a long mesosigmoid by turning up the flexure and approaching the vessel directly, or, if the mesosigmoid is short, it is incised and then the parietal peritoneum is incised and the vessel approached. Enlarged glands are removed and then protecting the abdominal cav-

ity against infection the sigmoid flexure is divided between two strong silk ligatures, disinfecting the cut edges and wrapping in Iodoform gauze. The upper end of the sigmoid is at once sutured in an incision in the left iliac region, not removing the ligature around the sigmoid until the third day. The mesorectum may be freed when the sigmoid and rectum are put upon the stretch. The band containing hemorrhoidal vessels is ligated at the same time. The rectum is loosened from the sacrum downward as far as possible, incising the rectovesical or rectouterine pouch at once, the rectum is wrapped in gauze and then the abdominal wound is closed. The bowel is loosened completely from below upward and removed, tamponing the resulting cavity and the skin-wound partly closed. Another claims better asepsis, better permanent cure, rapid recovery after operation, and absence of shock.

MYXOMATOUS DEGENERATION OF OVARY.

In the Medical Record of May 6, 1899, M. A. D. Jones describes myxomatous degeneration of the ovary as the third hitherto undescribed disease of that organ. The ovaries consist of fine and well-organized muscle fibres, fibrous connective tissue, nerves, and other vital structures as the ova, blood-vessels, etc., but all of these may be displaced and destroyed by this remarkable form of degeneration. Thus in Oöphoritis, when the tissues are reduced to protoplasm, or embryonal corpuscles, the ovary may degenerate into carcinoma, endothelioma, gyroma, or myxoma. This remarkable degeneration seems to have a withering and blighting effect upon every structure of the ovary. It seems very near akin to malignant disease resembling myxosarcoma. The constitutional symptoms are severe. Jones has found but five or six marked instances of this disease.

PERITONITIS FROM GONORRHEA.

Up to 1891 the general prevalent belief was held that the Gonococcus never extended beyond the fimbriae of the Fallopian tubes to produce a general diffuse Peritonitis, but,

at a meeting of the German Gynecological Society, Werthem presented clinical and experimental investigations to dispute this belief. A number of instances have been shown since that time of possible general peritonitis, but an exhaustive report of such a condition present in two cases has been proven during the past year at clinics at Hopkins—the value of the microscope at such operations being abundantly proven—these cases presenting no definite symptoms except general peritonitis at time of exploratory incisions, and then upon a systematic examination of the whole abdominal viscera finding deposits here and there of yellow fibrin flakes of lymph, no definite adhesions being present. Coverslip examinations were reported as showing deeply stained biscuit cocci for the most part intracellular, occurring in pairs and not decolorizing by Gram's method. This led to a further examination of the fimbriae of the tubes which, upon gently squeezing, brought forth an abundance of organisms with the morphology of Gonococci. Both tubes being removed, the abdominal cavity was thoroughly irrigated and drained and the patients made uneventful recoveries. Subsequent information was gained of a history of gonorrhoeal infection.

APPARATUS FOR SAFELY ANESTHETIZING PATIENTS IN KNEE-CHEST POSITION.

An apparatus for this purpose has been very ingeniously devised by Dr. C. A. Penrose, an assistant at Hopkins, the purpose of which is principally to allow of free breathing on the part of the patient, and yet it immobilizes the patient so that any operation, inspection or examination desired in this position can be safely done. The cut of this apparatus can be found in the Bulletin of Hopkins Hospital, November, 1899.

PELVIC MASSAGE.

During last year an interesting discussion on this subject took place at the joint meeting of the Chicago Medical and Chicago Gynecological Society. Arguments for and against the practice were presented, but the consensus of

opinion was in favor of the practice in well-selected cases. The principal objection was possibly the immoral effect that might result. Any acute inflammatory affection would, however, contraindicate its use. Old pelvic adhesions, subinvolutions, undeveloped generative organs, and particularly tenderness after operations, can all be relieved by this method of treatment. Haberlin reports cases of intestinal obstruction after celiotomies successfully treated by massage, after the usual means had failed. He believes that massage and frequent change of the patient's position should always be tried in preference to reopening the wound. No exception, but in pus cases, where adhesions wall off purulent foci. W. J. Smyly states that ileus is generally due to adhesions of the intestine to raw surfaces, either in the abdominal wound, the stump of the pedicle, the omentum, or the surfaces denuded in enucleating tumors or breaking down adhesions; constriction of the bowel by bands, kinking of the intestine, or volvulus. All of which can frequently be relieved by abdominal massage.

REPORT OF A CASE OF GASTROENTEROSTOMY
AND OF A CASE OF PARTIAL
GASTRECTOMY,

WITH REMARKS ON THE INDICATIONS FOR AN EXPLORA-
TORY INCISION IN DISEASES OF THE STOMACH.

CHARLS E. TAFT, M.D.,

HARTFORD.

I have two cases to report to you—one, the history of a gastroenterostomy for non-malignant stricture of the pylorus, with recovery; the other, a case of pylorotomy with removal of half of the stomach, for cancer, with subsequent recurrence and death of the patient.

The first case has been fully reported in the Yale Medical Journal of December, 1899, and I will merely review the important parts of the history presented and at the same time give the subsequent history of the patient.

The patient, a woman aged thirty-nine, came to my office with the following history:

She was not married. Her occupation had been that of a cook. While never strong, she had been able to do cooking and general housework until sixteen years ago, when she had a severe attack of chills and fever. Since that time she had been rather delicate, having been subject to severe headaches due to defective digestion, which manifested itself from time to time by distress after eating, water-brash, and sour stomach. Some five years ago she had what was called "an attack of inflammation of the liver," when she suffered severely with sharp, cutting pains over the pit of the stomach, which lasted about one week. At the same time she was extremely sensitive to touch over the epigastrium and so weak that she remained in bed some fourteen

days. Since then she has had no similar pain till four weeks before the operation when she had a sharp attack, lasting all night.

In December, 1898, her digestive symptoms having increased in severity, she went to several physicians of Hartford, who diagnosed her illness as a gastritis. There were present as symptoms, eructations of gas, distress after eating, sour stomach, and occasionally spitting up of sour food and mucus. A little later she commenced to vomit, and by February, 1899, her disorder had progressed to the degree that several hours after each meal she threw up the entire contents of the stomach, often including food eaten several days before. This gave great relief to the distressed feeling, but resulted in a steady loss of flesh, her weight at that time being a trifle over one hundred pounds. A physician then ordered her to a hospital, where she remained in bed and on a diet for four weeks. Stomach washing had not as yet been used, although it was suggested by one of the attending doctors. During this interval she lost some fifteen pounds, and grew considerably weaker, as a result of which she left the hospital against the advice of her attendants, and treated herself for several weeks.

On May 24th, 1899, the date she first appeared at my office, she complained of constipation, vomiting about once a day of from one to four quarts of food and mucus, acidity of the stomach, distress after eating, headache, dizziness, scanty urination, general weakness and great loss of flesh. Physical examination showed an emaciated woman, weighing about eighty pounds, with sunken eyes, dry skin, feeble pulse, ranging from sixty-five to seventy sitting, increasing to 110 to 120 on standing. Her temperature was subnormal. The heart, lungs and kidneys seemed to be healthy. Percussion, auscultation and palpation demonstrated a marked dilation of the stomach, but did not reveal the presence of any tumor.

The following morning she was given the test breakfast of Ewald by Dr. P. D. Bunce, consisting of fifty grammes of wheat bread without butter, and 300 c. c. of weak tea, without sugar. One hour later the gastric contents were removed by the stomach tube and filtered. This filtrate

treated by the Resorcin test, showed the presence of free hydrochloric acid. By triturating with decinormal soda solution the filtrate was found to have the normal acidity. Using Uffelmann's test, no trace of lactic acid was found in the filtrate. Pepsin was present. The examination of the motor power of the stomach was made one day later. A capsule containing salol, gr. xv. was given immediately after breakfast. Urine was then passed at intervals of an hour or more during the day and the various specimens were tested. No trace of the salol could be detected for about twelve hours. Under normal conditions, salol can be detected in urine one to one and one-half hours after taking it.

It was evident then from the tests and the physical and rational signs obtained, that the patient had a stricture of the pylorus, resulting in a dilated stomach. She was so advised, and strongly urged to submit to an exploratory incision, and, if possible, an operation for the relief of her condition. At this she demurred, and did not return to my office for a week. During this interval she lost at least another ten pounds in weight, and grew considerably weaker. This further loss of weight and strength seemed to convince her that my prognosis of certain death in a short time unless she could be relieved by an operation was correct, and she finally consented to enter a private hospital for that purpose.

Preparation of the patient for this consisted in having her rest in bed for a week. It seemed doubtful at first whether this delay was justifiable, but her general condition was so poor that it became essential to better it if possible by stimulation, food and rest. An immediate improvement showed the wisdom of this course. Her treatment for this interval consisted of stomach washing once or twice a day, and rectal enemata of peptonized milk, beef juice and whiskey. A noticeable feature of these stomach washings was the great quantity of mucus removed.

On the seventh day she commenced to lose ground again and, further delay seeming useless, she was submitted to an exploratory incision, the idea being to make a permanent opening between the stomach and bowel if the condition of

the parts justified it. On making the usual incision, dense adhesions, involving a thickened condition of the pylorus, were revealed. Before these could be separated and the exact condition of affairs determined, such marked collapse of the patient occurred that it became necessary to make an anastomosis between the stomach and bowel at once in order to save the patient's life, it being evident that a prolonged operation must be fatal. This was rapidly done by the insertion of the large size Murphy button between the anterior portion of the stomach and the upper part of the jejunum. Until the button sloughed through on the seventh day, the patient's condition was most critical, owing to constant vomiting of immense quantities of bile regurgitated through the button. Downward passage of the bile was evidently prevented by a kink in the gut on the distal side of the button. On the tenth day, the stitches were removed on account of stitch abscess, and on the following day, in spite of firm strapping, the entire wound burst open, owing to the tremendous strain put upon it by a renewal of the vomiting. Chloroform was then administered and silkworm gut sutures reinserted.

Although very weak the patient made a steady recovery, and to-day, one year after the operation, is pursuing her occupation of cooking. Her weight has increased nearly fifty pounds, and although she is still troubled with indigestion if she eats much starchy food, she is practically as well as she ever was.

As the second case has not previously been reported, I will give it in greater detail. I first saw the patient on January 6, 1900, in consultation with Dr. Henry Rising, of South Glastonbury, who had attended her as her family physician for several years. She was aged forty-seven, and married. Her family history was negative as regards heredity. She had for years had occasional attacks of indigestion, but had not suffered continuously from it up to two years ago. At that time her appetite began to fail and she gradually developed a catarrhal condition of the stomach, manifested by eructations of gas, water-brash, occasional sour stomach, some nausea, a constipated habit, increasing liability to

attack of palpitation of the heart, and intercostal neuralgia. At first she lost no weight, but by January, 1899, her flesh began to lessen and in one year she had dropped off some twenty to thirty pounds. These symptoms persisted and increased in severity until the latter part of October, 1899, when they were aggravated by attacks of vomiting, which soon occurred daily and usually at night after lying down. At no time was there any vomiting of blood. This condition of her digestion caused a great deal of distress and some pain. By January 1, 1900, the emesis had increased in frequency, occurring two to three times a day and usually several hours after eating. The vomitus was of a ropy consistency and contained some food, having a coffee-ground appearance as early as the latter part of December, 1899. During the summer and fall Dr. Rising had placed her on a milk diet, combined with egg, which seemed to give her much less distress than any other food.

While making an examination a few days previous to my visit, in January, Dr. Rising discovered the growth in her abdomen and suggested a consultation. I found at my examination, a woman about forty-five, much emaciated, complexion pale, pulse eighty, normal and of fair strength, temperature and respiration normal, heart, lungs and kidneys negative. Her abdominal muscles were relaxed and flesh flabby, so much so that it was extremely easy to map out an oval shaped tumor in the epigastrium about half the size of the closed fist, which could be easily moved from one side of the abdomen to the other. This mass was hard, not sensitive, and could not be indented. By percussion and succussion it seemed to be connected with the pyloric end of the stomach, and from its mobility suggested that the stomach itself must be somewhat dilated. No glandular enlargement or involvement of other organs could be detected. The general strength of the patient did not permit of her walking about without exhaustion.

The great mobility of the mass, its probable nature, the relative good condition of the patient, and rapid increase of symptoms, which suggested a pyloric stenosis with its certain outcome, indicated to us the advisability of an exploratory incision with a view to a gastroenterostomy for relief

of pain and vomiting. The nature of this, its dangers and the possibilities in the way of a successful operation, as well as the certainty of a subsequent return of the disease, were all carefully and fully explained to the family, and they decided to take the small chance which was offered them for relief. Accordingly the patient presented herself for operation at the private hospital of Miss Wilson on January 24, 1900. She was put to bed and fed, up to the time of the operation, six days later, with milk and lime water, clam broth, bovine, oyster broth, beef juice, malted milk, chicken broth, and occasionally ice cream. These articles of diet distressed her less than any other, and a portion of them were retained.

In view of our positive diagnosis of her condition and the desire to not weaken her further, no attempt was made to test the stomach contents or to wash out the organ. The abdomen was prepared in the usual way on January 29, and the bowel thoroughly washed out. After 10 P. M. of the day previous to operation she received no food by the stomach until 8 A. M. of the 30th, when two ounces of black coffee were given. This was followed by an enema of brandy two ounces, coffee two ounces, and salt solution one pint. Atropia gr. 1-50 was given hypodermically. At 9:40 ether was administered, Drs. Rose, Rising, Bunce and Boucher assisting. The usual incision was made in the median line, extending from just below the ensiform cartilage to a point one inch below the umbilicus. After arresting all hemorrhage, the peritoneal cavity was opened and the stomach and a portion of the transverse colon readily drawn out and wrapped in warm sterilized towels.

Examination showed a new growth, oblong in shape and of firm consistence, which involved the pylorus and the adjacent third of the stomach proper. With the exception of three small glands below the pylorus, which were enlarged, there was no involvement of the other organs or glands of the abdominal cavity. It was evident at once that while complete stenosis of the pylorus did not exist, it must soon occur, and to relieve the patient either a gastroenterostomy must be performed or the growth removed. Inasmuch as the disease seemed limited in extent, as its edges could be

sharply defined, and as the remainder of the stomach and the surrounding viscera appeared free from the disease, it was deemed proper to give the patient a possible chance by resecting the diseased portion of the stomach. The degree of malignancy could not, of course, be predicted, although it was evident that the disease must be in an advanced stage, and that at the most the life of the patient could only be prolonged a few months. In view of the outcome of the case, it is probable that the gastroenterostomy would have been safer and would have given at least as long a lease of life. Whether a complete gastrectomy would secure a longer period of freedom from the disease I can not say—I am sorry that it was not performed, particularly as it would have been much easier than the procedure undertaken.

Throughout the operation Kocher's method of resection of the pylorus with gastroduodenostomy was closely followed. The omental attachments of the stomach were tied off with silk about one inch each side of the new growth, and four large forceps applied to the stomach and duodenum and clamped as tightly as possible. The intervening portion of stomach, including the pylorus, was then excised at least one inch beyond the margin of the new growth (over one-half of the stomach being removed), and the cut edges carefully disinfected with 1-1000 bichloride solution. This portion of the operation might have been much facilitated had I Kocher's forceps, which are slightly curved and have very thin edges. They are used by clamping the stomach walls very tightly, cutting off the intervening mass close to the forceps, and then running the needle and thread back and forth beneath them, a method of applying a continuous suture which can be done with very great speed. After separating the tumor, sterilized gauze was packed carefully about it so as to prevent any of the contents of the stomach or intestine from escaping into the peritoneal cavity. My first suture, of fine, black silk, passed through all the coats of the stomach, and was applied continuously on the cardiac side of the forceps. The sewn edge was then invaginated, thus burying the first sutures, and a second continuous Lembert suture of fine black silk was inserted. This was reinforced by still a third similarly

passed. An incision, corresponding to the breadth of the duodenum, was then made on the surface of the stomach, parallel and posterior to the line of sutures already introduced, and the posterior edges of duodenum and incision in stomach united by a fine silk thread passed continuously through all three coats, the ends of this suture being left long and threaded so that they could continue the deep suture in opposite directions until they met anteriorly. This suture took some time, it being difficult to accurately adjust the opposing surfaces. Following this a second and third continuous suture were introduced, passing through the two outer coats. Normal salt solution was freely poured into the peritoneal cavity. The peritoneum was closed with a continuous catgut suture, and the other layers of the abdominal wound with through and through interrupted silkworm gut sutures. The usual dry dressing, with strapping, was applied.

One hour and fifty minutes were taken up by the operation before the patient was put in bed. At no time during this long operation was there much of any shock or any noticeable rapidity of pulse. To guard against shock, a second enema of coffee, whiskey and salt solution was given at once, together with a hypodermic of strychnia sulphate gr. 1-50. The greatest of pains had been taken to plan out every step of each operation which might be undertaken, and every possible precaution observed to avert shock. To this, and to my able assistants, I attribute the success of the operation. The growth was submitted to Dr. P. D. Bunce, who reported a carcinoma of the stomach, containing very little connective tissue stroma between the cells. He predicted an early return on account of its malignancy. A large, superficial ulceration covered the whole of the inner surface of the growth.

The subsequent treatment consisted of enemata of peptonized milk four ounces, brandy one-half ounce, white of one egg, and five drops of laudanum every four hours, salt solution being occasionally substituted, if great thirst developed. Strychnia sulphate gr. 1-100 was given hypodermically every two to four hours, as indicated. On the morning of the third day feeding was begun by the mouth,

in quantities of one-half ounce at intervals of about two hours, the patient being turned on the right side each time, to facilitate passage of food through the stomach. The general condition was good until the fifth day, when the patient was suddenly seized in the epigastrium with sharp and very severe pains which were accompanied by a rise in temperature to 103.4 degrees and pulse to 140. Examination of the wound revealed a diffuse, even and deep-seated swelling about the upper portion of the incision. My interpretation of these symptoms was a probable escape of some of the gastric contents into the subperitoneal coat of the stomach with slight adhesive peritonitis. After consultation, in view of the fact that both temperature and pulse gradually fell and the swelling and tenderness seemed to grow less, it was decided to be wise to treat the case expectantly. Five days later some pus broke through and saturated the dressings. Exploration of the pus cavity made it apparent that the source of the trouble was subperitoneal, and not an ordinary stitch abscess. During this period the bowels moved several times daily. Digestion, while not perfect, was fair, and the general condition of the patient steadily improved, she being practically free from pain, except an occasional attack of colic, which seemed to be due to over-feeding, the stomach being able to hold only a small amount without discomfort. The digestion continued to improve, however, being attended with the least discomfort when food was limited to a proteid diet. The patient was not allowed to sit up until the end of the fourth week on account of her general weakness. During all this time there was a slight purulent discharge from the upper end of the wound.

Six weeks after the operation a gradually increasing swelling again appeared about the cut. This, as before, seemed to be the walls of a subperitoneal abscess, and at times it discharged a great deal of pus. In spite of this the patient remained up and gained in weight and strength. About eight and one-half weeks after operation, as the swelling continued to increase it was finally decided to give ether and explore the cavity to see if some of the buried silk sutures were responsible for the condition of affairs.

This was accordingly done, but, to our great chagrin, although I can hardly say we were surprised, it was found that the bulk of the swelling surrounding the abscess cavity was cancerous, involving the stomach and peritoneum. Many small glandular swellings in the neighborhood were easily felt. One loose stitch which had evidently sloughed out, was removed. Several days after this exploration a cancerous ulceration broke through from the walls of the stomach, discharging its contents into the dressings. This was accompanied by a temperature indicating profound sepsis, which with her inability to retain nourishment either by rectum or mouth, rapidly caused death sixty-four days after the first operation. No post-mortem was obtained.

As regards lessons that one may draw from these two cases, it is evident that the first case should have been operated on long before she came into my hands. Her symptoms of pyloric obstruction, coexistent with marked dilatation, absence of tumor, and presence of hydrochloric acid and pepsin, from which a non-malignant condition could at least have been inferred as probable, made it urgent that an exploratory incision should be made. How much more could have been done for her if her condition had been better, was only too evident. This case also teaches that abdominal sutures should be left in much longer in anemic, debilitated patients, or where there is great irritability of the stomach which may occasion vomiting. It also suggests the advisability of a posterior anastomosis, in order to get more direct drainage and possibly a less probability of kinking of the gut. It certainly teaches that an anastomosis by suture is far safer than the use of the Murphy button, provided the condition of the patient permits of the longer operation.

As regards the second case, in view of the rapid return and the result, it is evident that the disease was too far advanced to expect any lasting improvement or very great relief. This patient survived the operation, regained sufficient strength to walk about the house—this being more than she could do before the operation—had but little discomfort and expressed herself as having less distress and

feeling stronger than for several months previous. It certainly gave her a peace of mind and entire freedom from worry, as her death occurred after three or four days' severe sickness during the most of which time she was delirious. In spite of this, if one could diagnosticate the extent of the disease in a similar case, it would hardly seem worth while to do more than make a gastroenterostomy to relieve the starvation. Probably that would have been the best operation in this case, although I, as I have already stated, must confess to a regret that I did not remove the whole stomach.

Rather than to discuss both these operations and the various methods of performing them, I have chosen to use them as my text for the consideration of the propriety of an exploratory incision in doubtful cases and in all cases in the presence of certain symptoms. While the indications for this are becoming well defined in the minds of operators of large experience and are being thoughtfully turned over in the minds of surgeons of lesser degree, it has seemed to me that there might be present here to-day men doing but little or no surgery, who, in view of the rather late and rapid development of this branch of surgery, might profitably consider what indications in the presence of chronic symptoms referable to the stomach would justify or demand the exploratory incision. I will not attempt to take up the conditions of the esophagus requiring a gastrostomy, but will limit the discussion strictly to chronic diseases of the stomach. That there is urgent need of such discussion is evident from the fact that my first patient spent several weeks in a public hospital and was under the care of a number of physicians shortly before I saw her, without a suggestion of anything more than dieting and medicines, and that in the presence of progressing emaciation and an evident dilatation of stomach.

When is an exploratory incision positively indicated in a case with symptoms persisting some weeks?

It would seem sound surgery to state that a history of chronic hemorrhages coexistent with other symptoms of ulcer of the stomach, unrelieved by medical treatment, should always demand an exploration of the abdominal cavity, if the general condition of the patient permitted.

Dr. W. L. Rodman's paper, read at the meeting of the American Surgical Association, gave the latest analysis of statistics bearing on this. As regards intervention in an acute hemorrhage,—if repeated and profuse, it would seem proper to open the abdomen with the hope of locating the ulcer. I am well aware that this is difficult or impossible of accomplishment in many cases, but one who has watched a patient bleed to death from this cause as I have on two occasions—once fifteen years ago in the Boston City Hospital, and again three years ago in my private practice—cannot but feel that the attempt should be made, as not infrequently one's only hope must rest on surgery and not on medicine in the presence of this great emergency. If the patient's condition can be sufficiently improved after the second hemorrhage, it would seem to me bad judgment to await the third before operating. Tiffany, of Baltimore, calls attention to a very practical point in connection with the examination of the interior of the stomach to locate the ulcer, and that is, that by cutting through the gastrocolic omentum and passing the hand up back of the stomach, it can be practically turned inside out, so that the mucous surface can be seen through a moderate sized incision.

Do severe, remittent pains, combined with a history of symptoms suggesting an ulcer of the stomach, ever demand an operation?

I think this should be answered in the affirmative, although it offers a chance to display excellent judgment in the selection of suitable cases. There is no doubt but that the close observance of this rule would cause no little mortification to some operators, inasmuch as a mistaken diagnosis is peculiarly liable to occur in patients presenting this symptom, for some abdomens would be opened only to find a normal stomach. Persistent vomiting, not relieved by treatment, unquestionably presents an equal claim with persistent pain for an operation to demonstrate the cause, and is as frequently relieved by operation. Symptoms suggesting a perigastritis with adhesion of the stomach to adjacent parts, while often difficult to properly diagnose, should, if persistent, be regarded as presenting a condition

which could only be relieved by a laparotomy. Even when pains suggestive of either this condition or that of a biliary colic are not severe, but only persistent, operation is urged by some men, and lately by Dr. A. T. Cabot, of Boston, who reports most favorable results.

The necessity of an exploratory incision in the presence of signs of a perforation need not be more than mentioned. No emergency, excepting a ruptured tubal pregnancy, presents a more imperative demand for interference in abdominal surgery than this. The proper consideration of each of these subjects would occupy in each instance more time than I have given to this paper, and I will limit myself to these four statements which, while seldom endorsed by the great majority of general practitioners, are probably the latest views of the abdominal surgeons of to-day.

It is, I believe, conceded by all conservative surgeons that to operate for the removal of cancer with the hope of a long respite before return or of a permanent cure, one must make the operation before the tumor can be felt, in other words during the early stage of the disease, and that the presence of the tumor denotes a development of the disease which makes a return certain. If, then, a tumor is felt, the patient being in good condition and no marked symptoms of pyloric obstruction present, is an exploratory incision ever justifiable? Most certainly, yes,—provided no involvement of other organs can be diagnosticated and no marked cachexia is present; for if no radical operation can be done, it is often possible to obtain great relief through a palliative one. The recent history of four successful gastrectomies, giving from one to two years of life, would certainly seem to promise a good deal in properly selected cases,—although the field of this operation is now considered to be more limited than was at first supposed. Where pyloric obstruction is evident, unless the disease is advanced, a gastroenterostomy offers so much in the way of relief from the distressing vomiting and pain, and also a possibility that the progress of the disease may be delayed through removal of the local irritation of the fermented food, that I believe an exploration to determine its advisability to be always proper.

A question which will always worry us and which is at present being discussed by surgeons all over the world, is what early symptoms suggesting a probable development of cancer justify the exploratory incision? Some men of note have said—when in doubt,—operate; but I think conservative physicians will hardly endorse this dictum.

Hemeter goes so far as to state that in all cases of nervous dyspepsia or chronic gastritis where no benefit results after six weeks treatment, if there is lessened peristalsis and no free hydrochloric acid, and if atypical and asymmetrical mitoses in the cells of tissue which may be scraped from the stomach are found, exploratory incision is indicated. The specialists in stomach diseases have called attention to the necessity of making careful and repeated tests of the stomach contents under varying conditions, and certainly one should exhaust every method of diagnosis by such means before going further. Symptoms denoting a benign obstruction of the pylorus or stomach, with dilatation, demand early interference as certainly as those which are due to a malignant growth. One can be so easily mistaken as to the cause of such obstruction that a sound surgical rule would be to resort to an exploratory incision in all cases where daily lavage, medical treatment, diet and rest fail to effect a cure, or give partial relief, and especially where the patient runs down or loses weight in spite of these procedures. Indeed, this rule should be extended to similar cases where an intractable and chronic gastric dilatation existed without apparent obstruction. Gastrorrhaphy in selected cases has given a low mortality and good results.

The moral of these remarks is that stomach cases presenting chronic symptoms, unrelieved by medical treatment and diet, should not be held too long by the general practitioner, but should be sent early to the stomach specialist for a careful examination of the digestive processes, and to the surgeon for his judgment on the results obtained.

THE HISTORY AND TREATMENT OF A UNIQUE INJURY TO THE FACE.

M. M. JOHNSON, M.D.,

HARTFORD.

Sunday afternoon, October 2nd, 1898, I was summoned to Plainville, to see Mr. A. N. C., who gave the following history. He was driving home from church, when one of the forward wheels of his carriage came off throwing him into the horse's heels. The horse kicked him violently in the face. An examination elicited the following injuries. The force of the blow was on the right side. The right zygoma was fractured; the nasal bones were crushed into small splinters. There was a fracture of the superior maxillary, posterior to the canine teeth, passing upwards and forwards separating the dental prominence of the incisor and canine teeth, so that, when the mouth was opened the teeth with a portion of the bone dropped down.

The separation of the articulations, of the superior maxillary with the right nasal, frontal, and ethmoid, together with the fracture of the zygoma, caused a depression of the malar and the floor of the orbit, so that the right eye was thrown out of the plane of the left causing a vertical double vision.

The patient had lost considerable blood and was suffering from severe nervous shock, the face was badly swollen and blackened from the severe contusion he had sustained. It was said that he did not lose consciousness, but was very weak.

The attending physician had enlarged a cut through the skin on the nose, and was attempting to remove the splinters of bone, but the patient objected.

After washing his face, I sewed up the skin incision on his nose, and pressed the pieces of bone together, so as to give a normal and shapely appearance to the nose and retained them in this position.

To hold the teeth in position temporarily, I bent two pieces of wire into a hook shape and caught them under the front teeth and attached strings to them and tied them over his head.

It was evident that it would require a dentist's plate to hold them in place. Accordingly, the next morning I asked Dr. Bryant, (dentist) to accompany me. The doctor made a wax impression of the superior maxillary, from which he made a plaster cast.

As there was necessarily much detail in the work, the patient came to the Woodland Sanatorium, where the dentist completed and adjusted a hard rubber plate, into which I had him vulcanize two strong gold wires, which were so curved as to come out of the angles of the mouth and then bent back, so as to give a lifting purchase to the displaced anatomy.

The nurse was instructed to make a well fitting skull-cap, reinforced with two strong bands over the top, so as to make it as firm as possible.

Plates I and II show the method of retaining the injured parts in position.

The plate was then placed in the mouth and two strings, made of waxed linen thread were tied to the wires and passed around safety pins, which were placed on either side of the cap, as a cleft. This lifted and retained the bony structures in their places. The strings were tightened from day to day, so as to hold the bones in their places. At the end of one month the bones were united.

This process raised the bony structures, so that the floor of the orbit was nearly in normal position. At least it was sufficiently so to overcome the disagreeable condition of double vision.

The incisor teeth are perfectly firm, the bony structure having firmly united. The nose is in normal shape, in fact the recovery is so perfect that the patient's most intimate friends would not notice any disfigurement.



Fig. 1.



Fig. 2.

OBITUARIES.

*My grief lies all within ;
And these external manners of lament
Are merely shadows to the unseen grief
That swells with silence in the tortured soul ;
There lies the substance.*

—RICHARD II. iv : i.

PAUL A. STACKPOLE, M. D., DOVER, N. H.

Dr. Stackpole was born February 12, 1814, in Rochester, N. H., and was the son of Samuel and Rosanna (Nute) Stackpole. His father came of pioneer ancestry and was born in Dover, having settled on land near Rochester, where he lived for several years, and then moved to the thickly settled section of the village. Dr. Stackpole attended the common schools of the city of Dover until eighteen years of age and then entered Phillips' Academy at Andover, Mass., where he fitted for college and afterwards was a student at Dartmouth College, but did not graduate. Subsequently he commenced his professional education with Dr. Joseph H. Smith, of Dover, and afterwards in a private medical school in Boston. Afterwards he resumed his medical studies at Dartmouth College and was graduated M. D. from the medical department of Dartmouth College in 1843. He immediately established himself in Dover, where he practiced his profession until 1891 and then retired from active work. During the best portion of his life he acquired an active practice and won a wide reputation as an able physician.

In his political affiliations, Dr. Stackpole was a staunch Democrat, and up to within a few years was very active and influential in the party ranks. He was always interested in the welfare of the city and took a deep interest in educational matters, serving several terms on the school board. In 1864 and 1868 he was a delegate to the national Democratic conventions, and for many years was unanimously elected President of the Democratic state conventions. He edited for a period of four years the State Press, at the time a leading Democratic organ, and showed himself to be an able and forceful writer. He was a member of the Strafford lodge of Masons and Wecohamet lodge of Odd Fellows. Two sons survive him, Dr. Harry H., of Dover, and Charles H., of Boston.

DR. SAMUEL HAYES PENNINGTON.

Dr. Samuel H. Pennington, often spoken of as "Newark's Grand Old Man," died at his home, 28 East Kinney street. He was the oldest living graduate of Princeton, a member of the University's Board of Trustees, and president of the Newark City National Bank.

The cause of Dr. Pennington's death was a form of apoplexy, which developed unexpectedly.

Dr. Pennington was ninety-four years old, but until about three years ago he frequently walked with a firm, brisk step to the bank, and bore his years better than most men do the usually allotted period of three score and ten. His habits in late years were simply a repetition of an active, energetic career. He was a man who did not like the idea of being helped. He wanted to do things himself, as he always had done.

Several years ago Dr. Pennington fell, while at his country place in the Adirondacks, and broke his hip. Since then he had spent most of the time in his room reading continuously, until a comparatively short time ago. His faculties were most remarkably preserved and you might easily have taken him for a man twenty years younger than he was. Until within a few months all his senses, save that of hearing were singularly acute, and by insistent reading, even without glasses, he kept himself au courant with all the latest doings told of in the newspapers.

He was a unique and historical personality in the history of Princeton University and for the years during which he was a member of the Board of Trustees he never missed a meeting until after the accident in the Adirondacks. He endowed a scholarship in the college and was as much of a Princeton man in spirit as an undergraduate. He felt Princeton's defeats on gridiron or diamond and enjoyed her victories just as keenly.

Dr. Pennington was graduated from Princeton in 1825,

when there were only thirty-nine youths to receive their "dips." Three-quarters of a century ago it was, and Dr. Pennington is believed to have been the only one of his class who saw the year 1900 come in. With him were graduated such well-known men as Senator William L. Dayton, who was Minister Plenipotentiary to France; Chancellor Abraham O. Zabriskie, Judge William Y. Gholson, of Ohio; Judge William N. Wood, of the Court of Errors and Appeals, and Dr. Whitfield Nichols. Nearly all of his class lived to advanced years. Dr. Pennington acceded to the distinction of being the "oldest living graduate" when William Clay Wallace, who also lived here, died in 1898. Mr. Wallace's class was '23. Consequently, for years, Newark has been the home of the university's oldest alumnus.

Dr. Pennington last met one of his classmates when the "old boys" were congregated at the Princeton commencement in 1891. There was a man in the class of 1825 named Peter Johnson Gulick, speaking of whom Dr. Pennington once said:

"Father Gulick was one of the oldest boys in college, and that's why we called him 'father.' That's over seventy years ago, but I can recall Gulick just as he looked in those days. He afterward became a missionary to the Sandwich Islands and, I suppose, he died out there many years ago. Dr. Nichols was a dear and intimate friend of mine. Mr. Wallace, he and I were for many, many years Princeton's oldest boys in this city."

Dr. Pennington's memory was remarkable to a degree. He could recollect persons or things he had seen eighty years ago. His reminiscences of the Newark and New York of those days were replete with interesting details enough to fill a volume. He spoke of the earlier Presidents of the United States as a middle-aged man would speak of Lincoln or Grant, and would mention incidents of ancient political campaigns forgotten nowadays by all save the compilers of the country's political history. His father and his uncle, Governor Pennington, were Republicans, Jeffersonian Republicans, and Dr. Pennington was a Whig and afterward became a Republican of the present party.

It was Dr. Pennington's striking resemblance to Glad-

tone that caused his friends to speak of him as "Newark's Grand Old Man."

He was in his virile old age also similar to Britain's late Prime Minister. In height and general physique the two venerable men were wonderfully alike, and the finely chiselled face of each, bordered with a fringe of gray hair, would attract attention anywhere. A few years ago, when Gladstone was still in his prime, the resemblance was greater than of late. President Porter, of Yale College, once remarked upon it to Dr. Pennington, and Bishop Paddock told him the same thing a year or so later.

Samuel Hayes Pennington was born in Newark on October 16, 1806. He was graduated from the Newark Academy and then went to Princeton, where he entered in the junior class. After he had obtained his A. B. in 1825, he attended lectures under the Rutgers medical faculty of Geneva College. In 1828 Princeton gave him the degree of A. M., and the next year he was graduated in medicine. He began practice with his uncle, Dr. Samuel Hayes, and in 1839 succeeded to his practice.

Dr. Pennington was a member of the Board of Education for seventeen years, for seven of which he was president of that body. He was elected to the Board of Trustees of the Newark Academy in 1833 and since 1854 was president of the board until his death.

In 1856 he was made a trustee of Princeton College and soon afterward a trustee of the Princeton Theological Seminary. He held both these offices at his death, being president of the seminary board.

He had not practiced medicine for a number of years, but at one time his professional duties were many. He was a member of the Medical Society of Essex County and in 1848 was made president of the State Medical Society. He was an honorary member of the Connecticut Medical Society and a corresponding member of the Medical Society of Munich and of the Royal Botanical Society of Ratisbon.

Princeton conferred on him the degree of LL. D. in 1895. He wrote some articles in the medical journals which attracted considerable attention.

In 1851, when the Newark City National Bank was founded, Dr. Pennington was made its president and was the bank's only head until his death. He was a member of the New Jersey Historical Society, and also its president years ago.

Dr. Pennington is survived by a widow and three children, Joseph P. Pennington, of New York; Samuel H. Pennington, Jr., a lawyer of Newark, and Mrs. A. P. Ranney, of New York city.

LONDON CARTER GRAY, M. D., NEW YORK.

Dr. Landon Carter Gray died at his home in New York, on Tuesday, May 8th, after a long illness. He was born in New York City, April 3, 1850. While in Columbia College he had serious trouble with his eyes, on which account he went abroad for a rest, and upon recovering he remained there, studying at the University of Heidelberg. Later he returned home and studied medicine at the Bellevue Hospital Medical College, where he took his degree in 1873. After practicing in New York for a while he removed to Brooklyn, where he remained until 1886. Dr. Gray early turned his attention to the study of diseases of the nervous system, and speedily won for himself an enviable reputation in that line of practice.

While in Brooklyn he was professor of neurology at the Long Island Hospital College and was visiting neurologist to St. Mary's Hospital. Returning to New York he became one of the founders of the New York Polyclinic and was the first occupant of the chair of nervous and mental diseases in that institution. He was at various times president of the Medical Society of the County of New York, the American Neurological Association, the New York Neurological Society and the Society of Medical Jurisprudence. He was the author of a work on nervous and mental diseases, and a frequent contributor to periodical literature in that specialty.

New York Medical Record, May 12, 1900.

BENJAMIN NEWTON COMINGS, B. A., M. D., NEW
BRITAIN.

E. B. LYON, M.D.,

NEW BRITAIN.

Dr. Benjamin Newton Comings died at his East Main Street home in New Britain, Conn., December 4th, 1899.

He was born at Cornish, N. H., November 2nd, 1816. He fitted for college at Kimball Academy, Meriden, N. H., graduating in 1837.

He was graduated at Dartmouth College in 1842 and from the Medical College at Castleton, Vt., in 1847.

After practicing two years in Troy, N. Y., he removed to Rockville, Conn., where he remained until invited to New Britain to lecture before the State Normal School upon physiology and to prepare a text-book for schools upon that science. His interest in education led to his appointment as chairman of the school board which he held for ten years, until his practice of medicine and surgery had become so absorbing as to take all his time.

His professional success led to his selection for military service and in November, 1861, he was appointed surgeon of the Thirteenth Regiment, Connecticut Volunteers, and went to Louisiana. Soon after his arrival he was detached from his Regiment by Gen. Butler's order and given charge of the First Division Hospital Corps, and set about the sanitary reformation of New Orleans. The work and climate so impaired his health that he resigned his commission in January, 1863. Since his return he has with slight interruptions, continued in practice, winning in his time in his profession the first rank in his own and surrounding towns.

For twelve years he was Chairman of the Board of Health, and for twelve more medical examiner for the coroner.

He was not only successful at the bedside and skillful as a surgeon, but he was greatly beloved by his patrons and highly esteemed by everybody who knew him.

His practice extended over more than fifty years and was arrested by a paralytic shock in his eighty-first year, from which he never recovered.

Among his professional brethren he was highly respected and received more than his share of honors, having been President of the City, County and State Societies.

As a citizen he was on the right side of every civic and political question and being an able writer and fine public speaker he could ably advocate and defend his principles.

In theory and practice he was a temperance man and he pleaded the cause in private homes, through the press and before many public assemblies.

In religion he was a devout Christian and was intimately identified with the First Congregational Church.

In the home the best testing-place, he was a devoted husband, an indulgent father, a sympathetic friend and neighbor.

He married Betsey Maria Righter of Parsippany, N. J., July 22nd, 1847. She died November 22nd, 1872.

By her he had John Righter, Ellen Shugard and William Righter Comings.

January 11th, 1877, he married Mrs. Helen Maria Lewis, of Farmington, who survives him, as does his son, William Righter Comings, who resides in London, England. During his last years of physical and mental weakness he accepted with affection the ministrations of his devoted wife and the attentions of his friends who will continue to hold his memory precious.

WILLIAM METCALF BURCHARD, M. D.,
UNCASVILLE.

LEONARD B. ALMY, M. D.,

NORWICH.

Dr. Burchard, whose loss we all mourn, was born October 31, 1844, in Bozrah, Conn., and was the son of the Rev. William M. Burchard and Mary Whitman, his wife.

A little before his eighteenth birthday he enlisted, August 4, 1862, as a private in Company G, Sixteenth Volunteer Infantry, but was sometime later transferred first to Company K, Eleventh I. C. and later to Twenty-Second Company, Second Battalion Veteran Reserve Corps. He served with the line of the Army until April 3, 1865, when he was honorably discharged, but re-enlisting he was appointed Hospital Steward, U. I. A. During this period of his service, he was on duty in the office of the Surgeon General of the Army. On April 3, 1868, at the expiration of his term of service, he again received an honorable discharge and his discharge papers state that his character was "most meritorious and deserving in every respect, has always performed his duties to the entire satisfaction of his commanding officers."

About this time Dr. Burchard received the degree of M. D. from the Georgetown Medical College and following Horace Greeley's advice to young men, went West, and located in St. Cloud, Minnesota, where he practiced for more than a year, then his love for the East caused him to return to Connecticut in the Fall of 1869.

The village of Montville with its manufacturing industries attracted him and he settled there and continued to practice over its hills and dales, through storm and sunshine for nearly thirty years.

On December 28, 1870, Dr. Burchard married Miss Elizabeth Robertson, the daughter of a manufacturer residing in the vicinity, and to them two children were born, a son and a daughter. He was devoted to his family and they to him, and when death claimed the daughter, the doctor never recovered from her loss.

He was a very successful physician and a most genial companion, with a fund of dry wit which seemed inexhaustible and often came forth under the most trying circumstances.

During the closing years of his life, he found the Winter climate of New England too trying for his health and he consequently passed the colder months in the South where he enjoyed his well-earned rest in hunting and fishing. On his return from Florida in the Spring of 1899, he had evidently not received the benefit from his trip that he had previously been conscious of and it soon became evident to his friends that he had but a short time to live. He suffered intensely, yet he had his joke almost to the last.

He died from cancer of the stomach on the first of June, 1899, leaving a widow and one son. The community, whom he had cared for so long and faithfully, feel his loss as that of a wise counselor and skillful physician and a loved and trusted friend, whose loss is not capable of being replaced.

JAMES CAMPBELL, M. D., HARTFORD.

WILLIAM D. MORGAN, M.D.,

HARTFORD.

Died.—At his residence, No. 2 Congress Street, Hartford, Conn., October 17, 1899, James Campbell, M. D., in the fifty-second year of his age.

Born about the middle of the century, March 14, 1848, at Manchester, Conn., he received his early training and education on his father's farm and at the country school, which developed in him that sturdy self-reliance and adaptability of means to ends which may be said to have been his leading characteristics, and doubtless were potent factors in his successful career.

He received his medical education at the University of Vermont, taking his degree in the year 1871, and shortly after commenced the practice of his profession in Hartford. During the earlier years he doubtless met with the varying vicissitudes which beset the young practitioner. He was not one easily dismayed, however, and the genuine love he had for, and pride he took in, his profession were stimulants to an unflagging zeal.

In the outset he recognized that in the science of medicine and art of surgery there is, so to speak, no stopping-place. The march is ever onward. The taking of a degree as Doctor of Medicine but signifies that the recipient has gained the vantage ground of a sure foundation on which to construct, by constant labor and continuously newly-acquired material, the memorial of his professional life. He was not only ambitious, but of untiring energy, and dogged perseverance in the attainment of his aim. Undaunted by opposition, shrewd in his knowledge of men, he generally accomplished his purposes.

His ambitions were not purely personal. In the Spring of 1885 he organized the Board of Health in the municipality of Hartford against an influential opposition, became its

first President and continued in the chair to the time of his death. The high efficiency to which it has attained and the continuously increasing confidence the public has reposed in it are due in a great measure to his successful administration of its affairs and unflagging zeal in the city's interests.

In the spring of 1886 he was elected to the Chair of Obstetrics at the Yale Medical School and for fourteen years it may be said, not only with little or no remuneration, but at considerable financial loss and physical and mental strain, he faithfully and untiringly fulfilled the duties of that position and labored for the interests of the School. He tendered his resignation only when death overshadowed him and he stood face to face with the inevitable. He served faithfully for many years on the Visiting Staff of the Hartford Hospital with the untiring zeal which characterized all his public service, and for the last four years of his life he was Assistant Medical Director of the Aetna Life Insurance Co., a high position of trust.

His practice was a large one and in an unusual degree he acquired and held the confidence of his patients. For some years previous to his death, owing to the demand upon his time by his public duties and to a physical disability, under which he labored in occasional attacks of asthma, he felt constrained to decline much practice that naturally gravitated to him and directed to other channels much that under ordinary conditions he could easily have retained for himself.

The earlier indications of the disease to which he finally succumbed were manifest, as we now retrospectively discover, as early as the Fall of 1898, in a loss of weight which the doctor gladly welcomed, at the time regarding it as in a measure a family trait, and partly due to a restricted regimen he had adopted. Whereas formerly his exceeding overweight had been a great annoyance to him, its loss not only gave him no apprehension, but he congratulated himself upon the freedom he enjoyed from much that it entailed upon him, and from the time that he noticed a diminishing of weight, he was free from the asthmatic attacks from which he had been a great sufferer. In fact, it may be said

that from the Fall of 1898 until about the first of May, 1899, the Doctor not only enjoyed life thoroughly, but regarded himself as enjoying better health than for a long period of time preceding.

In the latter part of April, one morning before rising, he was seized with a coughing spell, and placing his hands cross-wise over the epigastrium to give support to the muscular strain, he discovered the presence of a tumor located a little to the right of the median line, below the ensiform cartilage. There had been no other symptom up to this time, loss of weight excepted, which had been otherwise accounted for, suggestive of cancer. From this time, however, the Doctor became apprehensive. He consulted several of his brother practitioners who were naturally reluctant in pronouncing sentence upon him, though from the outset there could have been little doubt as to the character of the tumor.

About the middle of May he had a distressing seizure attended with retching and vomiting in which blood was discoverable in considerable quantity in the ejection. This was followed by a second attack of similar character about the first of June in New York, following the Annual Meeting and Banquet of the Association of the Medical Directors of Insurance Companies. From this time on he was subject to more or less frequent attacks of retching and vomiting, until finally nourishment in any form excited a repugnance and disgust which made it preferable for him to go without rather than to attempt to swallow it. In September he finally decided to consult New York surgeons in hope of some relief, and went to New York for that purpose. Drs. R. F. Weir and W. Evelyn Porter, after exhaustive examinations, could only reiterate opinions already given and advise against any operative procedure. About this time he consented reluctantly to submit to lavage, which had been urged upon him, and it unquestionably afforded him some relief. Morphine was his chief reliance, however, in gradually increasing amounts until the date of his death from cholemia and exhaustion.

From the time of discovery, the tumor increased rapidly in size and secondary nodules were plainly discoverable

upon palpation shortly previous to his death, probably scattered through the omentum. Measurements, palpation and percussion failed to show any very great dilatation of the stomach, nor were there marked indications of stricture of the pylorus. The tumor, as originally discovered, was variously diagnosed as involving the pylorus, or the right lobe of the liver. There was no post-mortem examination, but the probability is that there was a primary tumor of pylorus and secondary tumors of liver and omentum.

The County Medical Society, of which he was President, at the time of his death passed the Resolutions herewith subsequently incorporated:

The Hartford County Medical Society, in assembling for its fall meeting to-day, is called upon to recognize the sad fact that a well-known and honored member, who presided at its last session, has been called from his work and has gone to reap his reward in the Great Unknown World; and it is fitting that proper recognition should be made of his work in the field of medicine, his devotion to this Society, and his high standing as a citizen. Therefore, be it

Resolved: That the Hartford County Medical Society feel a keen loss in the death of Dr. James Campbell, who, for years, was closely allied to its best interests; and who by his attendance and scientific work proved himself a faithful member; that in his death all suffer the loss of a true friend.

Resolved: That we take this opportunity to extend to the bereaved family our sincerest sympathy; the condolence of men who knew Dr. Campbell in his professional life and recognized his high, and lovable qualities.

Resolved: That these resolutions be placed upon the records of this Society and that a copy be forwarded to the family of the deceased.

PHINEAS H. INGALLS,
WILLIAM T. BACON,
ANSEL G. COOK,
Committee.

FREDERICK O. WHITE, M. D., NEW HAVEN.

EDWARD P. PITMAN, M.D.,

NEW HAVEN.

It is the unexpected that happens. This we all know to be true. And yet I shall never forget the shock of that moment on a Tuesday afternoon in October last, when my friend Dr. Frederick O. White fell at my side, a victim of apoplexy. The descendant of a remarkably long-lived race, possessing everything that should make life enjoyable, without a moment of preparation given him, he was summoned.

On Tuesday, the third of October, 1899, the writer was called to assist the doctor in an obstetrical case. While preparations were being made for the application of instruments, the doctor was apparently in the best of spirits. As the operation proceeded it was noticeable that he showed much more exhaustion than usual. Before the work could be completed, with a suddenness, that under the circumstances was terrible, the doctor fell to the floor with an attack of cerebral hemorrhage. A carriage was procured as hastily as possible, and he was removed to his home. Consciousness was not entirely lost for about twelve hours. As the hemorrhage proceeded coma deepened and he died shortly before nine o'clock Thursday morning, October 5.

Frederick Olin White was born in Seymour, Conn., January 10, 1852. His father, William Walter White, is also a native of Seymour. His mother, whose name before marriage was Betsy Maria Parker, was a native of Meriden, Conn. When the doctor was about eight years of age, his parents removed to New Haven. Their residence for many years was on Elm street. The doctor's earlier education was obtained in a small private school, kept by a Mrs. Huntington. In 1863, together with his life-long friend, Dr. Edward S. Dwight of Smyrna, Del., he entered the preparatory department of the Hillhouse High School. After

leaving Hillhouse, White took a course in Wilbraham College. In 1870 he entered Yale Medical College, and graduated in 1873. After graduation he was appointed to the house staff of the New Haven Hospital, succeeding Dr. Frederick Bellosa. He filled this position for a year, and then began private practice at 514 Howard Avenue, which residence his parents had purchased shortly before he left the Hospital. He soon obtained the position of town physician, and filled this for many years. Dr. Dwight, who entered Yale Medical College during White's senior year, speaks in the highest terms of his thoughtfulness and kindness, of his disinterestedly furnishing him (Dr. Dwight,) with his first obstetrical experience, a case of twins; of his taking him to see everything interesting that came to his notice; of his helpful advice in seeking a location. In 1879 the two friends determined to go abroad for further study. Accordingly in August of that year they set sail for London, where they remained about five weeks. From London they went to Brussels and Antwerp; and finally located in Paris. Here they spent about eight months, taking in a host of clinics and clinical lectures, following the services of Richer, Verneuil De St. Germain, Broca, Pearl, Fournier and others; also taking practical instruction in operating under J. A. Fort. Dr. Dwight says White was very faithful in attendance at these clinics, and in addition did quite a little work with the microscope. His European trip covered a period of about eleven months. On returning to this country he resumed practice in New Haven.

Five or six years ago his life was greatly saddened by the loss of his mother, to whom he was a most devoted son. Within a year or two after his mother's death he married Miss Catherine Kelsey of Westbrook, Conn. This period of married life was all too short, for he was as thoughtful and considerate a husband, as he had been a good son. Shortly before his mother's death he became an active member of Trinity Methodist Church, and continued so until his death.

Dr. White was a true gentleman, a man to trust. He could not do too much for a friend. There was not a vestige of smallness or petty jealousy in his nature. As a

physician he was practical and conscientious. He was endowed with an abundance of good common sense. He took a special interest in obstetries in which branch he was possessed of unusual skill. He made friends easily and retained them through life. Who of us who knew him well can forget the sunny smile with which he was wont to greet us, the unfailing cheerfulness with which he was ever ready to assist us, no matter what the trouble might be to himself? It could be said of him more truly than of most men I have ever met, he was a true friend. Only the Father above can know of the influence for good such a nature as this leaves on this selfish old world of ours.

THOMAS J. O'SULLIVAN, M. D., DERBY.

Thomas Jefferson O'Sullivan was born in Preston, March 1, 1852. His father was Patrick O'Sullivan. Subsequently removing to Norwich, the boy received his early education in the public schools of that city, and after graduating from the Norwich Free Academy, in 1872, he entered Nicolet College, Canada. After taking a regular course and graduating at that institution he returned to Norwich and began the study of medicine under the direction of Dr. Patrick Cassidy. He took one course of lectures at the medical department of the University of Vermont, Burlington, and then entered Bellevue Medical College, New York, from which he graduated in 1876.

Thus, fully equipped for his professional career, he went to Worcester, Mass., to settle, and remained there two years. By that time he had acquired a good practice, but on learning that there was more scope for the display of his enterprise in Derby, he gave it up and made Derby the scene of his labors and his love. It is said of him that as a physician he probably treated more patients whom he knew could not pay him than any other in his city, and that he did the work simply and solely for humanity's sake, without expecting or receiving compensation. Quick of wit, naturally bright, a fine physician, a man born to lead, by his thus coming into contact with people he gained an intimate knowledge of them, a thorough acquaintance with them. This work unquestionably made him popular and when he entered the political field many a man who had needed and had received aid in time of trouble was only too glad to show that he appreciated and was glad to return, in some measure, the favors which had been bestowed upon him. He began to be placed in public positions connected with the town. The first elective office he held was that of registrar of births, marriages and deaths in 1880, being re-

elected in 1881. He was elected a member of the Board of Burgesses of the Borough of Birmingham in 1887 and 1888 and in 1889 was elected Warden. Elected again in 1891, after having been defeated once, he held the position by continued suffrage of the people until the town and borough were consolidated, when he was chosen first mayor of the City of Derby. His acquaintance with the prominent political personages throughout the State was very wide. Always a staunch Democrat, his advice was frequently sought during campaigns. He was able and efficient in framing the city charter under which Derby was incorporated as a city in 1893. His administration as mayor was economical, capable and honest. The mayoralty was the last elective office he held. In 1896 President Cleveland appointed him postmaster, which office he held until near the time of his death in February, 1900.

Those who opposed Dr. O'Sullivan politically never, in his long career, attributed to him either trickery or unfairness. When he favored or opposed any one or any measure, he fought to win and being a man of aggressive spirit, he made his power felt. That necessarily, in the heat of conflict, created friction and unpleasantness, but it was very seldom that these impressions were lasting. Nothing better shows this to have been true than the fact that men whom he opposed and fought in the middle time of his career were, in later years, his warmest friends. While his motives might at the time have been misunderstood, the result being attained, all doubt was cleared away and he invariably remained the leader of his party and the champion of the small taxpayer.

Dr. O'Sullivan was a member of the Board of Education, a charter member of the Derby-Shelton Board of Trade, of the Knights of Columbus, the Foresters of America, and a number of other organizations.

The disease, which resulted in the death of Dr. O'Sullivan, first manifested itself in May, 1899. A lump appeared under his right arm which at first did not cause him any uneasiness. But in July an operation was decided upon and a microscopical examination of the growth which was removed showed it to be of a cancerous nature. Again,

in October, another operation was performed, this time by Dr. Bryant, of St. Vincent's Hospital. It was ascertained during this operation that the subclavian artery and vein were involved in the malignant growth, and to remove all the disease an amputation at the shoulder would be necessary. After some improvement the disease progressed and became very painful. Death came February 9, 1900.

Dr. O'Sullivan was twice married, his first wife being Miss Margaret Brett, daughter of Patrick and Elizabeth Brett, of Waterbury. Five children were the result of this union—two only, Alice and Patrick, surviving their father. The first wife died April 14, 1892. His second wife, Miss Elizabeth H. Brett, was a sister of the first wife and resided in the family many years before the death of the first. The second marriage took place April 18, 1898. The second wife survives him.

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WALTER HAMLIN HOLMES, M. D., WATERBURY.

Walter Hamlin Holmes, son of Dr. Job Holmes (M. D., Bowdoin, 1826) and Vesta, sister of Vice-President Hannibal Hamlin, was born June 23, 1854, at Calais. He received his early education in the schools of his native town, and was prepared for college under private tutors. He was graduated with honors from Bowdoin in 1875, and from the Harvard Medical School in 1879. For a year and a half he was house surgeon at the Boston City Hospital. He then settled at Waterbury, Conn., and began a brilliant career as a physician, which was terminated by the failure of his health in 1893. In performing a surgical operation upon a cancerous patient the previous year he was accidentally poisoned. Though the gravity of the occurrence was fully realized, disease could not be warded off, and after a heroic and uncomplaining struggle of several months, he experienced a complete mental and nervous breakdown. For several years he never left his house. In 1882 Dr. Holmes was Secretary, and in 1889, President of the New Haven County Medical Association. In 1883 he contributed an article to the Proceedings of this Society on Treatment of Fractures of both Bones of the Leg, in which he gives some of his experience at the Boston City Hospital, with the results. In the following year, he wrote an essay, Aspiration of the Chest in Pleurisy, which was published in the Proceedings. Dr. Holmes married Medora Caroline, daughter of Dr. Gideon L. and Caroline Tudor Platt of Waterbury, who survives him without children. Dr. Platt was a man well known throughout the State and was President of this Society in 1880. To this influence was due in part the prestige which came to Dr. Holmes in the earlier years of his practice.

MEMBERS OF THE SOCIETY.

HONORARY MEMBERS.

ANDREW JACOB FULLER,	Bath, Maine.
ARTHUR WARD,	Newark, N. J.
ADRIAN THEO. WOODWARD,	Brandon, Vt.
WILLIAM McCOLLOM,	Brooklyn, N. Y.
SAMUEL THOMAS HUBBARD,	New York City.
AGRIPPA NELSON BELL,	Brooklyn, N. Y.
JOHN SHAW BILLINGS, U. S. A.,	New York City.
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EDWIN MOTT MOORE,	Rochester, N. Y.
WILLIAM HENRY WELCH,	Baltimore, Md.
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ACTIVE MEMBERS.

The names of those who have been Presidents are in capitals.

HARTFORD COUNTY.

WILLIAM T. BACON, M. D., President.

GEORGE T. CLARY, M. D., New Britain, Vice President.

WILTON E. DICKERMAN, M. D., Hartford, Clerk.

County Reporter, ARTHUR J. WOLFF.

Censors—JOSEPH B. HALL, M. D., HOWARD O. ALLEN, M. D.,
PHILO W. STREET, M. D.

Annual Meeting Third Wednesday in April. Semi-Annual Meeting Third
Wednesday in October.

HARTFORD:

GURDON W. RUSSELL, No. 207 Farmington Avenue.

HENRY P. STEARNS, No. 190 Retreat Avenue.

MELANCTHON STORRS, No. 91 Ann Street.

Horace S. Fuller, No. 95 Trumbull Street.

John O'Flaherty, No. 406 Main Street.

Nathan Mayer, No. 742 Main Street.

William M. Hudson, No. 105 Elm Street.

George C. Jarvis, No. 98 High Street.

David Crary, No. 1074 Main Street.

John B. Lewis, No. 56 Prospect Street.

Daniel T. Bromley, No. 121 Pearl Street.

Gustavus P. Davis, No. 56 Prospect Street.

Charles E. Froelich, No. 103 Pratt Street.

Harmon G. Howe, No. 137 High Street.

William T. Bacon, No. 11 Pratt Street.

William W. Knight, No. 95 Trumbull Street.

Thomas D. Crothers, No. 50 Fairfield Avenue.

George L. Parmele, No. 65 Pratt Street.

Ellen H. Gladwin, No. 705 Asylum Avenue.

Samuel B. St. John, No. 68 Pratt Street.

George R. Shepherd, No. 32 Farmington Avenue.

Frederick S. Crossfield, No. 75 Pratt Street.

Marcus M. Johnson, No. 92 Pearl Street.

William D. Morgan, No. 49 Pearl Street

John F. Axtelle, No. 635 Main Street.

George K. Welch, No. 103 Pratt Street.

Phineas H. Ingalls, No. 112 High Street.

Edward K. Root, No. 49 Pearl Street.

Luther A. Davison, No. 11 Pratt Street.

John Howard, No. 119 Trumbull Street.

Charles D. Alton, No. 86 Farmington Avenue.

Oliver C. Smith, No. 44 High Street.

Joseph E. Root, No. 67 Pearl Street.

- William Porter, Jr., No. 391 Allyn Street.
 Frederick T. Simpson, No. 122 High Street.
 George R. Miller, No. 132 High Street.
 Charles C. Beach, No. 535 Trumbull Street.
 Gideon C. Segur, No. 67 Farmington Avenue.
 George C. Bailey, No. 65 Church Street.
 Alva E. Abrams, No. 78 High Street.
 Charles E. Taft, No. 2 Garden Street.
 Thomas F. Kane, No. 517 Main Street.
 Arthur J. Wolff, No. 1 Spring Street.
 Ansel G. Cook, No. 340 Farmington Avenue.
 Edwin A. Down, No. 703 Asylum Avenue.
 Daniel F. Sullivan, No. 64 Church Street.
 Joseph H. Cahill, No. 51 Church Street.
 Everett J. McKnight, No. 110 High Street.
 Benjamin S. Barrows, No. 78 High Street.
 Michael A. Bailey, No. 65 Church Street.
 George N. Bell, No. 44 High Street.
 Frank L. Waite, No. 68 Pratt Street.
 * Charles S. Stern, No. 904 Main Street.
 Oliver K. Isham, No. 211 High Street.
 Franklin L. Lawton, No. 295 Main Street.
 John H. Rose, No. 11 Pratt Street.
 John B. Waters, No. 103 Trumbull Street.
 Joseph B. Hall, No. 57 Pratt Street.
 Edward O. Elmer, No. 813 Park Street.
 Janet M. Weir, No. 43 May Street.
 John F. Dowling, No. 1244 Main Street.
 Philip D. Bunce, No. 50 Pratt Street.
 Homer L. Law, No. 100 Washington Street.
 * Wilton E. Dickerman, No. 51 Pratt Street.
 John B. Boucher, No. 306 Main Street.
 Levi B. Cochran, No. 43 Farmington Avenue.
 James W. Ward, No. 437 Capitol Avenue.
 James H. Naylor, No. 153 Main Street.
 Charles P. Botsford, No. 1393 Main Street.
 James H. Standish, No. 378 Windsor Avenue.
 Michael H. Gill, No. 151 Windsor Avenue.
 John B. McCook, No. 390 Main Street.
 John W. Felty, No. 349 Windsor Avenue.
 George E. Sleeper, No. 1395 Main Street.
 Frank B. Look, No. 104 Church Street.
 Frank S. Snow, No. 252 Asylum Street.
 Elmer E. Douglass, No. 44 Church Street.
 Howard F. Smith, No. 609 Main Street.
 Thomas W. Chester, No. 110 High Street.
 Joseph A. Kilbourn, No. 771 Park Street.
 Phillip P. Carlon, No. 21 1-2 Church Street.
 William G. Craig, No. 11 Pratt Street.
 William S. Reoch, No. 70 Church Street.
 Thomas B. Enders, No. 3 Highland Street.
 Charles A. Goodrich, No. 5 Haynes Street.
 Alfred M. Rowley, No. 143 Main Street.

*Exempted from taxation.

- AVON:
John L. North.
- BERLIN:
Robert E. Eusign.
Charles A. Gillin.
- East Berlin:
George W. Lawrence.
- BRISTOL:
John J. Wilson.
William W. Horton.
Arthur S. Brackett.
- CANTON—Collinsville.
George F. Lewis.
Ida R. Gridley-Case.
William H. Crowley.
Paul Plummer.
- EAST HARTFORD:
Edward H. Griswold.
Thomas S. O'Connell.
Walter G. Murphy.
- Burnside:
Franklin H. Mayberry.
- EAST WINDSOR—Broad Brook.
Howard O. Allen.
- Warehouse Point:
Michael J. Kelly.
- ENFIELD:
Rial Strickland.
- Thompsonville:
Edward F. Parsons.
George T. Finch.
Henry G. Varno.
Thomas F. Reardon.
- Hazardville:
Simon W. Houghton.
- FARMINGTON:
Franklin Wheeler.
Charles Carrington.
John B. Griggs.
- GLASTONBURY:
* Henry C. Bunce.
Charles G. Rankin.
William S. Kingshury.
- South Glastonbury:
Henry M. Rising.
Harry B. Rising.
- MANCHESTER:
Francis H. Whiton.
John T. Dooley.
- South Manchester:
Jullan N. Parker.
William R. Tinker.
Thomas H. Weldon.
- NEW BRITAIN:
* George Clary.
Edwin B. Lyon.
Jay S. Stone.
Erastus P. Swasey.
Michael J. Coholan.
George J. Holmes.
Lawrence M. Cremin.
Wilbur P. Bunnell.
Samuel W. Irving.
Robert M. Clark.
Hermann Strosser.
Arvid Anderson.
Harris L. Paige.
- PLAINVILLE:
John N. Bull.
Theodore G. Wright.
- ROCKY HILL:
* Rufus W. Griswold.
- SIMSBURY—Tariffville.
Charles M. Wooster.
- SOUTHINGTON:
Willard G. Steadman.
- SOUTH WINDSOR:
Mary S. Tudor.
Henry A. Deane.
- SUFFIELD:
Jarvis K. Mason.
Matthew T. Newton.
Philo W. Street.
- WEST SUFFIELD:
William E. Caldwell.
- WETHERSFIELD:
* Abner S. Warner.
Edward G. Fox.
Arthur W. Howard.
Walter N. Thayer, Jr.
- WINDSOR:
* Samuel A. Wilson.
Newtous S. Bell.
- WINDSOR LOCKS.
Sidney R. Burnap.
Joseph A. Coogan.
William J. Coyle.

*Exempted from taxation.

NEW HAVEN COUNTY.

CARL E. MUNGER, M. D., Waterbury, President.

HENRY L. SWAIN, M.D., New Haven, Vice-President.

JOSEPH H. TOWNSEND, M. D., New Haven, Clerk.

County Reporter, C. W. KELLOGG, M. D., New Haven.

Censors—H. L. SWAIN, M. D., W. L. BARBER, M. D.,
F. W. WRIGHT, M. D.

Annual Meeting third Thursday in April; semi-annual, third Thursday
in October.

NEW HAVEN:

S. G. Hubbard, No. 23 College Street.

C. A. LINDSLEY, No. 15 Elm Street.

John Nicoll, No. 96 Broadway.

Moses C. White, No. 214 Crown Street.

T. H. Bishop, No. 215 Church Street.

FRANCIS BACON, No. 32 High Street.

W. L. Bradley, No. 426 Orange Street.

A. E. Winchell, No. 60 Pearl Street.

Robert S. Ives, No. 339 Temple Street.

Evelyn L. Bissell, No. 308 Crown Street.

Arthur Buickoldt, No. 71 Olive Street.

Walter Judson, No. 1145 Chapel Street.

Frederick Belloso, No. 209 Orange Street.

S. D. Gilbert, No. 27 Wall Street.

S. H. Chapman, No. 193 Church Street.

J. P. C. Foster, No. 109 College Street.

W. H. Carmalt, No. 87 Elm Street.

T. H. Russell, No. 137 Elm Street.

F. H. Whittemore, No. 13 Elm Street.

C. P. Lindsley, No. 37 Elm Street.

H. Fleischner, No. 928 Grand Avenue.

M. Mailhouse, No. 151 Meadow Street.

M. C. O'Connor, No. 882 State Street.

Charles E. Park, No. 132 Olive Street.

F. E. Beckwith, No. 139 Church Street.

Gustavus Eliot, No. 209 Church Street.

J. E. Stetson, No. 106 High Street.

J. F. Luby, No. 667 Grand Avenue.

William W. Hawkes, No. 35 High Street.

Frank H. Wheeler, No. 221 Crown Street.

Herbert E. Smith, Medical College.

Benjamin L. Lambert, No. 358 Howard Avenue.

F. W. Wright, No. 413 Orange Street.

Edward K. Roberts, No. 244 Grand Avenue.

Oliver T. Osborne, No. 252 York Street.

Lucy C. Peckham, No. 145 Green Street.

William G. Daggett, No. 189 Church Street.

Louis S. DeForest, No. 54 Wall Street.

Henry L. Swain, No. 232 York Street.

Mary B. Moody, Sherland Avenue cor. E. Grand Avenue.

- G. F. Converse, junction Whalley Avenue and Goffe Street.
 * J. H. Townsend, No. 39 College Street.
 T. M. Cahill, No. 36 Elm Street.
 C. J. Foote, No. 26 Elm Street.
 Marvin Smith, No. 73 Pearl Street.
 S. J. Maber, No. 212 Orange Street.
 Jay W. Seaver, No. 25 Lynwood Street.
 Louis B. Bishop, No. 77 Whitney Avenue.
 H. W. Ring, No. 46 Elm Street.
 W. C. Welch, No. 44 College Street.
 A. O. Baribault, No. 528 Chapel Street.
 Rollin McNeil, No. 149 Bradley Street.
 Edward M. McCabe, No. 224 Orange Street.
 James M. Reilly, No. 337 Cedar Street.
 Clarence E. Skinner, No. 67 Grove Street.
 N. R. Hotchkiss, No. 150 Shelton Avenue.
 Benjamin A. Cheney, No. 40 Elm Street.
 Charles A. Tuttle, No. 129 Whalley Avenue.
 Harry B. Ferris, No. 118 York Street.
 Edward S. Thomson, No. 190 Grand Avenue.
 Henry F. Klenke, No. 730 Grand Avenue.
 Leonard W. Bacon, Jr., No. 294 Elm Street.
 Paul S. Robinson, No. 164 Grand Avenue.
 Arthur N. Alling, No. 199 York Street.
 A. W. Evans, No. 2 Hillhouse Avenue.
 R. A. McDonnell, No. 1142 Chapel Street.
 E. P. Pitman, No. 52 Sylvan Avenue.
 James A. Moore, No. 223 Grand Avenue.
 Isaac N. Porter, No. 198 Dixwell Avenue.
 Ernest H. Arnold, No. 46 York Square.
 Robert E. Peck, No. 56 Howe Street.
 Daniel A. Jones, No. 746 Chapel Street.
 William C. Wurtenberg, No. 42 Elm Street.
 Chaucey S. Lamb, No. 10 Park Street.
 Robert O. Moody, East Grand Avenue.
 Edward S. Moulton, No. 223 York Street.
 Frederick N. Sperry, No. 76 Wooster Street.
 William F. Verdl, No. 172 St. John Street.
 Charles J. Bartlett, Medical College.
 Morris D. Slattery, No. 352 Howard Avenue.
 John J. Selbold, No. 235 Blatchley Avenue.
 Ward H. Sanford, No. 39 Edwards Street.
 William M. Kenna, No. 145 Olive Street.
 Ambrose K. Brennan, No. 179 Franklin Street.
 Ralph S. Goodwin, Jr., No. 1179 Chapel Street.
 Leonard L. Sanford, No. 216 Crown Street.
 Willis H. Crowe, No. 74 Whalley Avenue.
 Archibald McNeil, No. 51 Livingstone Street.
 Charles H. Robbins, 329 Grand Avenue.
 Louis M. Gompertz, 39 Wooster Place.
 Alfred G. Nadler, 122 Olive Street.
 T. E. Beard, Jr., 163 Wooster Street.
 William Sprenger, No. 366 George Street.

*Exempted from taxation.

- Joseph B. Monahan, 228 Congress Avenue.
 Frederick C. Bishop, 1223 Chapel Street.
 James H. J. Flynn, 426 Howard Avenue.
 Frank A. Kirby, 214 Dixwell Avenue.
 Charles D. Phelps, 472 Orange Street.
 William J. Sheahan, 383 Howard Avenue.
 Clifford W. Kellog, No. 233 York Street.
 John F. Sullivan, No. 304 Exchange Street.
 John S. Ely, No. 60 Wall Street.
 Peter F. Metz, No. 279 Crown Street.
 Donald R. Hinckley, No. 35 College Street.
 Maximilian L. Loeb, No. 74 York Street.
 Edward F. McIntosh, No. 192 York Street.
 Nicola, Mariani,
 Samuel M. Hammond.
 George I. Hemingway.
 Bernard E. Henrehan, 603 Dixwell Avenue.
 James S. Maher.
 Percy D. Littlejohn.
 A. W. Marsh, No. 1012 Whalley Avenue
 William N. Winne, No. 1002 Whalley Avenue.
- ANSONIA:**
 Louis E. Cooper.
 Louis H. Wilmot.
- BRANFORD:**
 C. W. Gaylord.
 Walter Zink.
 A. J. Tenny.
 George H. Townsend.
 Harry A. Elcock.
- DERBY:**
 F. N. Loomis.
 Royal W. Pinney.
 Elmer T. Sharpe.
 M. J. Sheahan.
- EAST HAVEN:**
 Charles W. Holbrook.
- GUILFORD:**
 George H. Beebe.
- HAMPDEN:**
 * E. D. Swift.
- Whitneyville:**
 Henry H. Smith.
- MADISON:**
 * D. M. Webb.
- MERIDEN:**
 * Asa H. Churchill.
 C. H. S. Davis.
 N. Nickerson.
 A. W. Tracy.
 E. T. Bradstreet.
- J. D. Eggleston.
 Edward W. Smith.
 O. J. D. Hughes.
 Ava H. Fenn.
 E. W. Pierce.
 S. D. Otis.
 F. P. Griswold.
 E. D. Hall.
 H. W. Delesdernier.
 H. A. Meeks.
 William Galvin.
 J. W. H. La Pointe.
- MILFORD:**
 E. B. Heady.
 E. C. Beach.
 A. L. Tuttle.
- NAUGATUCK:**
 Frank B. Tuttle.
 Thomas M. Bull.
 Frederick Spring.
 James W. Robbins.
 William J. Delaney.
 Edwin H. Johnson.
- NORTH HAVEN:**
 R. B. Goodyear.
- ORANGE—West Haven.**
 J. F. Barnett.
 William V. Wilson.
 Durell Shepard.
- OXFORD:**
 Lewis Barnes.

*Exempted from taxation.

SEYMOUR:

Frank A. Benedict.
Elias W. Davis.

WALLINGFORD:

J. D. McGaughey.
C. H. Atwater.
William S. Russell.
William P. Wilson.

WATERBURY:

Edward L. Griggs.
F. E. Castle.
E. W. McDonald.
Walter L. Barber.
C. W. S. Frost.
Charles S. Rodman.
J. M. Benedict.
Thomas L. Axtelle.
Carl E. Munger.
Bernard A. O'Hara.
John F. Hayes.
Caroline R. Conkey.

Augustin A. Crane.
Patrick T. O'Connor.
John D. Freney.
Charles A. Hamilton.
George O. Robbins.
Isaac P. Fiske.
Charles H. Brown.
Edward W. Goodenough.
Myron L. Cooley.
Frederick G. Graves.
George Holbrook.
John R. Poore.
James L. Moriarty.
Daniel J. Maloney.
Thomas J. Kilmartin.
Larmon W. Abbot.
Ernest D. Chipman.
Charles A. Monegan.
Henry G. Anderson.

Waterville:

Joseph S. Holroyd, —199

NEW LONDON COUNTY.

RUSH W. KIMBALL, M. D., Norwich, President.

CHARLES B. GRAVES, M. D., New London, Vice-President.

CARLISLE F. FERRIN, M. D., New London, Clerk.

County Reporter, CHARLES B. GRAVES, M. D., New London.

Censors—WILLIAM WITTER, M. D., L. S. PADDOCK, M. D.,
F. N. BRAMAN, M. D.

Annual Meeting first Thursday in April; semi-annual, first Thursday in October.

COLCHESTER:

James T. Mitchell.

EAST LYME—Niantic.

Frederick H. Dart.
Edward C. Chipman.
John L. Burnham.

GRISWOLD—Jewett City.

George H. Jennings.

GROTON:

Edmund P. Donglass.
Frank W. Hewes.

LEBANON:

Norman L. Drake.

MONTVILLE—Uncasville.

Morton E. Fox.

NEW LONDON:

Abiel W. Nelson.
FRANCIS N. BRAMAN.
John G. Stanton.
Charles B. Graves.
Joseph R. Crofton.
Hiram B. Thomson.
Harold H. Heyer.
* Carlisle F. Ferrin.
Thomas W. Rogers.
J. Clifton Taylor.

*Exempted from taxation.

Griswold Bragaw.
Patrick J. Cassidy.

NORWICH:

Lewis S. Paddock.
William Witter.
William S. C. Perkins.
Patrick Cassidy.
Leonard B. Almy.
Anthony Peck.
Julian LaPierre.
E. P. Brewer.
N. P. Smith.
Patrick H. Harriman.
Witter K. Tingley.
William T. Browne.
George R. Harris.
Charles H. Perkins.
Rush W. Kimball.
James J. Donahue.

Harvey E. Higgins.

Taftville:

George Thompson.

Yantic:

Herbert H. Howe.

STONINGTON:

Charles E. Brayton.
George D. Stanton.

Mystic:

Frank A. Coates.
A. M. Purdy.

Old Mystic:

* Albert T. Chapman.
William H. Gray.

VOLUNTOWN:

Warren Russell Davis.

WATERFORD:

George M. Minor.

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FAIRFIELD COUNTY.

LOREN T. DAY, M. D., Westport, President.

FRANKLIN P. CLARK, M. D., Danbury, Vice-President.

GEORGE S. FORD, M. D., Bridgeport, Clerk.

County Reporter—WILLIAM S. RANDALL, M. D., Shelton.

Censors—W. H. DONALDSON, M. D., J. C. LYNCH, M. D.,
W. E. RICE, M. D.

Annual Meeting second Tuesday in April, at Bridgeport, semi-annual
in October.

BRIDGEPORT:

Andrew J. Smith, No. 191 Barnum Avenue.
GEORGE L. PORTER, No. 372 State Street.
Robert Lauder, No. 310 Fairfield Avenue.
Curtis H. Bill, No. 411 State Street.
N. E. Wordin, No. 274 Fairfield Avenue.
F. M. Wilson, No. 834-836 Myrtle Avenue.
T. F. Martin, No. 289 Golden Hill Street.
F. B. Downs, No. 358 State Street.
J. W. Wright, No. 808-810-812 Myrtle Avenue.
A. W. Lyons, No. 421 State Street.
* A. A. Holmes, No. 870 Broad Street.
Charles C. Godfrey, No. 310 State Street.
S. M. Garlick, No. 474 State Street.
Henry Blodget, No. 477 State Street.
J. C. Lynch, No. 408 State Street.
C. C. Hoyt, No. 1289 State Street.
G. W. Osborn, No. 888 Broad Street.
J. R. Topping, No. 295 East Main Street.

*Exempted from taxation.

BRIDGEPORT—Continued:

- B. F. White, No. 390 State Street.
 Jacob May, No. 124 Courtland Street.
 F. C. Graves, No. 561 State Street.
 G. B. Cowell, No. 502 East Washington Avenue.
 C. N. Haskell, No. 527 State Street.
 George E. Oher, No. 355 East Main Street.
 B. DeF. Sheedy, No. 426 State Street.
 D. C. DeWolfe, No. 509 Fairfield Avenue.
 Harry S. Miles, No. 836 Myrtle Avenue.
 Charles L. Banks, No. 340 State Street.
 Fessenden L. Day, No. 477 State Street.
 Edward Fitzgerald, No. 526 East Washington Avenue.
 George S. Ford, No. 313 State Street.
 Robert G. Leverty, No. 606 Washington Avenue.
 Frank M. Tukey, No. 429 State Street.
 * William W. Gray, No. 560 State Street.
 James D. Gold, No. 404 State Street.
 Renben A. Lockhart, No. 18 North Washington Avenue.
 Harriet A. Thompson, No. 695 Warren Street.
 Frederick J. Adams, No. 350 State Street.
 W. J. A. O'Hara, No. 683 East Main Street.
 David M. Trecartin, No. 542 State Street.
 G. Stanley Heft, No. 356 State Street.
 Michael M. Rowe, No. 1532 Main Street.
 Harry W. Fleck, No. 430 State Street.
 Thomas L. Ellis, No. 474 State Street.
 Charles R. Townsend, No. 346 State Street.
 Herbert E. Smyth, No. 27 Courtland Street.
 Harry R. Bennett, No. 525 State Street.
 J. Murray Johnson, No. 469 State Street.

BETHEL:

- A. E. Barber.
 Charles R. Hart.
 John DeWitt Wight.

BROOKFIELD:

- Junius F. Smith.

DANBURY:

- F. P. Clark.
 E. A. Stratton.
 W. S. Watson.
 D. Chester Brown.
 H. F. Brownlee.
 John H. Benedict.
 Nathaniel Selleck.
 George E. Lemmer.
 * Charles F. Craig.
 John A. Wade.
 William F. Gordon.
 W. H. Kiernan.

DARIEN:

- George H. Noxon.

FAIRFIELD:

- W. H. Donaldson.
 Greenfield Hill:
 M. V. B. Dunham.
 Southport:
 Robert E. Purdue.
 Joseph L. Hetzel.

GREENWICH:

- Frank Terry Brooks.

HUNTINGTON—Shelton:

- Gould A. Shelton.
 William S. Randall.
 Francis J. Nettleton.

Stepney:

- SETH HILL.

NEW CANAAN:

- Clarence H. Scoville.

NEWTOWN:

- Edward M. Smith.

*Exempted from taxation.

SANDY HOOK:

James W. Gordon.

NORWALK:

James G. Gregory.
R. L. Higgins.
S. H. Huntington.
William J. Tracey.

South Norwalk:

A. N. Clark.
C. G. Bobannan.
Lauren M. Allen.
Henry C. Sherer.
John T. Kennedy.
Jean Dumortier.
Wright B. Bean.

East Norwalk:

Frederick B. Baker.

REDDING:

Ernest H. Smith.

RIDGEFIELD:

Russell W. Lowe.
Willis E. Weed.

STAMFORD:

A. M. Hurlbut.
Samuel Pierson.
A. N. Phillips.
* C. R. Hexamer.
P. P. Van Vleet.
F. Schavoir.

Wm. A. R. Treadway.

F. J. Rogers.
Rosavelle G. Philip.
James A. MEEK.
George Sherrill.
Watson E. Rice.
Frank M. Tiffany.
Daniel A. Hanrahan.
Myre J. Brooks.
Leonard W. Munson.

STRATFORD:

W. B. Cogswell.
G. F. Lewis.

WESTON—Lyon's Plains:

F. Gorham.

WESTPORT:

George B. Bouton.
F. Powers.
Loren T. Day.
F. D. Ruland.
L. H. Wheeler.
J. M. Nolan.

WILTON:

A. B. Gorham.

Georgetown:

Howard P. Mansfield.

South Wilton:

Edward Everett Smith.

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WINDHAM COUNTY.

SELDEN B. OVERLOCK, M.D., Pomfret, President.

LAURA H. HILLS, M.D., Willimantic, Vice-President.

JAMES L. GARDNER, M.D., Central Village, Clerk.

County Reporter—F. A. MORRELL, M.D., Plainfield.

Censors—LOWELL HOLBROOK, M.D., E. H. DAVIS, M.D.,

F. E. GUILD, M.D.

BROOKLYN:

A. H. Tanner.

CHAPLIN:

Charles M. Knight.

DANIELSON:

RIENZI ROBINSON.
W. H. Judson.
C. J. Le Clair.
Frank H. Coops.
James R. Shannon.

*Exempted from taxation.

KILLINGLY :

Ashael E. Darling.
Henry L. Hammoud.

East Killingly :

Charles E. Hill.

Moosup :

Charles N. Allen.
W. W. Adams.
Alphonse Fontaine.

Central Village :

* James L. Gardner.

PLAINFIELD :

E. H. Davis.

POMFRET :

S. B. Overlock.

Abington :

Ezra B. Pike.

PUTNAM :

John B. Kent.
F. A. Morrell.
Omar LaRue.
Lewis O. Morasse.

THOMPSON :

* LOWELL HOLBROOK.

North Grosveuordale :

J. F. McIntosh.

WINDHAM :

F. E. Guild.

Willimantic :

Frederick Rogers.
T. MORTON HILLS.
C. J. Fox.
T. R. Parker.
John Weldon.
R. C. White.
George W. May.
* Laura H. Hills.

WOODSTOCK—East Woodstock :

Charles C. Gildersleeve.

Woodstock Valley :

Henry R. Lowe.

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LITCHFIELD COUNTY.

JOHN C. KENDALL, M.D., Norfolk, President.

JEROME S. BISSELL, M.D., Torrington, Vice-President.

W. M. S. CURTISS, M.D., Cornwall Bridge, Clerk.

County Reporter, ELIAS PRATT, M.D., Torrington.

Censors—W. L. PLATT, M.D., S. G. HOWD, M.D.,

J. H. NORTH, M.D.

Annual Meeting fourth Tuesday in April; semi-annual, second Tuesday in October.

BETHLEHEM :

Etta May Hadley-Judd.

CANAAN—Falls Village :

Albert E. Cobb.

CORNWALL—Cornwall Bridge :

* W. M. S. Curtiss.

West Cornwall :

Arthur M. Pratt.

GOSHEN :

J. H. North.
Caroline North.

KENT :

W. M. Barnum.

LITCHFIELD :

C. O. Belden.
J. T. Sedgwick.
John L. Buel.
W. S. MacLaren.
Charles I. Page.
Charles N. Warner.

NEW HARTFORD :

* Jerry Burwell.
Josiah Swett.

*Exempted from taxation.

NEW MILFORD:	Elias Pratt.
G. E. Staub.	J. W. Johnson.
NORFOLK:	J. S. Bissell.
John C. Kendall.	J. D. Hayes.
I. L. Hamant.	A. L. House.
Lucius D. Bulkley.	A. J. Barker.
Frederick S. Dennis.	C. H. Carlin.
NORTH CANAAN—Canaan:	* Sanford H. Wadhams.
C. W. Camp.	H. D. Moore.
F. H. Lee.	
PLYMOUTH—Terryville:	WASHINGTON:
W. P. Swett.	ORLANDO BROWN.
W. W. Wellington.	William J. Ford.
M. P. Robinson.	New Preston:
SALISBURY:	R. A. Marcy.
P. H. Sellew.	WATERTOWN:
Lakeville:	Eugene C. French.
W. Bissell.	Ernest K. Loveland.
G. H. Knight.	WINCHESTER—Winsted:
W. B. Bissell.	E. L. Pratt.
SHARON:	W. S. Hulbert.
C. W. Bassett.	Salmon J. Howd.
THOMASTON:	West Winsted:
RALPH S. GOODWIN.	E. H. Welch.
George D. Ferguson.	W. S. Richards.
TORRINGTON:	WOODBURY:
William L. Platt.	D. R. Rodger.
T. S. Hanchett.	

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MIDDLESEX COUNTY.

GEORGE N. LAWSON, M.D., Middle Haddam, President.

HENRY S. NOBLE, M.D., Middletown, Vice-President.

FRANK K. HALLOCK, M.D., Cromwell, Clerk.

County Reporter—GEORGE N. LAWSON, M.D., Middle Haddam.

Censors—S. W. TURNER, M.D., GEORGE W. BURKE, M.D.,

M. C. HAZEN, M.D.

Annual Meeting second Thursday in April; semi-annual, second Thursday in October.

CHATHAM—Middle Haddam:

George N. Lawson.

East Hampton:

Albert Field.

CHESTER:

* Sylvester W. Turner.
Fred. Sumner Smith.

CLINTON:

Herbert S. Reynolds.

*Exempted from taxation.

CROMWELL :

* Frank K. Hallock.
Charles E. Bush.
Sara M. DeHart.

DURHAM :

Earl Mathewson.

EAST HADDAM :

M. W. Plumstead.
Emma J. Thompson.

ESSEX :

Charles H. Hubbard.

HADDAM :

Miner C. Hazen.

KILLINGWORTH :

Edward P. Nichols.

MIDDLETOWN :

* George W. Burke.
FRANCIS D. EDGERTON.
Wm. E. Fisher.
Charles E. Stanley.
James M. Keniston.
Henry S. Noble.
Michael D. Murphy.
John E. Bailey.
Arthur J. Campbell.

Arthur B. Coleburn.
J. Francis Calef.
John E. Loveland.
Kate C. Mead.
Lewis Maitland.
Daniel A. Nolan.
Roger C. Downey.
Charles W. Page.
Alieu Ross Defendorf.
John H. Mountain.
William Fitzgerald.
Charles B. Young.

OLD SAYBROOK :

John H. Grannis.
William D. Spencer.

PORTLAND :

Cushman A. Sears
Frank E. Potter.
James Murphy.

SAYBROOK—Deep River :

* Edwin Bidwell.
H. T. French.

WESTBROOK :

Thomas B. Bloomfield.

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TOLLAND COUNTY.

FRANK LEWIS SMITH, M.D., Stafford Springs, President.

T. F. O'LAUGHLIN, M.D., Rockville, Vice-President.

EDWIN T. DAVIS, M.D., ELLINGTON, Clerk.

County Reporter—C. B. NEWTON, M.D., Stafford Springs.

Censors—E. P. FLINT, M.D., E. K. LEONARD, M.D.,
C. F. SUMNER, M.D.

Annual Meeting third Tuesday in April; semi-annual, third Tuesday in October.

BOLTON :

* CHAS. F. SUMNER.

COVENTRY :

William C. Haven.

South Coventry :

W. L. Higgins.
Clarence E. Simonds.

ELLINGTON :

* E. T. Davis.

MANSFIELD—Mansfield Depot :

F. E. Johnson.

ROCKVILLE :

Frederick Gilnack.

* Exempted from taxation.

ROCKVILLE—*Continued*:

E. K. Leonard.
T. F. Rockwell.
E. P. Flint.
T. F. O'Laughlin.

SOMERS:

A. L. Hurd.

STAFFORD—Stafford Springs:

C. B. NEWTON.
F. L. Smith.
Daulel Sullivan.

VERNON:

* A. R. GOODRICH.

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* Exempted from taxation.

ALPHABETICAL LIST

OF THE

MEMBERS OF THE CONNECTICUT MEDICAL SOCIETY,

With date and place of graduation, and Post-Office Address.

Name.	Medical Graduation.	P. O. Address.
Ahhot, Larmon Winthrope,	Yale, '96,	Waterbury.
Ahrams, Alva Elnathan,	Albany, '81,	Hartford.
Adams, Frederick Joseph,	Univ. N. Y., '95,	Bridgeport.
Adams, William Waldo,	Bellevue, '91,	Moosup.
Allen, Charles Noah,	Univ. Vt., '81,	Moosup.
Allen, Howard Oliver,	Univ. N. Y., '79,	Broad Brook.
Allen, Lauren Melville,	P. & S., N. Y., '80,	So. Norwalk.
Alling, Arthur Nathaniel, B.A.,	P. & S., N. Y., '91,	New Haven.
Almy, Leonard Ballou, B.A., '72,	Bellevue, '76,	Norwich.
Alton, Charles De Lancey,	Bellevue, '75,	Hartford.
Anderson, Arvid,	Univ. Mich., '93,	New Britain.
Anderson, Henry Gray,	P. & S., N. Y., '89,	Waterbury.
Arnold, Ernest Hermann,	Yale, '94,	New Haven.
Atwater, Caleb Huntington,	P. & S., N. Y., '71,	Wallingford.
Axtelle, John Frankln,	L. I. Hosp. Coll., '71,	Hartford.
Axtelle, Thomas Lincoln,	Bellevue, '81,	Waterbury.
Bacon, Francis,	Yale, '53,	New Haven.
Bacon, Leonard Woolsey, Jr.,	Yale, '92,	New Haven.
Bacon, William Turner, B.A., Yale, '63, M.A., '71,	Univ. N. Y., '71,	Hartford.
Bailey, George Cornelius,	Univ. N. Y., '86,	Hartford.
Bailey, John Elmore,	P. & S., N. Y., '85,	Middletown.
Bailey, Michael Angelo,	P. & S., Balt., '93,	Hartford.
Baker, Frederick Birdseye,	Univ. Md., '88,	E. Norwalk.
Banks, Charles Lincoln,	P. & S., N. Y., '91,	Bridgeport.
Barber, Alvin Ellzur,	Berkshire, '54,	Bethel.
Barber, Walter Lewis,	Bellevue, '73,	Waterbury.
Barhault, Arthur Octave,	Vict. Med. Col., '89,	New Haven.
Barker, Ahram James,	Bellevue, '97,	Torrington.
Barnes, Lewis, B.A., M.A., '47,	Buffalo Univ., '50,	Oxford.
Barnett, John Frederick,	Yale, '69,	West Haven.
Barnum, Walter Milo,	P. & S., N. Y., '83,	Kent.
Barrows, Benj. Safford, Ph.B., '83,	Univ. N. Y., '87,	Hartford.
Bartlett, Charles Joseph, B.A., Yale, '92; M.A., Yale, '94,	Yale, '95,	New Haven.

In preparing this list the Secretary has followed the list in the Proceedings of 1892, made with great care and labor by Dr. J. B. Lewis for the Centennial year. It may be relied upon as being correct.

Name.	Medical Graduation.	P. O. Address.
Bassett, Clarence Wheeler,	Univ. N. Y., '82,	Sharon.
Beach, Charles Coffing,	P. & S., N. Y., '82,	Hartford.
Beach, Edward Charles,	Yale, '88,	Milford.
Bean, Wright Butler,	P. & S., N. Y., '95,	South Norwalk.
Beard, Theodore Edward, Jr.,	Yale, '97,	New Haven.
Beckwith, Frank Edwin, M.A., '81,	P. & S., N. Y., '71,	New Haven.
Beebe, George Hoxie,	Univ. N. Y., '78,	Gulford.
Belden, Charles Ogilvie,	P. & S., N. Y., '82,	Litchfield.
Bell, George Newton,	Yale, '92,	Hartford.
Bell, Newton Stephen,	Univ. Vt., '64,	Windsor.
Bellosa, Frederick,	Yale, '72,	New Haven.
Benedict, Frank Allen,	P. & S., N. Y., '87,	Seymour.
Benedict, John Howe,	Conn. Med. Soc., '58,	Danbury.
Benedict, John Mitchell,	Univ. N. Y., '82,	Waterbury.
Bennett, Harry Raymond,	Univ. Vt., '96,	Bridgeport.
Bidwell, Edwin,	Yale, '47,	Deep River.
Bill, Curtis Harvey,	Univ. N. Y., '59,	Bridgeport.
Bishop, Frederick Courtney, B.A., Yale, '92,	Yale, '95,	New Haven.
Bishop, Louis Bennett, B.A., '86,	Yale, '88,	New Haven.
Bishop, Timothy Huggins,	Yale, '60,	New Haven.
Bissell, Evelyn Lyman,	Yale, '60,	New Haven.
Bissell, Jerome Samuel,	Yale, '94,	Torrington.
Bissell, William, B.A., Yale, '53,	Yale, '56,	Lakeville.
Bissell, William Bascom, A.B., Yale, '88,	P. & S., N. Y., '92,	Lakeville.
Blodget, Henry, A. B., Yale, '75,	Bellevue, '81,	Bridgeport.
Bloomfield, Thomas Blanch,	P. & S., N. Y., '76,	Westbrook.
Bohannon, Charles Gordon,	Univ. N. Y., '78,	So. Norwalk.
Botsford, Charles Porter,	Yale, '94,	Hartford.
Boucher, John Bernard,	P. & S., Balt., '94,	Hartford.
Bouton, George Beriah,	Y., '56; N. Y. M., '56,	Westport.
Brackett, Arthur Stone,	Jefferson, '95,	Bristol.
Bradley, William Lockwood, B.A., '60,	Yale, '64,	New Haven.
Bradstreet, Edward Thomas, B.A., '74,	P. & S., N. Y., '77,	Meriden.
Braman, Francis Nelson,	Bellevue, '66,	New London.
Brayton, Charles Erskine,	P. & S., N. Y., '73,	Stonington.
Bragaw, Griswold,	Bellevue, '97,	New London.
Brennan, Ambrose Kirk,	Yale, '93,	New Haven.
Brewer, Edward Pliny, Ph.D.,	Dartmouth, '79,	Norwich.
Bromley, Daniel Tyler,	Yale, '67,	Hartford.
Brooks, Frank Terry, B.A., Yale,	P. & S., '93,	Greenwich.
Brooks, Myre Joel,	Yale, '67,	Stamford.
Brown, Charles Henry,	Univ. N. Y., '93,	Waterbury.
Brown, David Chester,	Yale, '84,	Danbury.
Brown, Orlando,	Yale, '51,	Washington.
Browne, William Tyler, Ph.B., '78,	Harvard, '82,	Norwich.
Brownlee, Harris Fenton,	P. & S., N. Y., '88,	Danbury.
Bulkley, Lucius Duncan, M.A.,	P. & S., N. Y., '69,	Norfolk.
Buel, John Laidlaw,	P. & S., N. Y., '88,	Litchfield.
Bull, John Norris,	P. & S., N. Y., '78,	Mainville.

Name.	Medical Graduation.	P. O. Address.
Bull, Thomas Marens,	P. & S., N. Y., '87,	Naugatuck.
Bunce, Henry Clinton,	Yale, '50,	Glastonbury.
Bunce, Philip Dibble, A.B., Yale, '88,	P. & S., N. Y., '91,	Hartford.
Bunnell, Wilbur Pitkin,	Univ. N. Y., '84,	New Britain.
Burke, George Whiting, B.A., 39, M.A., 42, Wesleyan,	Yale, '43,	Middletown.
Burnap, Sidney Rogers, A.B., Union, '58,	P. & S., N. Y., '62,	W'ds'r Locks.
Burnham, John Lewis,	Yale, '99,	East Lyme.
Burwell, Jeremiah,	Berkshire, '39,	New Hartford.
Bush, Charles Ellsworth,	Yale, '94,	Cromwell.
Cabill, Joseph Henry,	Balt. Univ., '92,	Hartford.
Cabill, Thomas Matthew,	Yale, '88,	New Haven.
Caldwell, William Elry,	Balt. Med. Col., '95,	W. Suffield.
Calef, Jeremiah Francis, B.A., '77,	Yale, '80,	Middletown.
Camp, Charles Welford,	Univ. N. Y., '74,	Canaan.
Campbell, Arthur Joseph,	P. & S., Balt., '85,	Middletown.
Carllu, Charles Henry,	Univ. Mich., '96,	Torrington.
Carlou, Phillip Patrick,	Univ. N. Y., '90,	Hartford.
Carnalt, William Henry, M.A., '81,	P. & S., N. Y., '61,	New Haven.
Carrington, Charles,	P. & S., N. Y., '60,	Farmington.
Case, Ida R. Gridley, B.A., Wes. Univ., '86; M.A., Wes., '88,	P. & S., Boston, '89,	Collinsville.
Cassidy, Patrick,	Univ. Vt., '65,	Norwich.
Cassidy, Patrick John B. A., Yale, '94,	Johns Hopkins, '98,	New London.
Castle, Frank Edwin,	Yale, '70,	Waterbury.
Chapman, Albert Taylor,	P. & S., N. Y., '64,	Old Mystic.
Chapman, Sherman Hartwell, B.A., '53, M.A., '66,	P. & S., N. Y., '69,	New Haven.
Cheney, Benjamin Austin, B.A., '83,	Yale, '90,	New Haven.
Chester, Thomas Weston, B.A., Rutgers, '92, M.A., '95,	P. & S., N. Y., '95,	Hartford.
Chipman, Edward Clifford,	P. & S., N. Y., '91,	Niantic.
Chipman, Ernest Dwight,	Yale, '97,	Waterbury.
Churehill, Asa Hopkins,	Yale, '57,	Meriden.
Clark, Arthur Norman,	P. & S., N. Y., '83,	So. Norwalk.
Clark, Franklin Pierce,	P. & S., N. Y., '76,	Danbury.
Clark, Robert Moses,	Univ. Pa., '91,	New Britain.
Clary, George, A.B., '52, Dart- mouth,	Yale, '57,	New Britain.
Coates, Franklin Avery, A.B., '72; A.M., '75,	P. & S., N. Y., '75,	Mystic.
Cobb, Alfred Edward,	Yale, '98,	Falls Village.
Cochran, Levi Bennett,	Univ. Pa., '93,	Hartford.
Cogswell, William Badger,	Bellevue, '81,	Stratford.
Coholan, Michael James,	Univ. N. Y., '65,	New Britain.
Coleburn, Arthur Burr,	P. & S., N. Y., '90,	Middletown.
Conkey, Carollne Root,	W. Med., N. Y., '81,	Waterbury.
Converse, George Frederick,	Yale, '87,	New Haven.
Coogan, Joseph Albert,	Bellevue, '76,	W'ds'r Locks.
Cook, Ansel Granville,	P. & S., N. Y., '87,	Hartford.

Name.	Medical Graduation.	P. O. Address.
Cooley, Myron Lynus,	Buffalo, '86,	Waterbury.
Cooper, Louis Edward, Ph.B., '84,	Yale, '86,	Ansonia.
Coops, Frank Harvey,	P. & S., Balt., '96,	Danielson.
Cowell, George B.,	P. & S., N. Y., '88,	Bridgeport.
Coyle, William Joseph,	Buf'lo Med. Col., '85,	Windsor Locks.
Craig, Charles Frauklin,	Yale, '94,	Danbury.
Craig, William Gibson,	Jefferson, '92,	Hartford.
Crane, Augustin Averill, B.A., '85,	Yale, '87,	Waterbury.
Crary, David,	Yale, '69,	Hartford.
Crofton, Joseph Ricbard,	P. & S., N. Y., '89,	New London.
Crossfield, Frederick Solon,	Bellevue, '78,	Hartford.
Crothers, Thomas Davison,	Albany, '65,	Hartford.
Crowe, Willis Hanford,	P. & S., N. Y., '95,	New Haven.
Crowley, William Holmes,	Buf. Med. Col., '90,	Collinsville.
Curtiss, William Martin Stanley,	Univ. S. M., Balt., '93,	Cornwall B.
Daggett, William Gibbons, B.A., '80,	Univ. P., '84,	New Haven.
Darling, Asnahel Ebenezer,	Harvard, '72,	Killingly.
Dart, Frederick Howard,	P. & S., N. Y., '84,	Niantic.
Davis, Charles Henry Stanley,	Univ. N. Y., '66,	Meriden.
Davis, Edwin Taylor,	Univ. Vt., '88,	Ellington.
Davis, Elias Wyman, B.A., Yale, '80,	Yale, '92,	Seymour.
Davis, Emory Hawkins,	Univ. Vt., '72,	Plainfield.
Davis, Gustav Pierpont, B.A., '66,	P. & S., N. Y., '69,	Hartford.
Davis, Warren Russell,	Univ. Vt., '82,	Voluntown.
Davison, Lutber Augustus,	Univ. N. Y., '82,	Hartford.
Day, Fessenden Lorenzo, B.A.,	Bellevue, '93,	Bridgeport.
Day, Loren True,	Yale, '80,	Westport.
Deane, Henry Augustus,	Dartmouth, '68,	South Windsor.
Defendorf, Allen Ross, B.A., Yale, '94,	Yale, '96,	Middletown.
DeForest, Louis Shepard, B.A., '79; M.A., '91,	Univ. Jena., '85,	New Haven.
DeHart, Clara Madana,	Woman's Med. Col., N. Y. Inf., '94,	Cromwell.
Delaney, William Joseph,	McGill Univ., '87,	Naugatuck.
Delesdernler, Horace Willam,	Univ. Vt., '85,	Meriden.
Dennis, Frederic Shepard, B.A., Yale, '72; M.R.C.S.,	Bellevue, '74,	Norfolk.
DeWolfe, Daniel Charles,	Univ. Vt., '86,	Bridgeport.
Dickerman, Wilton Elias, B.A., Amherst, '90,	Yale, '93,	Hartford.
Donahue, James Joseph,	P. & S., Balt., '96,	Norwich.
Donaldson, Willam Henry,	Univ. N. Y., '81,	Fairfield.
Dooley, John Thomas,	Univ. N. Y., '87,	Manchester.
Douglass, Edmund Peaslee,	Univ. N. Y., '89,	Groton.
Douglass, Elmer Ellsworth,	{ P. S. Min'a'ls, '94, { Barnes, Medical, '95,	Hartford.
Dowling, John Francis,	L. I. Hosp. Coll., '90,	Hartford.
Down, Edwin Augustus,	P. & S., N. Y., '87,	Hartford.
Downey, Roger Charles,	Univ. Vt., '92,	Middletown.
Downs, Frederick Bradley,	Univ. N. Y., '78,	Bridgeport.

Name.	Medical Graduation.	P. O. Address.
Drake, Norman Lucie,	Univ. N. Y., '91,	Lebanon.
Dumortier, Jean,	Univ. Ghent, Belg., '89,	So. Norwalk.
Dunham, Martin Van Buren,	Harvard, '67,	G'field Hill.
Edgerton, Francis Daniels, A.M., '61.	Univ. Vt., '61,	Middletown.
Eggleston, Jeremiah Dewey,	P. & S., N. Y., '64,	Meriden.
Elecock, Harry Alfred,	P. & S., N. Y., '79,	Brauford.
Elliot, Gustavus, B.A., '77; A.M., '82.	Yale, '91,	
Ellis, Thomas Long, B.A., Yale, '94.	P. & S., N. Y., '80,	New Haven.
Elmer, Oliver Edward,	Yale, '96,	Bridgeport.
Ely, John Slade, Ph.B., Yale, '81, M.A., Columbia, '97,	P. & S., Balt., '94,	Hartford.
Enders, Thomas Burnham,	P. & S., N. Y., '86,	New Haven.
Ensign, Robert Eleazer,	P. & S., N. Y., '91,	Hartford.
Evans, Alexander William, Ph.B., '90,	Albany, '57,	Berlin.
	Yale, '92,	New Haven.
Felty, John Wellington,	Jefferson, '84,	Hartford.
Fenn, Ava Hamlin,	P. & S., Balt., '86,	Meriden.
Ferguson, George Dean,	Univ. N. Y., '79,	Thomaston.
Ferrin, Carlisle Franklin, B.A., Univ. Vt., '91,	P. & S., N. Y., '95,	New London.
Ferris, Harry Burr, B.A., '87,	Yale, '90,	New Haven.
Field, Albert,	L. I. Coll. Hosp., '67,	E. Hampton.
Finch, George Terwilliger, B.A., M.A., '78,	Hobart, '75, Bellevue, '77,	Thomp'ville.
Fisher, William Edwin,	Univ. Pa., '76,	Middletown.
Flske, Isaac Parsons,	Univ. N. Y., '75,	Waterbury.
Fitzgerald, Edward,	P. & S., Balt., '84,	Bridgeport.
Fitzgerald, William,	Univ. Vt., '95,	Middletown.
Fleek, Harry Willard,	Univ. Pa., '96,	Bridgeport.
Fleischner, Henry,	Yale, '78,	New Haven.
Flint, Eli Percival,	Yale, '79,	Rockville.
Flynn, James Henry Joseph,	Yale, '95,	New Haven.
Fontaine, Alphonse,	Victoria, Can., '89,	Moosup.
Foote, Charles Jenkins, B.A., '83,	Harvard, '87,	New Haven.
Ford, George Skiff,	Bellevue, '93,	Bridgeport.
Ford, William J.,	Univ. N. Y., '84,	Washington.
Foster, John Pierpont Codring- ton, B.A., '69,	Yale, '75,	New Haven.
Fox, Charles James,	Univ. N. Y., '76,	Willmantle.
Fox, Edward Gager,	Univ. N. Y., '83,	Wethersfield.
Fox, Morton Earl,	L. I. Hosp. Coll., '93,	Uncasville.
French, Eugene Cowles,	Univ. Mich., '82,	Watertown.
French, Howard Truman,	P. & S., N. Y., '91,	Deep River.
Freney, John Daniel,	L. I. Coll. Hosp., '93,	Waterbury.
Froelich, Charles Edward, M.A., Univ. Copenhagen, '64,	Copenhagen, '70,	Hartford.
Frost, Charles Warren Selah,	P. & S., N. Y., '80,	Waterbury.
Fuller, Horace Smith, Amherst, B.A., '58; A.M., '61,	P. & S., N. Y., '65,	Hartford.
Galvin, William,	Univ. Vt., '92,	Meriden.

Name.	Medical Graduation.	P. O. Address.
Gardner, James Lester,	Univ. Vt., '81,	Central Village.
Garlick, Samuel Middleton, B.A., Dart., '74,	Harvard, '77,	Bridgeport.
Gaylord, Chas. Woodward, B.A., '70,	Yale, '72,	Brauford.
Gilbert, Samuel Dutton, B.A., '69,	Yale, '71,	New Haven.
Gildersleeve, Charles Childs,	Yale, '96,	E. Woodstock.
Gill, Michael Henry,	Yale, '96,	Hartford.
Gillln, Charles Adelbert,	Univ. N. Y., '83,	Berlin.
Gilnack, Frederick,	P. & S., N. Y., '67,	Rockville.
Gladwin, Ellen Hammond,	W. Med., N. Y., '72,	Hartford.
Godfrey, Charles Cartlidge,	Dartmouth, '83,	Bridgeport.
Gold, James Douglass, Ph.B.,	P. & S., '91,	Bridgeport.
Gompertz, Louis Michael,	Yale, '96,	New Haven.
Goodenough, Edward Winches- ter, B.A., Yale, '87,	Yale, '93,	Waterbury.
Goodrich, Alfred Russell,	Berkshire, '46,	Vernon.
Goodrich, Charles Augustus, B.S., Mass. Ag. Col., '93,	P. & S., N. Y., '96,	Hartford.
Goodwin, Ralph Schuyler,	P. & S., N. Y., '66,	Thomastou.
Goodwin, Ralph Schuyler, Jr., Ph.B., Yale, '90,	P. & S., N. Y., '93,	New Haven.
Goodyear, Robert Beardsley,	Yale, '68,	North Haven.
Gordon, James William,	Bellevue, '88,	Sandy Hook.
Gordon, William Francis,	L. I. Hosp. Coll., '96,	Danbury.
Gorham, Andrew Bennett,	Yale, '79,	Wilton.
Gorham, Frank,	Yale, '76,	Lyon's Plain.
Grannis, John Henry,	Yale, '68,	Old Saybrook.
Graves, Charles Burr, B.A., '82,	Harvard, '86,	New London.
Graves, Frederick Chauncey,	Univ. N. Y., '88,	Bridgeport.
Graves, Frederick George,	Yale, '92,	Waterbury.
Gray, William Henry,	P. & S., N. Y., '89,	Old Mystic.
Gray, William Wetmore, B.S., Dickinson, '85,	Bellevue, '90,	Bridgeport.
Gregory, James Glynn, B.A., '65,	P. & S., N. Y., '68,	Norwalk.
Griggs, Edward Luther,	L. I. Hosp. Coll., '64,	Waterbury.
Griggs, John Bagg,	Yale, '97,	Farmington.
Griswold, Edward Hammond,	Univ. N. Y., '78,	E. Hartford.
Griswold, Frederick Pratt,	P. & S., N. Y., '76,	Meriden.
Griswold, Rufus White,	P. & S., N. Y., '54,	Rocky Hill.
Guild, Frank Eugene,	L. I. Hosp. Coll., '85,	Windham.
Hadley-Judd, Etta May,	Women's Med. Coll., Phila., '95,	Bethlehem.
Hall, Edward Dormeuio,	Harvard, '73,	Meriden.
Hall, Joseph Barnard,	Yale, '92,	Hartford.
Hallock, Frank Kirkwood, A.B., A.M., '82,	P. & S., N. Y., '85,	Cromwell.
Hamant, Irving Louis,	L. I. Hosp. Coll., '90,	Norfolk.
Hamilton, Charles Allen,	Univ. Vt., '86,	Waterbury.
Hammond, Henry Louis, Ph.B., '64,	Harvard, '66,	Killingly.
Hammond, Samuel Mowbray, Ph.B., Yale, '93,	Yale, '96,	New Haven.
Hanchett, Thatcher Swift,	Bellevue, '64,	Torrington.
Hanrahan, Daniel Aloysius,	Bellevue, '95,	Stamford.

Name.	Medical Graduation.	P. O. Address.
Harriman, Patrick Henry,	Univ. N. Y., '84,	Norwich.
Harris, George Robert,	P. & S., N. Y., '85,	Norwich.
Hart, Charles Remington,	P. & S., N. Y., '59,	Bethel.
Haskell, Charles Nahum,	Univ. Vt., '90,	Bridgeport.
Haven, William Chadbourne,	Univ. N. Y., '77,	Coventry.
Hawkes, Wm. Whitney, B.A., '79,	Yale, '81,	New Haven.
Hayes, James Dermot, B.S., Man. Coll., N. Y.,	Univ. N. Y., '94,	Torrington.
Hayes, John Francis,	Univ. N. Y., '79,	Waterbury.
Hazen, Miner Comstock,	Univ. Mich., '55,	Haddam.
Heady, Elias Buel,	Yale, '72,	Milford.
Heft, G. Stanley,		Bridgeport.
Hemingway, George Isaac,	Univ. Vt., '97,	New Haven.
Henrahan, Bernard Eliot,	Jefferson, '97,	New Haven.
Hetzel, Joseph Linn,	Bellevue, '91,	Southport.
Hewes, Frank William,	Univ. Vt., '94,	Groton.
Heyer, Harold Hankinson,	Univ. N. Y., '87,	New London.
Hexamer, Carl Reislg, B.S., '83,	P. & S., N. Y., '86,	Stamford.
Higgins, Harry Eugene,	Univ. N. Y., '96,	Norwich.
Higgins, Royal Lacey,	Bellevue, '67,	Norwalk.
Higgins, William Lincoln,	Univ. N. Y., '90,	So. Coventry.
Hill, Charles Edwin, B.A., '76,	Harvard, '79,	E. Killingly.
Hill, Seth,	Yale, '66	Stepney.
Hills, Lanra Heath,	W. Med. Coll., Pa.,	Willimantic.
Hills, Thomas Morton,	Yale, '63,	Willimantic.
Hinckley, Donald Rose, B.A., Yale, '92,	Harvard, '96,	New Haven.
Holbrook, Charles Werden, M.A., Amherst, '93,	Yale, '96,	East Haven.
Holbrook, George,	Univ. Vt., '94,	Waterbury.
Holbrook, Lowell,	Univ. N. Y., '49,	Thompson.
Holmes, Arthur Almond,	Harvard, '65,	Bridgeport.
Holmes, George James,	Albany, '82,	New Britain.
Holroyd, Joseph Scripture,	P. & S., N. Y., '95,	Waterville.
Horton, William Wickham,	Univ. N. Y., '79,	Bristol.
Hotchkiss, Norton Royce,	Univ. Md., '91,	New Haven.
Houghton, Simon Willard,	Bellevue, '79,	Hazardville.
Honse, Albert Louis,	Yale, '95,	Torrington.
Howard, Arthur Wayland,	Univ. N. Y., '90,	Wethersfield.
Howard, John,	Dartmouth, '81,	Hartford.
Howd, Salmon Jennings,	Jefferson, '83,	Winsted.
Howe, Harmon George,	Univ. Vt., '73, P. & S., N. Y., '75,	Hartford.
Howe, Herbert H.,	Univ. Vt., '80,	Yantic.
Hoyt, Curtis Clark,	P. & S., N. Y., '87,	Bridgeport.
Hubbard, Charles Henry,	Yale, '60,	Essex.
Hubbard, Stephen Grosvenor, M.A., '60,	Dartmouth, '43,	New Haven.
Hudson, William Miller, B.A., Yale, '53,	Jefferson, '55,	Hartford.
Hughes, Oliver John Davis, Ph.D., Univ. Heidelberg, '71, M. S. London.	L. I. Hosp. Coll., '75,	Meriden.
Hulbert, William Sharon,	Univ. N. Y., '80,	Winsted.
Huntington, Samuel Henry,	Yale, '76,	Norwalk.

Name.	Medical Graduation.	P. O. Address.
Hurd, Alonzo L., B.S., Me., '82,	Univ. Vt., '91,	Somers.
Hurlbut, Augustin Moen, B.A., '76,	P. & S., N. Y., '79,	Stamford.
Ingalls, Phineas Henry, A.B., '77; A.M., Bowdoin, '85,	P. & S., N. Y., '80,	Hartford.
Irving, Samuel Wellington,	Yale, '91,	New Britain.
Isham, Oliver Kingsley,	Univ. N. Y., '88,	Hartford.
Ives, Robert Shoemaker, B.A., '64, M. A.,	Yale, '66,	New Haven.
Jarvis, George Cyprian,	Univ. N. Y., '60,	Hartford.
Jennings, George Herman,	L. I. Hosp. Coll., '75,	Jewett City.
Johnson, Edwin Hines,	Univ. Vt., '88,	Nangatuck.
Johnson, Frederick Engene,	Univ. N. Y., '69,	Mansfield.
Johnson, John Murray,	L. I. Hosp. Col., '95,	Bridgeport.
Johnson, John William,	P. & S., Balt., '93,	Torrington.
Johnson, Marcus Morton, Ph.B., Brown, '70,	Univ. N. Y., '77,	Hartford.
Jones, Daniel Ablon, B.A., Yale, '84; D.M.D., Harvard, '89,	Yale, '92,	New Haven.
Judson, Walter, B.A., '64; M.A., '97,	P. & S., N. Y., '70,	New Haven.
Judson, William Henry,	Jefferson, '78,	Danielson.
Kane, Thomas Francis,	Bellevue, '87,	Hartford.
Kellog, Clifford Waleott,	Yale, '96,	New Haven.
Kelly, Michael J.,	Balt. Med. Coll., '97,	Warehouse Point.
Kendall, John Calvin, B.A., '70,	P. & S., N. Y., '75,	Norfolk.
Kenlston, James Mortimer,	Harvard, '71,	Middletown.
Kenna, William Matthew, Ph.B., Yale, '90,	Yale, '92,	New Haven.
Kennedy, John Timothy,	Univ. N. Y., '94,	So. Norwalk.
Kent, John Bryden,	Harvard, '60,	Putnam.
Kiernan, Walter Henry,	Trinity, Toronto, '97,	Danbury.
Kilbonrn, Joseph Austin,	P. & S., Balt., '97,	Hartford.
Kimball, Rush Wilmot, A.B., '87, Williams,	L. I. Hosp. Coll., '90,	Norwich.
Kingsbury, William Sauford,	Yale, '96,	Glastonbury.
Kirby, Frank Alonzo,	Columb. Univ., Wash., D. C., '95,	New Haven.
Klenke, Henry Frederiek,	Univ. N. Y., '92,	New Haven.
Knight, Charles Milo,	Louisville, '93,	Chaplin.
Knight, George Henry, A.M., Yale, '98,	P. & S., N. Y., '86,	Lakeville.
Knight, William Ward,	Univ. N. Y., '76,	Hartford.
Lamb, Chauneey Stafford,	Buffalo, '93,	New Haven.
Lambert, Benjamin Lott,	Univ. N. Y., '83,	New Haven.
LaPierre, Julian,	Bellevue, '71,	Norwich.
LaPointe, John William Henry,	Lavalle Univ., Montreal, '92,	Meriden.
LaRue, Omer,	Vict., Montreal, '71,	Putnam.
Lauder, Robert, M.A.,	Yale, '71,	Bridgeport.
Law, Homer, Lycurgus,	Jefferson, '69,	Hartford.
Lawrence, George Washington,	Yale, '90,	East Berlin.
Lawson, George Newton, B.A., '90,	Yale, '92,	M. Haddam.

Name.	Medical Graduation.	P. O. Address.
Lawton, Franklin Lymau, Ph.B., Yale, '90,	Yale, '93,	Hartford.
LeClair, Charles Joseph.	Victoria, '87,	Danielson.
Lee, Frank Herbert,	Albany, '88,	Canaan.
Lenner, George Edward,	Bellevue, '85,	Danbury.
Leonard, Elbridge Kuowilton,	Conn. Med., S'y., '66,	Rockville.
Leverly, Robert Gordon,	Univ. N. Y., '95,	Bridgeport.
Lewis, George Francis, B.A., '64,	Yale, '65,	Collinsville.
Lewis, George Frederick, B.A., '77,	Yale, '84,	Stratford.
Lewis, John Benjamin,	Univ. N. Y., '53,	Hartford.
Lindsley, Charles Augustus, B.A., '49; M.A.,	Yale, '52,	New Haven.
Lindsley, Chas. Purdy, Ph.B., '75,	Yale, '78,	New Haven.
Littlejohn, Percy Duncan,	Yale, '97,	New Haven.
Lockhart, Reuben Arthur,	Yale, '91,	Bridgeport.
Loeh, Maximilian Lawrence,	Yale, '97,	New Haven.
Look, Frank Byron,	Bowdoin, '84,	Hartford.
Loomis, Francis Newton, B.A., '81,	Yale, '83,	Derby.
Loveland, Ernest Kilhura,	Yale, '97,	Watertown.
Loveland, John Elijah, A.B., '89,	Harvard, '92,	Middletown.
Lowe, Henry Russell,	Dartmouth, '82,	Woodst'k Vall'y.
Lowe, Russell Walter,	Univ. N. Y., '89,	Ridgefield.
Luby, John Francis, Ph.B., '76,	P. & S., N. Y., '78,	New Haven.
Lynch, John Charles,	Univ. N. Y., '86,	Bridgeport.
Lyon, Edwin Bradbury,	Berkshire, '62,	New Britain.
Lyons, Andrew Wolff,	Columbus, '76,	Bridgeport.
MacLaren, William Stevenson,	P. & S., N. Y., '89,	Litchfield.
Maher, James Stephen, Ph.B., Yale, '92.	Yale, '96,	New Haven.
Maher, Stephen John,	Yale, '87,	New Haven.
Mailhouse, Max, Ph.B., '76,	Yale, '78,	New Haven.
Maitland, Lewis,	Univ. Pa., '95,	Middletown.
Maloney, Daniel Joseph,	Univ. N. Y., '96,	Waterbury.
Mansfield, Howard Parker,	L. I. Hosp. Coll., '93,	Georgetown.
Marcy, Robert Adrian,	Univ. N. Y., '82,	New Preston.
Mariani, Nicola,	Univ. Naples, '93,	New Haven.
Marsh, Arthur Washburn,	Univ. Vt., '82,	Westville.
Martin, Thomas Francis,	Univ. N. Y., '74,	Bridgeport.
Mason, Jarvis King, Yale, B.A., '55' M.A., '59,	Harvard, '61,	Suffield.
Mathewson, Earl,	P. & S., N. Y., '79,	Durham.
May, George William,	Milwaukee, '95,	Williamantic.
Mayberry, Franklin Hayden,	Univ. Vt., '85,	Burnside.
Mayer, Nathan,	Cincinnati, '57,	Hartford.
McCabe, Edward Michael, B.A., '84,	Yale, '87,	New Haven.
McCook, John Butler,	P. & S., N. Y., '94,	Hartford.
McDonald, Edward Walsh,	Univ. N. Y., '71,	Waterbury.
McDonnell, Ralph Augustine, B.A., '90,	Yale, '92,	New Haven.
McGaughey, James David,	Jefferson, '70,	Wallingford.
McIntosh, Edward Francis,	Yale, '97,	New Haven.
McIntosh, James Fabien,	Victoria, '87,	N. G's'n'rd'le.
McKnight, Everett James, B.A., Yale, '76,	P. & S., N. Y., '79,	Hartford.

Name.	Medical Graduation.	P. O. Address.
McNeil, Archibald,	Dartmouth, '96,	New Haven.
McNeil, Rollin,	Yale, '62,	New Haven.
Mead, Kate Campbell,	{ Wom. Med. Coll., { Phila., '88,	Middletown.
Meek, James Albert,	McGill Univ., '75,	Stamford.
Meeks, Harold Albert,	Bellevue, '90,	Meriden.
Metz, Peter Frederick,	Univ. N. Y., '93,	New Haven.
Miles, Harry Shillingford, Ph.G., N. Y., '88,	P. & S., N. Y., '91,	Bridgeport.
Miller, George Root,	P. & S., Balt., '88,	Hartford.
Minor, George Maynard,	L. I. Hosp. Coll., '85,	Waterford.
Mitchell, James Thomas,	Univ. N. Y., '91,	Colchester.
Monegan, Charles Andrew, B.S., Trinity, '93,	Univ. Pa., '98,	Waterbury.
Monahan, Joseph Bernhard,	Dartmouth, '94,	New Haven.
Moody, Mary Blair,	Buffalo, '76,	New Haven.
Moody, Robert Orton, E.S., Cor- nell, '91,	Yale, '94,	New Haven.
Moore, James Albert, B.A., Yale, '92.	Yale, '94,	New Haven.
Morasse, Lewis Ovid,	Univ. Vict., '84.	Putnam.
Morgan, William Dennison, A.B., Trinity, '72,	P. & S., N. Y., '76,	Hartford.
Moriarty, James Ligonrl,	Harvard, '96,	Waterbury.
Morrell, Frederick Augustus, B.A., Oberlin, '91; M.A.,	L. I. Hosp. Coll., '85,	Putnam.
Monlton, Edward Seymour, B.A., Oberlin, '91; M.A.,	Yale, '94,	New Haven.
Mountain, John Henry,	Jefferson, '96,	Middletown.
Munger, Carl Engene, Ph., B., '80,	P. & S., N. Y., '83.	Waterbury.
Munson, Leonard Walter,	Georget'n Univ., '96,	Stamford.
Murphy, James,	Univ. Pa., '95,	Portland.
Murphy, Michael Daniel,	Bellevue, '84,	Middletown.
Murphy, Walter Graham,	Alb'y Med. Coll., '90,	E. Hartford.
Nadler, Alfred Goldstein, B.A., Yale, '93,	Yale, 96,	New Haven.
Naylor, James Henry,	Univ. Vt., '95,	Hartford.
Nelson, Abiel Ward,	Harvard, '61,	New London.
Nettleton, Francis Irving, Ph. B., '94,	Yale, '97,	Shelton.
Newton, Cyrus Brownlle,	Yale, '56,	Stafford S'gs.
Newton, Matthew Turner,	Yale, '51,	Suffield.
Nichols, Edward Payson, A.B., '48; A.M., '51,	P. & S., N. Y., '52,	Killingworth.
Niekerson, Nehemiah,	N. Y. Med. Coll., '57,	Meriden.
Nicoll, John,	Yale, '54,	New Haven.
Nohle, Henry Smith, A.B., '59,	P. & S., N. Y., '71,	Middletown.
Nolan, Daniel Andrew, Ph.G., '94,	Med. Chir. Col., Pa.,	Middletown.
Nolan, Jacob Matthew,	P. & S., Balt., '94,	Westport.
North, Caroline,	Tufts, '98,	Goshen.
North, James Howard,	L. I. Hosp. Coll., '73,	Goshen.
North, John Leopold,	Louisville, '94,	Avon.
Noxon, George Henry.	Balt. Med. Coll., '93.	Darien.

Name.	Medical Graduation.	P. O. Address.
Ober, George Eugene,	Univ. Vt., '90,	Bridgeport.
O'Connell, Thomas Smith,	P. & S., Balt., '92,	E. Hartford.
O'Connor, Matthew Charles, A.B., '69,	P. & S., N. Y., '73,	New Haven.
O'Connor, Patrick Thomas,	Bellevue, '92,	Waterbury.
O'Flaherty, John,	Alhany, '64,	Hartford.
O'Hara, Bernard Augustine,	Bellevue, '82,	Waterbury.
O'Hara, William James Aloysius,	P. & S., Balt., '93,	Bridgeport.
O'Laughlin, Thomas Francis,	Univ. N. Y., '96,	Rockville.
Osborn, George Wakeman, B.A., '84,	P. & S., N. Y., '87,	Bridgeport.
Oshorne, Oliver Thomas,	Yale, '84,	New Haven.
Overlock, Seldeu Barden,	Bellevue, '89,	Pomfret.
Paddock, Lewis Sloat, M.A.,	N. Y. Med. Coll., '54,	Norwich.
Page, Charles Ithamar,	P. & S., N. Y., '90,	Litchfield.
Page, Charles Whitney,	Harvard, '70,	Middletown.
Palge, Harris Lee,	Jefferson, '96,	New Britain.
Park, Charles Edwin,	Yale, '81,	New Haven.
Parker, Julian Newell,	Yale, '67,	S. M'chester.
Parker, Theodore Raymond,	Univ. N. Y., '80,	Willmantic.
Parmele, George Lathier, D.M.D.,	L. I. Hosp. Coll., '69,	Hartford.
Parsons, Edward Field, A.B., Williams, '48,	P. & S., N. Y., '58,	Thomp'ville.
Peck, Anthony, B.A., '72,	Univ. N. Y., '75,	Norwich.
Peck, Robert Ellsworth, Ph.B., Yale, '90,	Yale, '93,	New Haven.
Peckham, Lucy Creemer,	Wom. Med., Pa., '85,	New Haven.
Perkins, Charles Harris,	P. & S., N. Y., '91,	Norwich.
Perkins, William Sheldon Clark,	P. & S., N. Y., '60,	Norwich.
Phelps, Charles Dickinson, B.A., Amherst '89; M.A., Amherst, '97,	P. & S., N. Y., '95,	New Haven.
Phillip, Rosavelle Gardner,	Wom. Med. Coll., N. Y. Inf., '75,	Stamford.
Phillips, Alfred Noroton,	P. & S., N. Y., '83,	Stamford.
Pierce, Elbridge Worthington,	Univ. N. Y., '85,	Meriden.
Pierson, Samuel,	P. & S., N. Y., '81,	Stamford.
Pike, Ezra Barker,	Bowdoin, '57,	Arlington.
Pinney, Royal Watson,	P. & S., N. Y., '88,	Derby.
Pitman, Edwin Parker, B.A., '86,	Dartmouth, '91,	New Haven.
Platt, William Logan,	P. & S., N. Y., '81,	Torrington.
Plummer, Paul,	Univ. Vt., '94,	Collinsville.
Plimstead, Matthew Woodbury,	Jefferson, '87,	E. Haddam.
Poore, John Rohlfson,	Harvard, '94,	Waterbury.
Porter, George Loring, B.A., '59,	Jefferson, '62,	Bridgeport.
Porter, Isaac Napoleou, B.A., Lincoln Univ., '90,	Yale, '93,	New Haven.
Porter, William, Jr.,	Chic. Med. Coll., '81,	Hartford.
Potter, Frank Edward,	P. & S., N. Y., '89,	Portland.
Powers, Frederick,	P. & S., N. Y., '70,	Westport.
Pratt, Arthur Wilson,	Bellevue, '92,	W. Cornwall.
Pratt, Edward Loomis,	Univ. N. Y., '84,	Winsted.
Pratt, Elias,	P. & S., N. Y., '87,	Torrington.
Purdy, Alexander Marshall,	Univ. Vt., '84,	Mystic.

Name.	Medical Graduation.	P. O. Address.
Randall, William Sherman, Ph.B.,	Yale, '83,	Shelton.
Rankin, Charles Goodrich, A.M., '87, Williams, A.B., '84,	Chic. Med. Coll., '86,	Glastoubury.
Reardon, Thomas Francis,	Univ. Vt., '94,	Thompsonville.
Reilly, James Michael,	Yale, '78.	New Haven.
Reoch, William Stewart, Ph.B., Brown, '93.	P. & S., N. Y., '96,	Hartford.
Reynolds, Herbert Sumner,	Univ. N. Y., '81.	Clinton.
Rice, Watson Emmons,	Univ. Mich., '72,	Stamford.
Richards, William Spencer,	Univ. N. Y., '89,	W. Winsted.
Riug, Heury Wilson, A.B., '79, M.A.,	Me. Med. Coll., '81,	New Haven.
Rislug, Harry Breed,	Yale, '95,	S. Glastonbury.
Rising, Henry Martiu,	Yale, '68,	So. Glastonbury.
Robbins, Charles Henry,	Med. Coll., Balt., '95.	New Haven.
Robbins, George Orrin,	Yale, '79,	Waterbury.
Robbins, James Watson,	Bellevue, '80,	Naugatuck.
Roberts, Edward Kilbourne, Ph. B., '78,	Yale, '80,	New Haven.
Robinson, Myron Potter,	Yale, '95,	Terryville.
Robinson, Myron Winslow,	Berkshire, '60,	Noroton.
Robinson, Paul Skiff, Ph.B., Yale, '89,	Yale, '91,	New Haven.
Robinson, Rienzi,	L. I. Hosp. Coll., '69,	Danielson.
Rockwell, Thomas Francis,	Univ. N. Y., '81,	Rockville.
Rodger, David Robert, A.B., Hamilton, '82,	P. & S., N. Y., '88,	Woodhury.
Rodman, Charles Shepard,	P. & S., N. Y., '68,	Waterbury.
Rogers, Francis Joseph,	Univ. Pa., '73,	Stamford.
Rogers, Frederick,	Univ. N. Y., '63,	Willimantic.
Rogers, Thomas Weaver,	P. & S., N. Y., '90,	New London.
Root, Edward King,	Univ. N. Y., '79,	Hartford.
Root, Joseph Edward, B.S., '76, S.B., Boston Univ.,	P. & S., N. Y., '83,	Hartford.
Rose, John Henry,	Univ. N. Y., '92,	Hartford.
Rowe, Michael Matthew,	P. & S., Balt., '96,	Bridgeport.
Rowley, Alfred Merrimau,	Univ. Vt., '97,	Hartford.
Rulekoldt, Arthur,	Univ. Jena, '65,	New Haven.
Ruland, Fred Davis,	P. & S., N. Y., '89,	Westport.
Russell, Gurdon Wadsworth, Trinity, B.A., '34; M.A., '37,	Yale, '37,	Hartford.
Russell, Thomas Hubbard, Ph.B., Yale, '72,	Yale, '75,	New Haven.
Russell, William Spencer,	Yale, '80,	Walllingford.
Sauford, Leonard Luther, B.A., Yale, '90,	Yale, '93,	New Haven.
Sanford, Ward Harding,	Balt. Med. Coll., '95,	New Haven.
Schavoir, Frederic,	P. & S., Balt., '87,	Stamford.
Scoville, Clarence Henry,	Balt. Med. Col., '92,	New Canaan.
Sears, Cushman Allen,	Univ. N. Y., '62,	Portland.
Seaver, Jay Webber, B.A., '80,	Yale, '85,	New Haven.
Sedgwick, James Theodore,	Univ. N. Y., '85,	Litchfield.
Segur, Gideon Cross,	P. & S., N. Y., '82,	Hartford.

Name.	Medical Graduation.	P. O. Address.
Seibold, John Jacob,	St. Louis Med. Coll., '91,	New Haven.
Selleck, Nathaniel,	Univ. N. Y., '89,	Danbury.
Sellew, Phillip Hamilton,	Jefferson, '90,	Salisbury.
Shannon, James Bernard,	Victoria, '89,	Danielson.
Sharpe, Elmer Thomas,	Univ. N. Y., '95,	Derby.
Sheedy, Bryan DeForest,	Univ. N. Y., '84,	Bridgeport.
Sheehan, William Joseph, B.S., Manhattan Col., '92,	Yale, '95,	New Haven.
Shelton, Gould Abijah, M.A., '91,	Yale, '69,	Shelton.
Shepard, Durell,	Yale, '64,	West Haven.
Shepherd, George Rubeus,	Yale, '66,	Hartford.
Sherer, Henry Clifford,	Univ. N. Y., '92,	So. Norwalk.
Sherrill, George,	P. & S., '91,	Stamford.
Simonds, Clarence Eugene,	Univ. N. Y., '97,	So. Coventry.
Simpson, Frederick Thomas, B.A., Yale, '79,	Me. Med. Coll., '84,	Hartford.
Skinner, Clarence Edward,	Yale, 91,	New Haven.
Slattery, Morris Dove,	Yale, '93,	New Haven.
Sleeper, George Everest,	Dartmouth, '95,	Hartford.
Smith, Andrew Jackson,	P. & S., N. Y., '63,	Bridgeport.
Smith, Edward Everett,	L. I. Hosp. Coll., '71,	So. Wilton.
Smith, Edward Montrose,	P. & S., N. Y., '82,	Newtown.
Smith, Edward Wler, A.B., Yale, '78,	McGill, Mont., '82,	Meriden.
Smith, Frauk Lewis,	Univ. N. Y., '75,	Stafford S'gs.
Smith, Frederick Sumner, B.A., Yale, '79,	Yale, '82,	Chester.
Smith, Herbert Eugene, Ph.B., Yale, '79,	Univ. Pa., '82,	New Haven.
Smith, Henry Hubert,	Jefferson, '77,	Whitneyville.
Smith, Howard Franklin, B.A., Yale, '94,	Yale, '96,	Hartford.
Smith, Junius Foster,	L. I. Hosp. Coll., '90,	Brookfield.
Smith, Marvin,	Univ. N. Y., '83,	New Haven.
Smith, Newton Phineas,	P. & S., N. Y., '82,	Norwich.
Smith, Oliver Cotton,	L. I. Hosp. Coll., '83,	Hartford.
Smyth, Herhert Edward,	McGill. Univ., '84,	Bridgeport.
Snow, Frank Simeon,	Albany, '89,	Hartford.
Sperry, Frederick Noyes,	Yale, '94,	New Haven.
Sprenger, William,	Univ. Vt., '91,	New Haven.
Spring, Frederick,	Univ. N. Y., '85,	Naugatuck.
Staudish, James Herbert,	Univ. N. Y., '95,	Hartford.
Stanley, Charles Everett,	Univ. Pa., '76,	Middletown.
Stanton, George Dallas,	Bellevue, '65,	Stonington.
Stanton, John Gilman, B.A., Amherst, '70,	Wurtzburg, '73,	New London.
Stauh, George Edwards,	L. I. Hosp. Coll., '93,	New Milford.
Steadman, Willard George,	Bellevue, '74,	Southington.
Stearns, Henry Putnam, B.A., Yale, '53; M.A., '56,	Yale, '55,	Hartford.
Stern, Charles Seymour,	Bellevue, '91,	Hartford.
Stetson, James Ehenezer,	Yale, '81,	New Haven.
St. John, Samuel Benedict, B.A., Yale, '66,	P. & S., N. Y., '75,	Hartford.

Name.	Medical Graduation.	P. O. Address.
Stone, Jay Stephen,	P. & S., N. Y., '65,	New Britain.
Storrs, Melancthon, B.A., Yale, '52,	Yale, '53,	Hartford.
Stratton, Edward Augustus,	Univ. N. Y., '83,	Danbury.
Street, Philo William,	Univ. Vt., '92,	Suffield.
Strickland, Rial,	Albany, '39,	Enfield.
Strosser, Hermann,	Univ. Berlin, '84,	New Britain.
Sullivan, Daniel,	Univ. N. Y., '97,	Stafford S'gs.
Sullivan, Daniel Francis, A.B., Niagara Univ., '89,	Niagara Univ. '91,	Hartford.
Sullivan, John Francis, B.A., Yale, '90,	P. & S., N. Y., '94,	New Haven.
Sumner, Charles Fletcher,	Univ. W. N. Y., '40,	Bolton.
Swain, Henry Lawrence,	Yale, '84,	New Haven.
Swasey, Erastus Perry,	P. & S., N. Y., '69,	New Britain.
Swett, Josiah,	Univ. Vt., '78,	N. Hartford.
Swett, William Plummer,	Univ. Vt., '76,	Terryville.
Swift, Elisha Dean,	Univ. N. Y., '49,	Hamden.
Taft, Charles Ezra,	Harvard, '86,	Hartford.
Tanner, Alfred Herbert,	Bellevue, '74,	Brooklyn.
Taylor, John Clifton,	Mich. Univ., '91,	New London.
Tenney, Arthur John, Ph.B., Yale, '77,	Yale, '83,	Branford.
Thayer, Jr., Walter Nelson,	Univ. N. Y., '97,	Wethersfield.
Thompson, George,	Me. Med. Coll., '89,	Taftville:
Thompson, Emma Jane,	Women's Med. Coll., N. Y. Inf., '96,	E. Haddam.
Thompson, Harriet Adaline,	Women's Med. Coll., Penn., '93,	Bridgeport.
Thomson, Edward Sanford,	P. & S., N. Y., '92,	New Haven.
Thomson, Hiram Benson,	Trin. Un., Tor., '88,	New London.
Tiffany, Frank Monroe, A.B., Amherst, '91,	Univ. Pa., '96, '	Stamford.
Tingley, Witter Kinney,	Bellevue, '86,	Norwich.
Tinker, William Richard,	Univ. N. Y., '80,	S. Manchester.
Topping, Jacob Reed,	Univ. N. Y., '82,	Bridgeport.
Townsend, Charles Rodman,	Albany, '95,	Bridgeport.
Townsend, George Hodgson,	Bellevue, '93,	Branford.
Townsend, Jos. Hendley, B.A., Yale, '85,	Yale, '87,	New Haven.
Tracy, Andrew William,	McGill, Mont., '73,	Meriden.
Tracey, William Joseph,	Univ. N. Y., '89,	Norwalk.
Treadway, William A. Bucking- ham,	Univ. Mich., '83,	Stamford.
Trecartin, David Munson,	Dartmouth, '94,	Bridgeport.
Tudor, Mary Starr,	Women's Med., Col. Phila., '93,	So. Windsor.
Tukey, Frank Martin, B.A., Bow doin, '91,	Harvard, '94,	Bridgeport.
Turner, Sylvester Wooster, B.A., Yale, '42,	Yale, '46,	Chester.
Tuttle, Albert Lake,	Albany, '88,	Milford.
Tuttle, Charles Alling, Ph.B., Yale, '88,	Yale, '91,	New Haven.
Tuttle, Frank Benjamin,	Yale, '63,	Nangatuck.

Name.	Medical Graduation.	P. O. Address.
Van Vleet, Peter P.,	Bellevue, '69,	Stamford.
Varno, Henry G.,	P. & S., Balt., '82.	Thomp'ville.
Verdi, William Francis.	Yale, '94,	New Haven.
Wade, John Alexander,	Bellevue, '93,	Danbury.
Wadhams, Sanford Hosea,	Yale, '96,	Torrington.
Waite, Frank Louis,	Bellevue, '88,	Hartford.
Ward, James Ward,	P. & S., Balt., '95,	Hartford.
Warner, Abner Spicer, A.B., Dartmouth, '42,	Dartmouth, '48,	Wethersfield.
Warner, Charles Norton,	Jefferson, '96,	Litchfield.
Waters, John Bradford,	Univ. Vt., '90,	Hartford.
Watson, Wilbur Seymour,	L. I. Hosp. Coll., '87,	Danbury.
Webb, Daniel Meigs, B.A., Yale, '46,	Yale, '49,	Madison.
Weed, Willis Edward,	P. & S., N. Y., '83,	Ridgefield.
Weir, Jauet Marshall,	Queen's Un, Kingston, Ont., '91,	Hartford.
Welch, Edward Hubbard,	Yale, '76,	W. Winsted.
Welch, George Kellogg,	P. & S., N. Y., '78,	Hartford.
Welch, William Collins,	Yale, '77,	New Haven.
Weldon, John,	Univ. N. Y., '83,	Willmantic.
Weldon, Thomas Henry,	Univ. N. Y., '83,	S. Manchester.
Wellington, William Winthrop.	Univ. Vt., '89,	Terryville.
Wheeler, Franklin, B.A., Yale, '47; M.A., Yale, '67,	P. & S., N. Y., '52,	Farmington.
Wheeler, Frank Henry, B.A., Yale, '80,	Yale, '82,	New Haven.
Wheeler, Lewis Hawley,	Yale, '97,	Westport.
White, Benjamin Franklin,	L. I. Hosp. Coll., '86,	Bridgeport.
White, Moses Clark, B.A., Wesleyan, '45, M.A., Yale,	Yale, '54,	New Haven.
White, Robert Creighton,	Univ. Vt., '89,	Willmantic.
Whiton, Francis Henry,	Dartmouth, '72,	Manchester.
Whittemore, Frank Hamilton,	Bellevue, '74,	New Haven.
Wight, George DeWitt,	Bellevue, '87,	Bethel.
Wilnot, Louis Howard,	Univ. N. Y., '91,	Ansonia.
Wilson, Frederick Morse, A.B., Colby, '71,	Harvard, '75,	Bridgeport.
Wilson, John Joseph,	P. & S., Balt., '86,	Bristol.
Wilson, Samuel Allen,	Yale, '52,	Windsor.
Wilson, William Patrick,	P. & S., Balt., '90,	Wallingford.
Wilson, William Virgil,	Yale, '67,	West Haven.
Winchell, Alverd Ezra, A.B., Wesleyan, '57,	P. & S., N. Y., '65,	New Haven.
Winne, William Nelson,	Univ. N. Y., '97,	Westville.
Witter, William,	Yale, '65,	Norwich.
Wolff, Arthur Jacob,	{ Tex. Med. Col., '76, { Bellevue, '83,	Hartford.
Wooster, Charles Morris,	Univ. N. Y., '79,	Tariffville.
Wordin, Nathaniel Eugene, B.A., Yale, '70; Yale, M.A., '72,	Jefferson, '73,	Bridgeport.
Wright, Frank Walden,	Bellevue, '80,	New Haven.
Wright, John Winthrop, A.B., Amherst, '77,	Univ. N. Y., '80,	Bridgeport.

Name.	Medical Graduation.	P. O. Address.
Wright, Theodore Goodelle,	Univ. N. Y., '65,	Plainville.
Wurtenberg, William Charles, Ph.B., Yale, '89,	Yale, '93,	New Haven.
Young, Charles Bellamy,	P. & S., N. Y., '94,	Middletown.
Zink, Walter,	Wurtzburg,	Branford.

Members noticing any errors or omissions in any part of their record will please inform the Secretary for correction in future lists.

APPENDIX.

DISCUSSION ON DR. ALTON'S PAPER (p. 154).

Dr. E. Pratt—It seems strange but unavoidable that this, the most important paper read today, should have so few to hear it. If no other paper but this one had been read, but been discussed and acted upon, we would have accomplished more than at any other time in our work. This institution, a state sanatorium for consumptives can be built before we close the year 1901; all we have to do is to act. In almost every town of this State we have representatives who are men of influence. If the physicians of this State will sit down with their representatives, talk with them and show them that they are unselfish in their advocacy of this plan, there will be no objection to it. It was my pleasure to go to the legislature in 1894 and again last session. I framed a bill covering nearly the same ground as this, but as it had no backing I withdrew it. It proposed a sanatorium for inceptive cases. We want in this matter to get the help of the rural physicians. If we can secure the influence of the rural physicians we can have the sanatorium; the bill will pass the legislature. The suggestion of the president was to put the matter in the hands of the present legislative committee. I fear the president has made a mistake. That committee is made up of old war-horses who have fought for the Medical Practice Act. They will feel defeated at the start. We want new blood in this business. That committee have many other things to do. If we can have such a committee the Society will do more good than in any ten years of its existence.

Dr. Pratt offered a resolution, (See p. 62) and in commenting on it said further—In selecting members of this committee from the County Association, the Legislative Committee will

communicate with the President or Clerk and get men enthusiastic in the work, men who will be responsible for the representatives in his county. There are various societies before whom this can be brought, for instance, the University Club in Litchfield County, and many of these clubs contain educated and influential men. He wished that the resolution appointing the sub-committee for this work could be adopted and the committee appointed.

Dr. M. C. White—It's all good talk but you only cut off the tops and leave the roots in the ground. You don't accomplish much. During the last twenty years the condition of the tenement houses of our cities is twice as bad as before. They need attention. Permission is given to build houses in back yards which are not large enough. Schools do not have room enough for their pupils. In this and other cities the tenement districts are in fearful condition. Back yards, small lots, small houses are constantly found. Diseases come from close quarters and close hovels in our midst.

YALE UNIVERSITY.

DEPARTMENT OF MEDICINE.

FACULTY.

ARTHUR T. HADLEY, L.L.D., PRESIDENT.

MOSES C. WHITE, M.D., *Professor of Pathology, Emeritus.*

CHARLES A. LINDSLEY, M.D., *Professor of the Theory and Practice of Medicine, Emeritus, and Lecturer on Sanitary Science.*

WILLIAM H. CARMALT, M.D., *Professor of the Principles and Practice of Surgery.*

THOMAS H. RUSSELL, M.D., *Professor of Clinical Surgery and Lecturer on Surgical Anatomy.*

HERBERT E. SMITH, M.D., *Professor of Chemistry, and Dean of the Medical School.*

JOHN S. ELY, M.D., *Professor of the Theory and Practice of Medicine.*

OLIVER T. OSBORNE, M.D., *Professor of Materia Medica and Therapeutics.*

HARRY B. FERRIS, M.D., *Professor of Anatomy.*

OTTO G. RAMSAY, M.D., *Professor of Obstetrics and Gynecology.*

CHARLES J. BARTLETT, M.D., *Professor of Pathology.*

OTHER INSTRUCTORS.

FRANCIS BACON, M.D., *Lecturer on Medical Jurisprudence.*

SAMUEL B. ST. JOHN, M.D., *Lecturer on Ophthalmology.*

GEORGE R. SHEPARD, M.D., *Lecturer on Life Insurance Examinations.*

MAX MAILHOUSE, M.D., *Clinical Lecturer on Neurology.*

ARTHUR N. ALLING, M.D., *Instructor in Ophthalmology.*

LOUIS B. BISHOP, M.D., *Instructor in Pediatrics.*

LEONARD W. BACON, JR., M.D., *Instructor in Operative Surgery.*

CHARLES D. PHELPS, M.D., *Instructor in Physical Diagnosis.*

RALPH A. McDONNELL, M.D., *Instructor in Dermatology and Materia Medica.*

ROBERT E. PECK, M.D., *Instructor in Neurology.*

- WARREN A. SPALDING, *Demonstrator of Pharmacy.*
ERNEST H. ARNOLD, M.D., *Instructor in Orthopaedic Surgery.*
ALLEN R. DEFENDORF, M.D., *Lecturer on Insanity.*
CLIFFORD W. KELLOGG, M.D., *Instructor in Histology.*
EDWARD M. McCABE, M.D., *Clinical Assistant in Ophthalmology.*
LEONARD C. SANFORD, M.D., *Assistant in the Surgical Clinic.*
FREDERICK C. BISHOP, M.D., *Assistant in the Throat and Ear Clinic.*
DONALD R. HINCKLEY, M.D., *Assistant in Physical Diagnosis.*
WILLIAM J. SHEEHAN, M.D., *Assistant in the Surgical Clinic.*
SAMUEL M. HAMMOND, M.D., *First Assistant in the Therapeutic Clinic and Assistant Demonstrator of Anatomy.*
FREDERICK N. SPERRY, M.D., *Assistant in the Throat and Ear Clinic and Assistant Demonstrator of Anatomy.*
WILLIAM F. VERDI, M.D., *Assistant in the Surgical Clinic.*
CLARENCE L. KILBOURN, M.D., *Second Assistant in the Therapeutic Clinic and Assistant in Histology.*
PERCY D. LITTLEJOHN, M.D., *Assistant in the Medical Clinic.*
EDWARD F. McINTOSH, M.D., *Assistant in the Medical Clinic.*

THE CURRICULUM.

The college year extends from the first Thursday of October to the last Wednesday in June, and includes 34 weeks exclusive of vacations. The curriculum is graded through four years, and consists largely of exercises based on assigned lessons in text-books, with much personal instruction in laboratories and clinics.

The Laboratories in all departments are fully equipped for thorough and systematic work by students, and such work is required.

The Clinical Instruction is conducted at the New Haven Dispensary, located on the University grounds, and at the New Haven Hospital, which is near the School. Besides attending the regular clinics which are assigned in the schedule, the students serve as assistants in the Dispensary during the Senior year, and here participate in the daily work of a service amounting to more than 16,000 cases annually.

COLLATERAL INSTRUCTION.

In addition to the regular studies of the curriculum, medical students here have the unusual opportunities of increasing their fund of general information which arise from their residence in a great educational center. As students in the University there are open to them numerous lectures on scientific collections and the use of the University Library of 200,000 volumes.

TERMS OF ADMISSION.

Candidates for admission to the first year of the course leading to the degree of Doctor of Medicine must present satisfactory testimonials of moral character from former instructors or physicians in good standing, and must pass the matriculation examinations. (See Annual Announcement). But the examinations are not required from candidates who have received degrees in arts or science, nor from those presenting certificates from the proper officer showing that they have successfully prosecuted the subjects of the examinations at some college, high school, academy, or preparatory school, approved by the Faculty as maintaining a satisfactory standard.

HONORS AND PRIZES.

The Degree of Doctor of Medicine *magna cum laude* will be conferred on students whose examinations and school work show distinguished merit.

The degree of Doctor of Medicine *cum laude* will be conferred on students whose examinations and school work show unusual merit.

THE CAMPBELL GOLD MEDAL

This medal, which is a memorial of Professor James Campbell, M.D., is awarded to that member of the graduating class who secures the highest rank in all of the examinations of the course.

THE KEESE PRIZE.

The income of the fund for the Keese Prize, a memorial of Hohart Keese, M.D., of the class of 1855, which amounts to about \$140 annually, is awarded by the Faculty to that member of the graduating class who presents the best thesis.

For particulars of the matriculation and degree examinations, and for information concerning tuition and living expenses, see the Annual Announcement, which will be furnished on application to the Dean,

DR. HERBERT E. SMITH,
Yale Medical School,
New Haven, Conn.

