PROCEEDINGS

OF THE

CONNECTICUT MEDICAL SOCIETY,

1897.

ONE HUNDRED AND FIFTH

ANNUAL CONVENTION,

HELD AT

HARTFORD, CONN.,

MAY 26TH AND 27TH.

PUBLISHED BY THE SOCIETY.

1897.

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 New Haven, May 25th and 26th, 1898.

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CONTENTS.

OFFICERS OF THE SOCIETY.

1897–98.

PRESIDENT.

RALPH S. GOODWIN, Thomaston.

VICE PRESIDENT.

HENRY P. STEARNS, Hartford.

VICE PRESIDENTS, ex officio.

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CHARLES S. RODMAN,
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J. FRANCIS CALEF,
WILLIAM L. HIGGINS.

TREASURER.

W. W. KNIGHT.

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N. E. WORDIN.

ASSISTANT SECRETARY.

JULIAN LAPIERRE.

COMMITTEE ON MATTERS OF PROFESSIONAL INTEREST IN THE STATE.

CHARLES J. FOOTE, LEONARD B. ALMY,
AUGUSTIN A. CRANE.

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Committee to Nominate Physicians to the Retreat for the Insane.

JOHN B. KENT, M.D., FRANCIS D. EDGERTON, M.D.,
HENRY DOUTTEIL, M.D., HORACE S. FULLER, M.D.,
FRANCIS L. DICKINSON, M. D.

Committee on Legislation.

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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.

HORACE S. FULLER, M.D., JOHN W. WRIGHT, M.D.,
J. FRANCIS CALEF, M.D., LEONARD B. ALMY, M.D.,
MAX MAILHOUSE, M.D.

On Honorary Members and Degrees.

JOHN STANTON, M.D., P. H. INGALLS, M.D.,
GEORGE L. PORTER, M.D.

Committee on Publication.

N. E. WORDIN, M.D., ex officio.
JULIAN LAPIERRE, M. D.
GUSTAVUS ELIOT, M.D.

Committee of Arrangements.

MAX MAILHOUSE, M.D., Anniversary Chairman.
FRANK W. WRIGHT, M.D.,
BENJAMIN L. LAMBERT, M.D.,
FREDERICK BELLOSA, M.D.

PROCEEDINGS

OF THE

CONNECTICUT MEDICAL SOCIETY.

ONE HUNDRED AND FIFTH ANNUAL MEETING.

The President and Fellows of the Connecticut Medical Society met in Keney Hall, Hartford, on Wednesday, May 26, 1897. The President, Dr. Robinson, called the meeting to order at 12 M. The Committee on Credentials made its report by calling the roll of regularly appointed delegates.

FELLOWS, ex officio.

President.
RIENZI ROBINSON.

Vice President.
RALPH S. GOODWIN.

Vice Presidents, ex officio.
JARVIS K. MASON,
CHARLES S. RODMAN,
*WILLIAM S. C PERKINS,
WILLIAM H. DONALDSON,
HENRY L. HAMMOND,
WILLIAM S. MACLAREN,
J. FRANCIS CALEF,
WILLIAM L. HIGGINS.

Treasurer.
WILLIAM W. KNIGHT.

Secretary.
N. E. WORDIN.

Committee on Matters of Professional Interest in the State.
J. C. KENDALL, *C. J. FOOTE,
*L. B. ALMY.

*Absent.

FELLOWS BY COUNTIES, ELECTED IN 1897.

Hartford County.

George F. Lewis, Thomas F. Kane,
Gideon C. Segur, Sidney R. Burnap,
Erastus P. Swasey.

New Haven County.

Walter L. Barber, B. L. Lambert,
O. J. D. Hughes, Frederick Bellosa,
‖Thomas M. Bull.

New London County.

*Charles V. Butler, George R. Harris,
*Charles E. Brayton, William A. Korn,
*Edmund P. Douglass.

Fairfield County.

Harry S. Miles, John W. Wright,
*Samuel M. Garlick, *Andrew J. Smith,
*George Ford.

Windham County.

William H. Judson, Thomas M. Hills,
John B. Kent, *William W. Adams,
Frank E. Guild.

Litchfield County.

W. S. MacLaren, *David R. Rodger,
*George D. Ferguson, Edward H. Welch,
William S. Richards.

Middlesex County.

John E. Bailey, J. E. Loveland,
A. J. Campbell, *Kate C. Mead,
Cushman A. Sears.

Tolland County.

*T. F. Rockwell, Frank L. Smith,
Frederick Gilnack.

*Absent. ‖In place of S. D. Gilbert.

It will be seen that Hartford, New Haven and Tolland Counties had full delegations, while Windham and Middlesex had only one absent.

The President then delivered the

ANNUAL ADDRESS TO THE FELLOWS.

Gentlemen:

As Fellows of the Connecticut Medical Society I welcome you to this, our one hundred and fifth annual session. It seems but yesterday since we met in New Haven a year ago, so busy have been the days and so silently and swiftly have they glided by into the ever receding past.

To-day we meet to compare our own gleanings in the field of medicine with those of our fellow workers. May it be a generous rivalry of who can best work and best agree.

The condition of our Society is much the same as when we last met. Some familiar faces are forever gone from us and new ones have taken their places. Death, who never forgets any living creature, has stretched out his icy finger and chilled into eternal silence some of our warmest hearts and busiest brains, thus tending to thin our ranks, but faith in the power and strength of organization and organized labor has added new members, strong in their young and confident manhood, so that our number to-day is larger than a year ago.

The obituaries which will pay kind tribute to the dead, will be found in our published transactions, but I may be allowed to say in passing that no written words can fully express the gratitude stamped upon the hearts of those who have been ministered to by these brave men who, taking their lives in their hands, never hesitated to do battle with the most malignant diseases.

Every complicated machine, however well adjusted

needs now and then a readjusting of its various parts, a tightening of a screw, an easing of a bearing, to meet the demands made upon it. So with our Medical Society. Every year we find the need of some change, small though it may be, to meet the demands of the ever-changing surroundings. You have been elected by the several County Associations as Fellows and have met here to-day for the purpose of making such changes here and there as in your judgment may seem wise. I am sure your action will be for the good of the State Society and of medicine in general. Permit me to call your attention to some of the points which may be brought before you for action, and ask your careful consideration of them.

I. At our meeting last year our Secretary, in doubt as to what constituted such a residence as entitled a physician to full and complete membership in our State Society, declined to count three who had applied and been admitted to the different County Associations which presented their names to the State Society.

After considerable discussion, the Society voted to receive two of the three, but owing to their feeling that it was establishing a precedent, which might be a source of annoyance at some future time, did not take action upon the third applicant. This left the matter as unsettled as before, without establishing any principle or rule by which the Secretary could act with certainty.

It would seem desirable that the Society should settle this matter and determine whether a legal, voting, tax-paying residence shall be the basis of admission as a member or whether something less or more shall be required.

Unless this be done, I see no reason why there may not be a repetition of last year's confusion, and I therefore urge that a clear, concise and definite rule as to the kind of residence essential to membership be adopted at our present meeting.

II. At the semi-annual meeting of the New Haven County Medical Association, held October 15, 1896, the following resolutions were adopted:

Resolved, by the New Haven Medical Association that the Connecticut Medical Society be requested to so alter its By-laws on Publication Committee that said Publication Committee shall consist of the Secretary (ex officio) and two other members, of which the Assistant Secretary shall not be one. No two of the members of this Committee shall be members of the same County Association. No paper shall be rejected if offered through the County Association, except by the full vote of said Publication Committee."

This resolution or set of resolutions will go to the Committee on County Resolves and may come before you for action. Should they be reported upon favorably, they would have to lie over one year and then if adopted would necessitate the amending of Section 4, Chapter III of our By-laws. It would also necessitate erasure of a sentence in Chapter II, Section 5. I would suggest that the Committee on County Resolves take into consideration the amendments to the By-laws which the adoption of these resolutions make necessary while passing upon the resolutions themselves.

III. I would call the attention of the Nominating Committee to the fact that at times in the past physicians who have recently served on some of the committees requiring a good deal of time and labor have again with but little interval been placed upon the same or similar committees, thus making the repeated duties burdensome.

Last year the chairmen of two of our committees declined to serve for this reason and it would seem that their point was well taken. The desirableness of distributing the work of the committees more equably is apparent and I would suggest to the Nominating Committee that they take the matter into consideration in making the nominations, avoiding as far as possible similar complaints in future.

IV. On account of the American Medical Association holding its meeting in Atlanta last year earlier than usual

to avoid the heat, our annual meeting came later by some days. This year, holding their meeting in Philadelphia later, our meeting precedes theirs by a few days. This may seem a little confusing to our delegates elected to the American Medical Association. As I understand the matter, the delegates whom we elected last year should attend the American Medical Association to be held the coming week, while those elected to-day should attend the Association next year wherever and whenever it may be held.

V. Hitherto in our published Proceedings, whenever there has been any paper published with illustrations, the cost of the cuts has been paid by the author, not by the Society. This has entailed such personal expense as to deter in many instances the writers from illustrating as fully as could be wished, thus lessening the value of the paper.

The question naturally arises, should not the Society bear the expense of illustrating as well as printing an article? If in the judgment of our Publication Committee an article is worth printing, and illustrating too, it would seem no more than just that the Society bear the expense. Our Proceedings would become thereby more attractive and of more value. I would, therefore, recommend that our Publication Committee be given discretionary power to illustrate as well as print, if in their judgment the financial condition of our Society will warrant the same.

VI. This year we have made quite an innovation in our order of work in arranging that some of our papers may be read upon the first day of our session instead of upon the second day. We have thought it better to curtail our business meeting somewhat that more time might be devoted to the reading and, I trust, discussion of papers.

To the practicing physician the business meeting is a necessary but not always an interesting matter. The good

he receives in attending comes from the points he carries away with him; points made in the reading of articles, and brought out sharply in the discussion of them.

I feel strongly on this subject of discussion and were it possible I would have as much or more time given to discussing than to the reading of papers. The crowding of all the papers into the second day tends to limit discussion for want of time, and hence the present change, which I am sure will add to the interest of our session.

VII. Let me call your attention to the general apathy among the members to the work of one of our most prominent committees, that on Matters of Professional Interest in the State. This committee at great pains and considerable expense issued circulars to all our members, about six hundred, February 1st, to be filled and returned with as little delay as possible, to the Chairman of the Committee. On April 1st duplicates were sent out to about one half of this number.

Less than twenty-four per cent. responded at all, and a little over one half of these only to send regrets. Such a showing makes the work of the committee seem out of proportion to the results obtained and tends to lead members to shrink from serving on such committees.

It is difficult to see just how this condition can be improved and the members led to consider it a personal duty which they owe to the Society to respond and thus help the committees in their work. A society is strong not in proportion to the number but in proportion to the zeal of its members. Could every member in some way realize the need and value of his individual contribution, I am sure there would be a general response. But how to bring this home to the individual conscience of the six hundred comprising our Society is the question.

Possibly some of you may suggest the method and solve the problem after listening to the report of the committee.

Our County Reporters are likewise remiss in their duties, notwithstanding these duties are clearly defined and

set forth in our By-laws, Chapter II, Section 6. After specifying the duties of the Committee on Matters of Professional Interest in the State, it goes on to specify, "And the more effectually to perfect this report it shall be the duty of each County and other Association represented in this Society annually to appoint one of its members as a Reporter, who shall furnish to the committee on or before the first day of May all the information he can get relative to these subjects within the limits of the district in which the local association exists."

The attention of all the County Reporters was called to this section of the By-laws February 1st and afterwards they were written to personally with request to send in such material as they could gather. The responses from the County Reporters whose duties are so clearly defined was but little if any better than that from the members. Here is indeed a sad state of indifference and it certainly bodes no good to our Society in future unless there can be infused into the many members a spirit of pride and enthusiasm in sustaining the various committees. Certainly no committee can be in the best sense successful without the support and co-operation of the individual units that make up the Connecticut Medical Society.

Our Medical Practice Act is still sucessfully evaded by the vendors of specific medicines. The method is as simple as it is successful. Consultation is free; the patient is then sent to some other place in the same town or city for the medicines where he pays enough to cover drug and doctor. Here is a matter for our Committee on Legislation to take up when some of the other matters, possibly of more importance, are disposed of. Our legislators seem somewhat averse to medical legislation and it may be wisdom to get what we can, little by little rather than strive too hastily for what we ought to have. We are happy to say that the present Legislature has passed an act whereby every physician wishing to practice medicine in the State is required to pass an examination before doing so.

This only awaits the Governor's signature to become a law, and is most certainly a great step in advance, and one that has been long sought for by those interested in raising the medical standard to the highest possible point.

This year the British Medical Association meets near our border. Its president has by special letter requested that we be represented by delegate. I think it would be well for the Nominating Committee to bring before the convention the name of some gentleman who would be likely to attend this meeting at Montreal and represent the Connecticut Medical Society. I would also suggest that one or more delegates be appointed to the International Medical Congress at Moscow. Our Secretary has the names of one or more physicians who expect to go and it would be fitting that they should go as our appointed representatives.

In conclusion, Gentlemen, I now declare the one hundred and fifth session of the Connecticut Medical Society open for the transaction of any business that may legitimately come before it.

The regular Committees were then announced as follows:

On Credentials.

N. E. Wordin, F. L. Smith.

On Unfinished Business

Jarvis K. Mason, Frank E. Guild.

On County Resolves.

Charles S. Rodman, William H. Donaldson,
William S. C. Perkins.

To Nominate Essayist on the Progress of Medicine and Surgery.

J. W. Wright, O. J. D. Hughes, J. F. Calef.

On Business.

N. E. Wordin, W. S. Richards, E. P. Swasey.

Auditing

Henry L. Hammond, William L. Higgins.

Reception of Delegates and Guests.

G. C. Segur, E. J. McKnight, J. E. Root.

On motion, a committee of three was appointed to consider the subjects alluded to by the President in his address. Doctors C. A. Lindsley, T. M. Hill and J. W. Wright were named as members of it.

Adjournment was then made to 1:45.

The afternoon session was called to order at 2 o'clock, and the Treasurer presented his report, which was referred to the Auditing Committee:

REPORT OF 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 25, 1897:

RECEIPTS.

Balance from old account.....		$541.81
Cash received from County Clerks:		
Hartford County, ...	$221.40	
New Haven County, ...	277.27	
Fairfield County, ...	169.65	
New London County, ...	76.05	
Windham County, ...	50.40	
Litchfield County, ...	81.76	
Middlesex County, ...	70.20	

Tolland County,	25.20	
Total receipts from taxes,		971.86
Total,		$1,513.67

EXPENSES.

Printing Proceedings,	$510.89	
Binding Proceedings,	127.93	
Printing and Stationery,	43.65	
Postage and Expressage,	76.66	
Expenses Committee on Matters of Professional Interest,	82.65	
Salary of Secretary,	150.00	
Expenses of Secretary,	2.40	
Salary of Treasurer,	25.00	
Total Expenses,		1,019.18
Cash on hand May 25, 1897,		494.49
		$1,513.67

ARREARS ON TAX OF 1896.

Hartford County,	$ 00.00
New Haven County,	78.00
Fairfield County,	40.00
New London County,	20.00
Windham County,	12.00
Litchfield County,	2.00
Middlesex County,	00.00
Tolland County,	00.00
Total amount in arrears,	$152.00

Respectfully presented,

W. W. KNIGHT, Treasurer.

Dr. St. John presented the report of the Committee to Revise the List of Medical Colleges. This was a majority

and minority report, the latter from Dr. Eliot. The majority report is as follows:

To the Connecticut Medical Society:

Your committee empowered to revise the list of medical colleges "recognized as legal and reputable" by this Society, accepts the action of the Society last year in rejecting the report of the committee whereby the list was reduced from sixty-five to sixteen as indicating that the Society expects the committee to revise the old list rather than to make a new one, and decides to make no additions or subtractions except for definite and assignable causes. The committee believes that the basis of the original list—the report of the Illinois Board of Health, founded upon the requirements of the various colleges as to time of study and number of lecture courses—affords the most available starting point, while admitting that these requirements should not alone govern our action when other factors are available, such as the general reputation of the institution; the character and reputation of its faculty; the character and reputation of its students as a class, &c. To drop any college from our list implies that we have some reason for no longer recognizing it as "legal and reputable"; we should be prepared to give the reason if called on.

Acting upon the foregoing reasoning, your committee, not having any facts at command tending to show that any college on the list has no longer the right to remain thus, decides to make no subtractions.

Regarding additions the committee would add to the list the name of the Baltimore Medical College. The reason for this action is found mainly in a letter from Prof. Wm. H. Welch of Johns Hopkins University (which letter is in the hands of the committee and will be read if desired) strongly commending the college and its work.

S. B. St. John, Chairman.
W. G. Brownson.

The minority report, signed by Dr. Eliot, is in the form of a letter but is sufficiently clear:

My Dear Doctor Brownson:

Considering our duties in the light of Section 10 of the statute, which defines our duties, it seemed to me that we ought not to eliminate any colleges from the list published in 1895, unless we could give good, definite reasons for doing so, and that we ought to add any colleges which furnished us proper endorsement. The Baltimore Medical College did this. I enclose Dr. Welch's letter and ask you to forward it to Dr. St. John.

On the other hand there seemed to be a strong feeling in the Society that the list ought to be very much abbreviated. Therefore we have made two lists, one of which should include the large number of the colleges which were approved by the 1895 committee, and another shorter list which should be prepared so as to avoid some of the criticisms which were made of the list prepared by the 1896 committee. The list presented last year contained sixteen colleges. I have prepared a list containing seventeen colleges, (counting Bellevue and the University of New York as one).

If I were asked to make the list any shorter, I should be inclined to cut off all except Harvard, Columbia and University of Pennsylvania. It rests with you to decide which list shall be the majority report. The other it is proposed to present as a minority report.

Please communicate your decision to Dr. St. John.

Very Sincerely Yours,

GUSTAVUS ELIOT.

CONNECTICUT. Yale University, Medical Department.

ILLINOIS. Rush Medical College.

Northwestern University Medical School, (Chicago Medical College.)

MARYLAND. University of Maryland.

Baltimore Medical College.

Johns Hopkins University, Medical Department.

MASSACHUSETTS. Harvard University, Medical Department.

NEW YORK. Columbia University (College of Physicians and Surgeons).

University of the City of New York (Bellevue Hospital Medical College).

Albany Medical College.

University of Buffalo, Medical Department.

Long Island College Hospital.

Woman's Medical College of the New York Infirmary.

PENNSYLVANIA. University of Pennsylvania, Medical Department.

Jefferson Medical College.

VERMONT. University of Vermont, Medical Department.

VIRGINIA. University of Virginia, Medical Department.

The entire subject was laid upon the table and the Secretary was called upon to read the Act just passed by the Assembly and at this moment waiting the Governor's signature, which is as follows:

[House Bill No. 286.]

CHAPTER CLXXXVII.

AN ACT CONCERNING THE PRACTICE OF MEDICINE, SURGERY, AND MIDWIFERY.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. No person, after the passage of this act, shall obtain or receive a certificate of registration as required by the provisions of Chapter clviii of the Public Acts of 1893, until he has passed a satisfactory examination before one of the examining committees appointed for the purpose under the provisions of said act, nor until he has complied with the other requirements of said act.

SEC. 2. Section one of Chapter clvii of the Public Acts of 1893 is hereby amended by inserting after the word "government" and before the word "nor" in line twenty-two, the words "in so far and to the extent only as the use of such remedies are concerned."

Dr. Calef presented the following resolution calling for a conference committee with the State Bar Association, concerning medical testimony:

WHEREAS, The present method of examining the medical witness in court unavoidably places him in the position of an advocate, and

WHEREAS, His true position is that of an adviser to the court upon questions within his special knowledge, and

WHEREAS, The method now pursued is bringing discredit upon the whole system of medical jurisprudence which our professional forefathers labored so diligently to establish, therefore be it

Voted, that the Connecticut Medical Society invite the State Bar Association to select five of their number to confer with a like number of physicians, to be appointed by the chair, for the purpose of devising ways and means to remedy this evil.

Dr. Lindsley, in seconding the resolution, said that this had been a crying evil from time immemorial. This was the best way to settle it, by conference, but our profession can not do it. The initial step is of the first importance, and should come from us.

The resolution was adopted, and the President appointed as the Committee:

J. FRANCIS CALEF,
C. A. LINDSLEY,
HENRY P. STEARNS,
GEORGE L. PORTER,
LOWELL HOLBROOK.

REPORT OF COMMITTEE ON THE RECOMMENDATIONS IN THE PRESIDENT'S ADDRESS.

The first recommendation relates to defining the word "residence," as necessary to membership in this Society.

The committee adopt the definition given in the written opinion by Charles E. Gross:

"Residence means a legal residence or domicile, and ordinarily, citizenship." He further says: "A mere temporary abiding in a town in this State, or keeping and using a summer residence for some weeks in each year, will not give the party a residence in such town. A summer resident is only a sojourner." (p. 53, Proceedings 1896.)

Your committee venture to recommend such a change in Section 3, Chapter IV, as will make eligible to membership distinguished members of our profession who own summer residences in Connecticut and spend a portion of the year among us.

Second.—The committee recommend that Section 4, of Chapter III be amended by striking out the words, "one of whom shall be Assistant Secretary" in the fourth line after the word "ballot," and adding the words, "no two of which shall be members of the same County Association."

Third.—Your committee fully approve of the suggestion by the President that the committee work of the Society be so evenly distributed as not to be burdensome to a few.

Fourth.—The explanation of the President in regard to the delegates to the American Medical Association was sufficiently lucid without further remark.

Fifth.—As no by-law now exists regarding the cost of illustrations of papers, your committee believe this matter may be left to the discretion of the Publication Committee and the state of the treasury.

Concerning the discussion of papers, your committee recommend (provided there is not now a similar law) that

time occupied in reading a paper be limited to twenty minutes in order to give more time for discussion.

Your committee also heartily approve of the remarks of the President regarding the apathy of our members in responding to the Committee on Matters of Professional Interest, and hope that the stimulating remark applied to County Reporters will have a desirable effect.

The report was adopted with the exception of that part relating to the Publication Committee which was laid on the table to await the report of the Committee on County Resolves which had the same matter under consideration.

Dr. Rodman then made his report for that committee.

REPORT OF THE COMMITTEE ON COUNTY RESOLVES.

This committee has received and presents for your consideration resolutions from three County Associations, viz: those of Fairfield, New London and New Haven.

I. "We are of the opinion that in accordance with the recommendation of the Fairfield County Association, the resignation of Dr. George W. Benedict should be accepted, and that the dismissal of the members therein named as delinquent, should be approved by this Society."

II. The following resolution was passed by the New London County Medical Association at its annual meeting April 1, 1897:

WHEREAS, One of the incentives to affiliation with many of the secret societies and esoteric associations of the present day is the expectation of receiving medical attention gratis, or by lodge contract at a ridiculous discount from fees elaborated by long-continued experience, and

WHEREAS, Such deviation from long established usages is a palpable and most unjust usurpation of prerogatives universally accorded to all scholarly professions, and

WHEREAS, In the estimation of a public mind seemingly becoming more selfish and less appreciative from year to year in its demands upon a public spirited and self denying profession, such usurpation must of necessity lower the morale of said profession at large, therefore be it

Resolved, That the New London County Medical Association as an integral part of the Connecticut State Medical Society, looks with disapproval upon any and all alienation of professional principles whereby discrimination is made in the acceptance of compensation for services rendered individuals belonging to any sect creed or society.

"This committee desires to express its satisfaction at the attitude of the New London County Association and the sincere hope that the Association's disapproval may prove deterrent. As the unsigned resolution requests no action on the part of this Society, we have no recommendation to make."

III. At the semi-annual meeting of the New Haven County Medical Association, held in Waterbury, October 15, 1896, the following resolution was adopted:

"Resolved, by the New Haven County Medical Association that the Connecticut Medical Society be requested to so alter its By-laws on Publication Committee, that said Publication Committee shall consist of the Secretary (ex officio) and two other members (of which the Assistant Secretary shall not be one). No two of the three members of this Committee shall be members of the same County Association. No papers, to be rejected, if offered through the County Associations, except by the full vote of said Publication Committee."

Respectfully,

JOSEPH H. TOWNSEND,
Clerk of New Haven County Medical Association.

These resolutions suggest a feeling of dissatisfaction with the publication known as our Proceedings. No act-

ion such as is suggested can be taken at this time, and your committee is therefore at present indisposed to discuss the cause and remedy for such dissatisfaction. We desire to call attention to an apparent misapprehension on the part of the New Haven County Association. The resolution provides that the Publication Committee shall consist of the Secretary ex officio, and two other members (of which the Assistant Secretary shall not be one). Reference to our By-laws, adopted in 1892, on the report of Drs. M. C. White and S. B. St. John, Committee on By-laws, shows that the Publication Committee consists not of the Secretary and Assistant Secretary ex officio, and one other member, but of the Secretary and two members to be elected at the annual meeting, one of whom the Secretary is authorized to appoint as his Assistant. The Assistant Secretary, therefore, is not elected as such, and is not in virtue of his selection a member of the Publication Committee. One of any two members of this Society, whom we elect to the Publication Committee, and no other member is to be selected by the Secretary as his Assistant.

Quoting from Chapter II, Section 5, of our Constitution and By-laws, "One of the elected members of the Committee on Publication, to be selected by the Secretary, shall be the Assistant Secretary." And, from Chapter III, Section 4, "The Committee on Publication shall consist of the Secretary ex officio, and two members elected by ballot, one of whom shall be Assistant Secretary."

From the list of officers which preface the annual Proceedings of our Society, it appears that for the last four years the Publication Committee has consisted of Drs. Wordin and Lapierre, ex officio, and one elected member, viz: Drs. F. W. Wright, C. C. Godfrey, W. H. Donaldson and Henry Fleischner, successively. In the announcement of this, the one hundred and fifth annual meeting of the Society, we read that the Nominating Committee is to choose one member of the Publication Committee. On

the title page of this announcement we find Dr. W. L. Barber one of our Vice Presidents (ex officio). The Doctor was President of the New Haven County Association four years ago at the time when the Assistant Secretary became ex officio or de facto a member of the Committee on Publication, and no one is more worthy of the honor than our friend Barber.

But, the By-laws which are our Constitution, designate not the Secretary and the Assistant Secretary as ex officio members of the Publication Committee, but only the Secretary. Permit us to read again from the By-laws, "The Committee on Publication shall consist of the Secretary ex officio and two members elected by ballot," and "one of the elected members of the Committee on Publication, to be selected by the Secretary, shall be Assistant Secretary."

We realize the impossibility of avoiding errors in the compilations of our literature and the laborious duties faithfully performed by the Secretary; we deprecate action likely to increase his work and especially the election to the Publication Committee of members who are indifferent or who have not signified a willingness to serve.

Since it is the duty of this assembly to elect two members of the Publication Committee, and since the Secretary can appoint as his Assistant no member other than one of these two, the resolutions of the New Haven County Association cannot be prompted by dissatisfaction with that member of the Publication Committee who has been selected by the Secretary as his Assistant.

In compliance with Chapter VII, Section 2, of our By-laws, to the effect, "That no articles of the By-laws, as now adopted, shall be altered or amended, except the subject proposed shall have been submitted in writing to the consideration of the President and Fellows at a previous annual meeting; and a vote of two thirds of the members present in that body shall be necessary to ratify and confirm any amendment," we recommend that the resolution

of the New Haven County Medical Association be laid upon the table.

C. S. Rodman,
W. H. Donaldson.

It was moved that we take up each part of it separately. Passed. The first and second sections were then adopted without dissent.

In considering the third section, Dr. Lindsley explained that the time allowed his committee for consideration was very brief and that they did not know of the proposed action of any other committees. Dr. Rodman stated that the By-laws show that no Assistant Secretary can be chosen until after the Publication Committee has been elected, that two members of the Publication Committee are elected by the Society, of which two the Secretary chooses one. The third portion of the report was then adopted.

It was voted that we send delegates to the meeting of the British Medical Association at Montreal and the International Medical Congress at Moscow and that the Nominating Committee be requested to name candidates.

Dr. Swasey, for the business of the convention, reported some change from the printed announcement. The report was accepted.

The Committee to nominate Physicians to the Retreat for the Insane reported progress.

Dr. Storrs tendered a report for the Committee on Legislation, saying in addition that they wanted things other than they could get and tried to obtain them, but found that they would only endanger the bill. They wanted the clause concerning the druggists revoked, but that created opposition. The things which were added to the bill, concerning higher examination fees and less frequent examinations only hindered the passage of the bill. The one thing needed most, examination for all, had been secured. The trial was harder than that of two years ago. Then the subject of medical legislation

was the thing before the Legislature. The Assembly was convinced that legislation was necessary, but others had to be heard and all kinds and conditions were brought together. This year things were mixed and the conditions were rather those of detail.

THE COMMITTEE ON MEDICAL LEGISLATION

would respectfully make the following report:

In accordance with the vote at the last annual convention, the Committee on Medical Legislation availed themselves of the services of Charles E. Gross, Esq., as legal counsellor, and at a meeting of the committee held early in the year the amendments and alterations referred to the committee at the last convention, together with other suggestions, were carefully considered. Mr. Gross was instructed to present the amendments agreed upon to the Legislature. A public hearing before the Judiciary Committee was had early in the session. The matter was fully discussed; very little opposition appeared—one member of the Eclectic Society and a druggist were in the opposition.

Yet the questionings and suggestions of the Judiciary Committee gave evidence of their dislike for the proposed amendments, particularly on the part of the chairmen of the Senate and House. They lived in border towns and thought that physicians over the line should not be subjected to the law.

Under the advice of the Judiciary Committee our counsel was directed to bring in a revised bill, striking out the provisional enactments in the old law and incorporating the proposed changes. The report of the committee was unfavorable to the bill and it was rejected by the House by a large vote and failed of reconsideration.

In the opinion of Mr. Gross, the bill was lost for the season and his first advice was that nothing more should

be attempted, but later, in an interview with Mr. Warner, chairman on the part of the Senate, it was agreed that he would favor the amendment requiring examination, provided that all the other amendments were withdrawn. As examination was of great importance it was thought best to accept the proposition and work for this single end. The Judiciary Committee were called together, reported favorably and it was passed in the Senate as follows: (vide enactment). It was then taken to the House; a change of sentiment had there taken place, there was a growing tendency to favor the original bill and another bill similar to the first but in some features more stringent was before the House—petitions to the Legislature came in from various parts of the State. But it was an assured fact that neither bill could pass the Senate, and if so the result would be that the amendment passed by the Senate, requiring examinations, would be lost.

The history of the bill has been recited in part to justify the committee in the course taken to secure the most important feature of the bill. Except for certain complications the committee believe that it was in the heart of the Legislature to enact the entire bill, but it proved unfortunate to ask for so many changes in one session; for it opened up the general question of medical legislation which had been definitely settled four years ago.

The law of 1893, giving registration and the mode or machinery of examination, and the amendment of 1897, requiring examination for all physicians hereafter, will give a strong and effective law, which will be gradually in the future perfected.

The committee report with great pleasure the valuable time and services given to this work by Dr. E. J. McKnight at the capitol. His legislative experience qualified him to do excellent service.

Accompanying this report is a copy of the proposed

revision of the law which was the result of the best deliberations of the committee aided by their counsel. This may be of value hereafter.

Respectfully submitted,

M. STORRS, Chairman.

The report was accepted.

AN ACT CONCERNING THE PRACTICE OF MEDICINE, SURGERY AND MIDWIFERY.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. No person, after the passage of this act, shall, in this State, professionally or as a business, treat, operate, or prescribe for any injury, deformity, ailment or disease, actual or imaginary, of another person, nor practice surgery or midwifery, unless or until he has obtained a certificate of registration as hereinafter provided, and then only in the kind or branch of practice as stated in said certificate, but this act shall not apply to dentists while practicing dentistry only; nor to any person in the employ of the United States Government while acting in the scope of his employment; nor to any person who shall furnish medical or surgical assistance in cases of sudden emergency; nor to any person residing out of this State who shall be employed to come into this State to assist or consult with any physician or surgeon who has registered in conformity with the provisions of this act; nor to any actual resident of this State recommending by advertisement or otherwise the use of proprietary remedies sold under trademarks issued by the United States Government; nor to any chiropodist or clairvoyant who does not use in his practice any drugs, medicines or poison, nor to any person practicising the massage method or Swedish movement-cure, sun-cure, mind-cure, magnetic healing,

Christian science, or any other person, provided such person does not use or prescribe in his treatment of mankind, drugs, poisons, medicine, chemicals, or nostrums.

SEC. 2. No person, after the passage of this act, who shall not have previously received from the State Board of Health of this State a certificate of registration as required by the provisions of Chapter CLVIII of the Public Acts of 1893, shall obtain or receive a certificate of registration as required by the provisions of Section 1 of this Act, until he has passed a satisfactory examination before a committee to be appointed for the purpose by the State Board of Health, as hereinafter provided, nor until he has filed with said Board of Health duplicate statements subscribed and sworn to by him upon blanks furnished by said Board, 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, and if he has previously practiced anywhere, stating the length of time during which said person has been engaged in practice, and where; and he shall also state whether he has been engaged in general practice, or only in some special branch of medicine or surgery, and, if so, what branch. Upon the receipt of such statements as aforesaid, together with duplicate certificates, to be filed by such person, signed by a majority of one of the examining committees, stating that they have found him qualified to practice medicine, surgery and midwifery, or midwifery alone, the State Board of Health shall issue upon the receipt of three dollars to the person mentioned in said certificate of said examining committee a certificate of registration which shall state the kind or branch of practice in which the person named therein has been found qualified so to practice.

SEC. 3. During the month of December, annually, the Connecticut Medical Society, The Connecticut Homeopathic Medical Society, and The Connecticut Eclectic

Medical Association, shall each file with the State Board of Health the name of one practicing physician in this State, who shall have been recommended by the respective medical societies as persons competent to serve upon the examining committees hitherto appointed by the State Board of Health under the provisions of Chapter CLVIII of the Public Acts of 1893; and from time to time in case any vacancy occurs upon any of said examining committees the president of the respective society shall nominate and the State Board of Health shall appoint such person to fill said vacancy.

SEC. 4. In the month of January annually hereafter the State Board of Health shall appoint one member of each of said committees who shall have been nominated for such office as aforesaid, to serve five years; and said board shall in the same manner fill any vacancy occurring at any time in any of said committees.

SEC. 5. Each of said committees shall hold stated sessions for examinations, on the second Tuesdays of March, July and November in each year, unless said State Board of Health shall notify any of said committees one week in advance that no person has filed an application for examination before said committee. Every applicant desiring to practice medicine, surgery or midwifery shall notify in writing the State Board of Health that he desires to be examined by one of said committees, stating which committee, at least two weeks before any one of said stated sessions of said examining committees, and shall then deposit with the Secretary of said State Board of Health, to be paid over by him to said examining committee for their expenses, the sum of twenty-five dollars for an examination in medicine, surgery and midwifery, or the sum of fifteen dollars for an examination in midwifery alone. Every applicant for an examination in medicine, surgery and midwifery before said examination must produce to the examining committee a diploma showing that the applicant is a graduate of a medical college, and

has spent in said college at least three years in the study of medicine, surgery and midwifery. Applicants to practice medicine or surgery shall be examined in anatomy, physiology, medical chemistry, obstetrics, hygiene, surgery, pathology, diagnosis, and therapeutics, including practice and materia medica. Each committee shall frame its own questions and conduct its examinations in writing, and both questions and answers shall be placed on file with the State Board of Health. Each applicant shall have the right to choose which of the three committees shall be the one by whom he shall be examined. An applicant, after having been rejected by any of said examining committees, shall not be eligible to examination by another committee of examination until after the expiration of twelve months.

Sec. 6. 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.

Sec. 7. Every person violating any of the provisions of Section 1 of this act shall be deemed guilty of a misdemeanor, and on conviction shall be punished by a fine of not less than one hundred nor more than three hundred dollars for the first offense, and for each subsequent of-

fense by a fine of not less than two hundred nor more than five hundred dollars, or by imprisonment in the county jail for not less than thirty nor more than ninety days, or by both such fine and imprisonment.

SEC. 8. Any person who shall swear to any false statement contained in any statement required by this act to be filed with the State Board of Health, shall be deemed guilty of perjury and be punished accordingly.

SEC. 9. The State Board of Health may revoke, after hearing, any certificate issued under the provisions of Chapter CLVIII of the Public Acts of 1893, or of this Act, to any person who shall have been convicted before a proper court for crime in the course of professional business, or under Section 12 of Chapter CLVIII of the Public Acts of 1893, or under Section 8 of this Act; in which case said Board shall cause a written notice of such revocation to be served upon such person, and a duplicate thereof to be recorded in the office of the town clerk in the town where said person resides, and also in the town clerk's office in which such Board's certificate was originally filed under the provisions of the statute in force at the time, and thereupon all right or license of such person to practice medicine, surgery or midwifery in this State shall cease and be at an end.

SEC. 10. The State Board of Health may, from time to time, appoint one of its number, or a person not a member of its Board, to discharge the clerical duties imposed by this act upon said Board, and may fix and pay a salary therefor, to be paid only out of the fees received under the provisions of this Act.

SEC. 11. It shall be the duty of the County Health Officer to prosecute all violations of the provisions of this Act, and for the purposes of such prosecution shall have all the power of a grand juror in the several towns within his county, and all the powers of the prosecuting officer of each city or borough within his county.

SEC. 12. All physicians or surgeons practicing under

the provisions of this Act shall, when requested, write a duplicate of their prescriptions in the English language. Any person who shall violate the requirements of this Section shall pay a fine of not less than ten dollars for each and every offense.

SEC. 13. All registrars of births, marriages and deaths in this State shall annually during the month of December send to the Secretary of the State Board of Health a list of all persons who have died during the twelve months preceding the first day of the month in which said return is made, and who, previous to death, were authorized to practice medicine, surgery or midwifery in this State; and said registrars shall also include in said lists the names of all persons who have removed from their town during said twelve months and who at the date of such removal were likewise authorized to practice medicine, surgery or midwifery. Said State Board of Health shall pay to said registrars respectively ten cents for each name so sent to the Secretary of said Board under the provisions of this Section.

SEC. 14. So much of Chapter CLVIII of the Public Acts of 1893 as is inconsistent herewith is hereby repealed.

Dr. Fleischner rendered the report of the

COMMITTEE ON PUBLICATION,

which was accepted:

To the President and Fellows of the Connecticut Medical Society:

Your committee has published according to vote of the Society, seven hundred and fifty copies of the Transactions. Beside the official papers, such as the President's address, the Dissertation, the reports on the Progress of Medicine and Surgery and the report of the Committee on Matters of Professional Interest, there were published fourteen medical papers and only one surgical, that one being the county report for Hartford County. There were referred to the Publication Committee twenty-seven pa-

pers, not all of which were received and some of those received were not approved for printing. The members of the committee have endeavored to be as fair in their criticism and judgment of the subject matter presented to them as they could possibly be and with the interest of the Society at heart have been compelled to reject some of the papers. The committee feels called upon to warn the members meeting in the County Associations that the stereotyped vote of thanks to the writer of a paper with the recommendation to publish the papers read at such meetings, should be passed only when the paper is of marked and valuable merit. This would minimize the embarrassment of the Publication Committee and do away with the not inconsiderable ill feeling of members whose papers are deemed unworthy of publication.

Respectfully submitted,

HENRY FLEISCHNER.

REPORT OF THE COMMITTEE ON MEDICAL EXAMINATIONS.

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

Your Committee on Medical Examinations herewith presents its fourth annual report:

During the past year we have held seven sessions and examined twenty applicants. Of these but one was examined for the practice of midwifery; she passed the examination and was granted a certificate. Of the nineteen examined for general practice, twelve passed and seven were rejected; in round numbers there were thirty-seven per cent. of rejections. However, among these was one who was rejected on his first examination, but passed on a second examination five months later.

In addition to these, one candidate, a graduate of the Baltimore Medical College, withdrew without explana-

tion after examination in two branches, and a second also withdrew after examination in two branches on learning that his diploma admitted him to registration without examination. This seemed to the committee to be unfortunate, as his papers indicated that he was not well equipped to practice medicine, and adds one to the arguments in favor of removing from the law the list of legal and reputable medical colleges, and placing all applicants for registration upon the same plane of equal examination. The following were found qualified and were granted certificates:

1896,	June 26.	J. J. Donohue, M.D., '96, Norwich, Conn. (Coll. Physicians & Surg., Baltimore).
		T. Edward Beard, Jr., New Haven, Conn., (No diploma).
	Aug. 19.	Wm. P Caton, M.D., '96, (Coll. Phys. & Surg., Baltimore).
	Oct. 30.	Luigi Leone, M.D., '93, New Haven, Conn., (Univ. Naples).
		John Ballagi, M.D., New York City, (Univ. Buda Pesth, Hungary).
1897,	Jan. 27.	Walter Bergwall, M.D., '93, (Univ. Lund, Sweden).
	Feb. 18.	Albertina Blndau, Midwife.
	Apr. 6.	Calvin Weidner, M.D., '93, Manchester, Conn., (Med. Coll of Indiana).
		Nicola Mariani, M.D., New Haven, Conn., (Univ. Naples).
	May 11.	Jos. A. Kilbourn, M.D., '97, Hartford, Conn., (Coll. Phys. & Surg., Baltimore).
		Michael J. Morrissey, M.D., '97, Unionville, (Coll. Phys. & Surg., Baltimore).
		John J. Cloonan, M.D., '97, Hartford, Conn., (Coll. Phys. & Surg., Baltimore).

W. Bradford Eaton, M.D., '95, Hartford, Conn., (Univ. Berlin).

Of those not qualified, two were without diplomas and in their senior year in medical colleges; the others were graduated, one each at the University of Baltimore, Baltimore Medical College, Victoria Medical College, Montreal; University of Naples, and University of Genoa.

The examination for physicians consumed at each session two entire days, and the work of the committee was continued in many cases much beyond that time.

At each of two sessions but one candidate was examined, though three had applied; at each of two sessions three were examined, and at each of two sessions six candidates appeared.

The secretary of the committee has been somewhat annoyed by the fact that applications are sometimes made and the candidates fail to appear. This might lead to the bringing together of the committee unnecessarily, and some provision should be made against such mishaps, in future legislation. Not much harm is done where but one of several candidates fails to appear, but where there is but one candidate much loss might ensue to members of the committee.

There is to be a meeting of the National Confederation of State Medical Examining and Licensing Boards, at Philadelphia, on May 31st of this year, and our committee will be represented. The object of the Confederation is to consider questions pertaining to State control in medicine, and to compare methods in vogue in the several States, the collection and dissemination of information relative to medical education and to consider propositions that have for their purpose advancement of the standards in the United States. Your committee hopes that ultimately there will issue as a result of these conferences such uniformity of laws in all the States that license to practice in any one State in the Union shall give license to practice in all.

During the year the question of raising our standard for examination has frequently arisen and we have finally settled upon a requisite of seventy-five per cent. in each and every branch. This may possibly seem somewhat severe, but when one considers the practical nature of the questions asked and the importance of elevating the profession by only the very best admixture of new blood, we feel that we are justified in the stand taken.

The committee has no recommendation to make beyond those made in former reports concerning amendments to the Medical Practice Act, but would like more particularly to emphasize the necessity of securing an amendment to the law so that but three sessions per annum be held for the examination of candidates. We know of no State which has so absurd a law as to reqiure the examination of, for example, a single midwife within thirty days of the date of her application. Now that the Legislature has passed a bill requiring an examination of every one desiring to register as a practitioner, the know of no State which has so absurd a law as to require liable to become burdensome, and if, as appears to be the case, we are subject to be called together every thirty days, we have before us two years of incessant labor. Nevertheless, we feel that the profession and the State are to be congratulated upon this one important step in advance.

With the close of this year expires the term of Dr. H. S. Fuller, the Nestor of the Committee, and its President since its organization, who was originally appointed for four years. It is in no spirit of flattery that we, the remaining members of the committee, place on record here our sincere appreciation of his efforts. His mature judgment and knowledge of men, together with his sense of right, have been invaluable to us and have largely aided us in conducting our work so successfully.

Respectfully submitted,

MAX MAILHOUSE, Secretary.

This report was accepted.

The Nominating Committee announced that their report was ready. It was made as follows, by Dr. Miles, Secretary:

For President, Ralph S. Goodwin.

Vice President, Henry P. Stearns.

Treasurer, W. W. Knight.

Committee on Matters of Professional Interest in the State, C. J. Foote, L. B. Almy, A. A. Crane.

Committee to Nominate Physicians to the Retreat for the Insane, J. B. Kent, F. D. Edgerton.

Committee on Publication, Gustavus Eliot, Julian LaPierre.

Committee on Medical Examination, H. S. Fuller.

Committee on Honorary Members and Degrees, J. G. Stanton, P. H. Ingalls, G. L. Porter.

Anniversary Chairman, F. E. Beckwith.

Committee of Arrangements, F. W. Wright, B. L. Lambert, Frederick Bellosa.

Dissertator, F. N. Loomis.

Alternate Dissertator, John C. Lynch.

Delegates to the American Medical Association, 1898: E. H. Welch, A. N. Alling, C. A. Tuttle, M. Storrs, F. L. Smith, W. L. Barber, J. E. Bailey, C. A. Sears, P. Cassidy, E. P Flint, E. H. Davis, G. P. Davis, J. C. Kendall.

Delegates to the Maine State Medical Association, W. L. Higgins, M. C. Hazen.

Delegates to the New Hampshire Medical Society, F. N. Braman, C. J. Fox.

Delegates to the Vermont State Medical Society, Elias Pratt, W. C. Welch.

Delegates to the Massachusetts Medical Society, C. B. Newton, J. M. Benedict.

Delegates to the Rhode Island State Medical Society, R. G. Philip, H. L. Hammond, W. H. Crowley.

Delegates to the Medical Society of New Jersey, F. E. Guild, O. J. D. Hughes.

Delegates to the New York State Medical Association, W. S. MacLaren, J. E. Bailey, Carl Munger, G. A. Shelton.

Delegate to the British Medical Association, Francis Bacon.

Delegates to the International Medical Congress, A. E. Abrams, E. K. Root.

There was found to be a slight error and the report was referred back for correction. Again reported, exception was taken to the fact that Dr. Almy's name was on the Committee on Matters of Professional Interest in the State for the third time in eight years and that of Dr. Beckwith as Anniversary Chairman for the second time in three years. A motion was adopted that a ballot be cast for all the candidates, excepting that of Anniversary Chairman. This was done and they were declared elected. After some slight discussion, Dr. Mailhouse was nominated and the Secretary was instructed to cast a ballot for him. He was accordingly elected Anniversary Chairman.

Dr. J. W Wright, chairman of the Committee to nominate Essayists on the Progress of Medicine and Surgery, made a majority and minority report.

The majority report of Doctors Wright and Calef was:

On the Progress of Surgery, Dr. George R. Harris of the Backus Hospital, Norwich, and Dr. Frank M. Tukey, Assistant at the Bridgeport Hospital; on the Progress of Medicine, Dr. W. W. Knight of Hartford and Dr. F. M. Tiffany of Stamford. A ballot being taken on the acceptance of the report, some noes were heard and the President expressed himself as in doubt. This brought out the fact that there was a disagreement among the committee and that there was also a minority report. Dr. Wright said that one member of the committee wanted one of the appointees to come from New Haven but that there was a disagreement among the New Haven men themselves. The committee was willing to name one man from New Haven but there was so great a dif-

ference among the delegation from New Haven County that it was thought best to go outside altogether, as a compromise. If New Haven will agree upon a man, we will name him.

Dr. Hughes.—New Haven is agreed.

Dr. Wright.—We selected a good man from New Haven who was willing to accept the position, but New Haven declined to accept him.

Dr. Calef.—I second Dr. Wright's report. We had the names of three able men presented but if either of them had been selected it would have stirred up dissension. Therefore it was thought best to go outside for the sake of harmony and right. We have secured a good man.

A vote was taken to vote upon the candidates separately. Drs. Harris and Tukey were elected Reporters on the Progress of Surgery. Before balloting for Reporters on the Progress of Medicine, Dr. Fleischner was nominated. A vote was taken to vote by ballot. Dr. Fleischner received eight votes; Dr. Knight nineteen, and was declared elected. Dr. Tiffany of Stamford was then also elected.

It was ordered that a tax of two dollars be laid upon each member for the current year and that seven hundred and fifty copies of the Proceedings be printed.

The annual meeting of the President and Fellows then adjourned.

The banquet was held at the Hotel Hartford and was served promptly at 7:30. The speakers of the evening were the President, Dr. Robinson; His Excellency, Gov. Cooke; Dr. Henry O. Marcy of Boston, Very Rev. Father Mulcahey of Hartford, Dr. J. W. S. Gouley of New York, Judge A. F. Eggleston of Hartford, Dr. F. H. Wiggin of New York and Dr. Storrs of Hartford. Dr. A. G. Cook, Anniversary Chairman, presided as toast-master and the hours passed pleasantly until 12 when Auld Lang Syne was sung.

THE ANNUAL CONVENTION.

WEDNESDAY, MAY 26, 1897.

The mass meeting was called to order immediately after the adjournment of the meeting of the President and Fellows—an innovation upon the usual order of things, made possible by the amendment to the By-laws of last year.

The meeting was opened at 4 p. m., by the reading of

THE SECRETARY'S REPORT.

The Connecticut Medical Society enters upon its one hundred and sixth year with a membership of six hundred and twenty-two. This is a gain of twelve over last year; rather a small increase. As marking the general growth of the Society let me say that at the Centennial meeting in 1892, five years ago, our membership was five hundred and twenty-four—an increase of ninety-eight in five years.

Analyzing this change in members we find the losses to have been: From death, thirteen; from removal out of the State, seven. There were dropped from the list for non-payment of dues, ten.

The change by counties is as follows:

Hartford—137, a gain of 1.	New members, 8.	
	Died,	1,
	Removed	2.
New Haven—177, a gain of 9.	New members, 18.	
	Died,	3.
	Removed,	3.
	Dropped,	3.
New London—48, a loss of 1.	New members, 2.	
	Died,	2.
	Dropped,	1.

Fairfield—116, a gain of 1.	New members,	12.
	Died,	2.
	Removed,	4.
	Dropped,	4.
	Resigned,	1.
Windham—34, a loss of 3.	New members,	1.
	Died,	2.
	Dropped,	2.
Litchfield—49, a gain of 2.	New members,	6.
	Died,	3.
	Removed,	1.
Middlesex—42, a gain of 1.	New members,	1.
Tolland—19, a gain of 1.	New members,	1.

History repeats itself in the growth of the western part of the State. Of the forty-five new members admitted, thirty-four are from the three most populous counties, New Haven, Hartford and Fairfield. The largest net gain is in New Haven County, nine, and this county contains thirty-five per cent of the entire membership of the Society.

The following is a list of new members, with place of graduation and residence:

Levi Bennett Cochran, Univ. Penna., 1893, Hartford.
James Ward Ward, Coll. P. & S., Baltimore, '95, Hartford.
James Henry Naylor, Univ. Vt., '95, Hartford.
Charles Porter Botsford, Yale, '94, Hartford.
Charles Joseph Bartlett, Yale, '95, B.A., Yale, '92, M.A., Yale, '94, New Haven.
Morris Dore Slattery, Yale, '93, New Haven.
John Jacob Seibold, St. Louis Med. Coll., '91, New Haven.
Frederick George Graves, Yale, '92, New Haven.
David Walter McFarland, Univ. N. Y., '85, New Haven.
Ward Harding Sanford, Balt. Med. Coll., '95, New Haven.
William Matthew Kenna, Yale, '92, Ph. B., Yale '90, New Haven.
Ambrose Kirk Brennan, Yale '93, New Haven.

Ralph Schuyler Goodwin, Jr., P. & S., N. Y., '93, Ph. B., Yale, '90, New Haven.

Leonard Cutter Sanford, Yale, '93, B. A., Yale, '90, New Haven.

George Holbrook, Univ. Vt., '94, Waterbury.

John Robinson Poore, Harvard, '94, Waterbury.

Willis Hanford Crowe, P. & S., N. Y., '95, New Haven.

Joseph Scripture Holroyd, P. & S., N. Y., '95, Waterville.

Archibald McNeil, Dartmouth, '96, New Haven.

James Ligouri Moriarity, Harvard, '96, Waterbury.

George Washington Russell, Bellevue, '96, Waterbury.

Carl Alonzo Williams, Hahnemann Med. Coll., Phil., '95, New London.

James Joseph Donohue, P. & S., Baltimore, '96, Norwich.

Joseph Birkbeck Burroughs, Syracuse Med. Coll., '81, Bridgeport.

Robert E. Purdue, Starling Med. Coll., Ohio, Southport.

Frederick Joseph Adams, Univ. N. Y., '95, Bridgeport.

Frank Monroe Tiffany, Univ. Pa., '96, B. A. Amherst, '91, Stamford.

George Henry Noxon, Balt. Med. Coll., '93, Darien.

Jean Dumortier, B.S., & M.D., Univ. Ghent, Belgium, '89, So Norwalk.

Clarence Henry Scoville, Balt. Med Coll., '92, New Canaan.

William James Aloysius O'Hara, P. & S., Balt., '93, Bridgeport.

David Munson Trecartin, Dartmouth, '94, Bridgeport.

Daniel Aloysius Hanrahan, Bellevue, '91, Stamford.

Frederick Louis Mullville, Bellevue, '96, Stamford.

George Stanley Heft, Univ. Vt., '95, B. A., Lafayette, '91, Bridgeport.

Laura Heath Hills, Women's Med. Coll., Pennsylvania, Willimantic.

Phillip Hamilton Sellew, Jefferson, '90, Salisbury.

William Bascom Bissell, P. & S., N. Y., '92, L. B., Yale, '88, Salisbury.

Myron Potter Robinson, Yale '95, Terryville.

James Dermott Hayes, Univ. N. Y., '94, B. S., Manhattan Coll., Torrington.
Albert Lewis House, Yale, '95, Torrington.
Frederick Stanley Cowles, Yale '93, Westbrook.
T. O'Laughlin, Univ. N. Y., '96, Rockville.

An analysis of these colleges shows that the graduates are widely distributed in their college homes, that New York and Philadelphia are ceasing to be the choice of most of the young medical students, and that Yale continues to increase the lead among the new men who settle in our State. Out of the forty-five new members, ten are graduates of Yale, four each of the University of New York and the College of Physicians and Surgeons, three each from Bellevue, Baltimore Medical College and the College of Physicians and Surgeons, Baltimore, while two each come from the classical institutions of Harvard, Dartmouth and the University of Pennsylvania.

Familiar names may be also noticed and it will be found that some of them are treading in the footsteps of their fathers.

Of the dead there are thirteen, some of them among the oldest, two having been members for more than fifty consecutive years. Oldest on the list is Dr. Hull Allen, University of N. Y., 1821. Then follow:

Henry Wightman Hough, Yale, 1836.
Pinckney Webster Ellsworth, Yale, 1836.
William Frederick Lacey, Yale, 1844.
John Welch Bidwell, Berkshire, 1846.
Edwin Allen Hill, Harvard, 1850.
Leonard J. Sanford, Jefferson, 1854.
David Carroll Leavenworth, Yale, 1865.
Abraham Travis Clason, Univ. N. Y., 1866.
Byron Wooster Munson, Yale, 1869.
Joseph A. Livingston, L. I. Hosp., 1890.
William Rowland Babcock, Univ. N. Y., 1894.

In transcribing these names there comes the suggestion that the blood of many noble and great men of early

days is coursing through the veins of the Connecticut men of to-day. Allen, Pinckney, Carroll, Wooster—the American Revolution rises before us at the mention of their names. The name of Travis awakens the cry, Remember the Alamo! Hull, the father of the American navy, reminds us that our rights now extend over all the high seas, while Ellsworth and Webster are famous upon the bench and the forum.

Dr. Hull Allen was mentioned at the banquet of our centennial meeting as the oldest member of the Society. The first record on our archives concerning him is in 1829 when he is reported as a member from New Haven County. He graduated at the University of New York in 1821. This cannot mean the University of the City of New York, for that was not organized until 1831, but probably the medical department of Columbia College, early called King's College. King's College was organized in 1754. Its medical department, now known as the College of Physicians and Surgeons, was founded in 1768 and was the second medical school to organize in this country. So that Dr. Allen graduated a little more than fifty years after the organization of this next to the oldest medical college. This is the farthest reaching link that we have had.

Henry Wightman Hough graduated from the Yale Medical School in 1836. With him in the class was Dr. George B. Hawley, the philanthropist of Hartford, a former member of this Society. The death of Dr. Hough leaves but one surviving member of that class and but one older living graduate of the school, one year earlier. Dr. Hough was somewhat active in the Society. He was Fellow in 1843, 1855, 1856, 1860, 1875, and Vice President of his County Association in 1876 and 1881. He served as Second Assistant Surgeon of the 18th C. V., from September 20, 1862, to March 6, 1863, Dr. Carleton of Norwich being the Surgeon of the regiment. His only literary contributions were obituary sketches of Doctors Marcy and Hutchins of Windham County.

Pinckney Webster Ellsworth was present at the birth of painless surgery, and assisted much in encouraging Horace Wells to use nitrous oxide gas in preference to ether. Otherwise there might have been no dispute about the discoverer of ether. Dr. Ellsworth performed the first capital operation ever done upon a patient under the effects of nitrous oxide and did it under careful observation, to demonstrate the availability of the gas for the purpose of anesthesia. His clinical notes of the case, carefully made, are among his papers, now in the possession of his family. He was a daring but skillful surgeon, a man of good financial judgment, a thonghtful writer. At the annual meeting in 1845 the records tell us that the Committee appointed by the Connecticut Medical Society "to propose a prize question to members of this Society, and to award the prize," report: That five essays on the subject, Scarlatina, have been submitted for their examination, and that on opening the sealed envelope accompanying the essay for which the committee decided to award the prize, the anthor was found to be Pinckney W. Ellsworth, M. D., of Hartford. This report was signed by Eli Ives, Jonathan Knight and Charles Hooker, a triumvirate in our history. Dr. Ellsworth at that time had been a member of the Society but five years, and a graduate, six. Among his classmates at Yale were Hon. Henry C. Deming, M. C., of Hartford, and Rev. Dr. Richard Hooker Wilmar, Bishop of Alabama.

The medical teacher is, up to the day of his death, an object of respect in the eyes of the practitioner. Those who have sat under the instruction of Leonard J. Sanford will not soon forget his mild, soft voice, his quiet easy manner, his conversational style of imparting the facts of the dry bare bones, the impressiveness of his life, the benediction of his presence.

A conversation between him and a brother practitioner shows the golden vein which made up the warp of his life. Riding with Doctor B— who had called him in

consultation, they passed some time in silent thought. Dr. Sanford finally asked, "Dr. B—, if you was going to live your life over again, would you choose the medical profession?" The other raised his gray head and replied, "No, Dr. Sanford, I don't think I would. I don't think I would have the courage." "Well," said Dr. Sanford, "I think I would. I don't believe there is any profession, not excepting the ministry, in which one's opportunities of doing good are so great."

Dr. Sanford was Secretary of this Society in 1862-3 and was succeeded in 1864 by Dr. White who held the place continuously for twelve years, when, in 1876, he resigned. In 1863 Dr. Sanford was elected to fill the chair of Anatomy in the Medical Institution of Yale College, made vacant by the death of Prof. Charles Hooker.

If I should speak particularly of Dr. Byron Wooster Munson, it would be to drop a personal tribute to a friend. Large-hearted, and generous, frank and courageous, he was the friend of the soldier of the civil war. Your Secretary occupies his official position because, unknown to him, as a friendly act, Dr. Munson put him forward in the councils of the Nominating Committee.

During the year past, your Secretary was called upon to write the Medical History of Connecticut for the publisher of a book. I spent much time in looking over the records from their beginning. There is a deficiency in the record of the part taken by this Society in connection with the discovery of anesthesia, upholding the claims of Horace Wells and honoring his memory. This missing link is so important and interesting that it ought to be supplied and fortunately it can be.

In 1870, at our seventy-eighth annual meeting Dr. E. K. Hunt, of Hartford presented a preamble and resolution which declared that Dr. Horace Wells demonstrated "that the human system may be rendered insensible during surgical operations by the inhalation of nitrous oxyd gas and that he was entitled to the credit therefor."

These resolutions were adopted and a further one—that a committee of three be appointed from the Society "to immediately take such measures as shall seem to it best, to secure the erection of a monument which shall fitly commemorate the great fact of the discovery and forever perpetuate the name and memory of its discoverer."*

Doctors Stearns, Barrows and S. G. Hubbard were appointed a committee to present to the Legislature the views of the convention in relation to the claims of Dr. Wells as the discoverer of anesthesia. If any report was made it may have been a verbal one but there is no mention of it anywhere. In correspondence with Dr. Stearns upon the subject he has kindly made for me a report of that committee which I am pleased to insert here to complete the record:

REPORT OF THE COMMITTEE OF THE CONNECTICUT MEDICAL SOCIETY ON THE DISCOVERY OF MODERN ANESTHESIA.

The committee appointed by the Connecticut Medical Society at the yearly meeting in 1870 in relation to the discovery of anesthesia, beg leave to submit the following report:

As a part of the history of what has been done in relation to establishing the claims of Dr. Horace Wells as to priority in the discovery, it may be proper to state that before calling the attention of the Connecticut Medical Society in 1870 to this subject, the chairman of your committee, as a corresponding member of the Boston Gynecological Society, had presented the evidence in favor of Dr. Wells as the discoverer of modern anesthesia before that Society; and that a special committee of the Society had, after a thorough examination of the papers submitted, reported unanimously in favor of Dr. Wells' claim.

*Proceedings, 1870, p. 80.

And further, that, as Sir James Y. Simpson of Edinburgh, Scotland, had discovered the anesthetic properties of chloroform in 1847, and had been the first to use it in the relief of pain during childbirth, and also had written extensively on the relative merits of different anesthetics, it was thought best to forward the most important of the papers in relation to Dr. Wells' discovery to him, and ask for an examination of them and a report. Dr. Simpson complied with the request, and wrote a very emphatic letter in favor of the claim of Dr. Wells as the discoverer of modern anesthesia.

The chairman of your committee then attended the meeting of the American Medical Association, which was held at Washington in June of that year; and was successful in securing the passage of a resolution, with only one dissenting voice, in a very full house, awarding the honor of the discovery to Dr. Wells.

With this resolution and one of a similar import from our own Society, and another passed by the Connecticut Dental Society, and also the one from the Boston Gynecological Society, together with the letter from Sir James Y. Simpson, the chairman and Dr. James McManus of Hartford, who was chairman of a committee appointed by the Connecticut Dental Society, appeared before the Hartford City Government, and succeeded in securing an appropriation of $5,000 for a memorial in honor of Dr. Horace Wells. They then appeared before a committee of the Connecticut Legislature and secured an appropriation from the State of $5,000 for the same purpose. With this $10,000, the bronze statue of Dr. Wells which has been on Bushnell Park, Hartford, for many years, was secured.

Respectfully submitted,
H. P. Stearns, Chairman.

In arranging for our last meeting your Secretary secured from the Consolidated Railroad the privilege of half-fare return tickets from the meeting under condi-

tions which were easily complied with. An attempt was made again this year but without avail, although a second request was made. It was held by the Company that the number of return tickets taken up was a considerable less than one hundred which is the requirement. It is hoped that in another year this additional inducement may be offered to increase the attendance.

At the last meeting and since, some differences of opinion have arisen concerning affairs in the Society. And first as to its qualifications for membership. Your Secretary took and maintained the position that membership in the Society should be restricted to legal residence in the State. I attempted to have a precedent made, a principle established. Instead of that, the Society insisted on arbitrarily electing two men and without reason therefor arbitrarily rejecting a third. I believe that the election of one of these was illegal because the applicant does not fulfil the requirements of the By-laws. The Society should make a ruling either one way or the other, for future guidance. This has been done today by adopting the report of the Committee on the President's Address.

For some time there has been a growing feeling that writers of papers contributed to the Proceedings should be allowed to have them printed elsewhere at the same time, and at the last meeting a vote was passed that no paper should be excluded from the Proceedings simply because of its having appeared elsewhere. In spite of that vote the Committee on Publication unanimously decided to exclude one or more papers which were known to have been printed elsewhere. The reasons for that decision can be given by reading a letter now in the possession of the Secretary, sent by a member of the Publication Committee of that year. The Secretary has since inquired of the Secretaries of several of the State Medical Societies as to their custom in such cases. Mem-

bers are allowed to publish their articles in other periodicals after they have been read before their Society, but whether they are then published in the Transactions of the Society, I have not been satisfactorily informed. This is certain—a paper may be published in a medical journal any month, almost any week. Members ought to uphold their Society and to support its publication. They should desire to have it filled with fresh thought and be willing to sacrifice something that it may be so. Besides, with the improved methods of printing, our Proceedings can be issued now in a comparatively short time after the meeting.

I call to your attention the large number of papers presented on the program. This will make difficult the task of the Publication Committee but should ensure a publication of value.

The questions before us settled without disturbance, as they surely will be, the Society will continue its peace and prosperity and to this end may every one of us labor.

N. E. Wordin, Secretary.

The report was accepted.

Dr. Kendall followed with the Report on Matters of Public Interest in the State, the subject of which is:

I. Sterilization of Milk.

II. The Recent Treatment of Typhoid Fever.

The report was discussed by Doctors Lindsley and Fleischner.

Dr. T. M. Bull then read a paper on The Practical Treatment of Eczema and the meeting adjourned.

Thursday, May 27.

The meeting was called to order at 10 a. m. The first thing in order was the reception of delegates. Dr. S. P Warren of Portland, Maine, responded by letter:

May 18, 1897.

My Dear Doctor:

Your program of the annual meeting of the Connecti-

cut Medical Society was duly received. I believe that this is now the third time I have been honored by our State Association with an appointment as delegate to your Society. At the time of the appointment last June I fully intended this year to fulfil the obligation. But I regret that again engagements will prevent my being present with you.

Though it is now more than twenty years since I gave up a residence in Connecticut my interest in the state is nearly as strong as ever. A Connecticut man by birth and early home relations, the source of professional training, twice the recipient of degrees from the dear old Alma Mater, Yale, and with many friends there whom distance does not make forgetful—all this should and does keep alive more than a passing interest in its welfare. It is therefore with pride that I know the state still keeps front rank in science as well as art. The worthies of medicine of by-gone days are well represented by their descendants of to-day. Personally and officially, I wish you a very successful meeting, full of usefulness and incentive.

Again regretting my enforced abscence, I am

Most Sincerely and Cordially Yours,

STANLEY P. WARREN.

Dr. N. E. Wordin,
Bridgeport, Conn.

The President called upon Dr. Wiggin who, he said, was at home in either state, Connecticut or New York. He is like those people in Rhode Island who, when the Connecticut officers want them, are on the other side and when the Rhode Island officers are after them, are found in Connecticut.

Dr. Wiggin responded for the New York State Medical Association, a society of about eight hundred members. The meetings are well attended and there is special interest in scientific work, which is kept at a high point. Another year we hope there will be a larger delegation from this Society as our guests.

Dr. Goodwin was then called upon and read his paper, "Dr. Edward Jenner and his Great Work."

Dr. M. M. Johnson then presented a paper on The Treatment of Pus Cases in Appendicitis. It was discussed by Doctors MacLaren, Wiggin, Ingalls, J. W. Wright and Calef.

The Dissertation was then read by Dr. Alling of New Haven on the subject, Foreign Bodies in the Eye. Remarks were made upon it by Doctors Swain, J. W. Wright, Loomis and F. M. Wilson.

Here the incoming President was introduced by Dr. Robinson. Dr. Goodwin expressed his thanks for the high honor and his appreciation of the kindness of the Society. He would endeavor to perform his duties to the best of his ability.

The report on the Progress of Surgery for the year was read by Dr. MacLaren and then, the hour of twelve having arrived, the President read his address on Personality in Medical Science. Adjournment was made until 1:30 p. m.

The Afternoon Session

Was called to order at 1:45.

The first paper presented was the Report on the Progress of Medicine by Dr. Simpson of Hartford.

Cow's Milk in Infant Feeding was a carefully prepared and well written paper by Dr. W. G. Murphy of East Hartford.

Dr O. T. Osborne then detailed extemporaneously a case of Acromegaly. A paper describing the case had previously appeared in the American Journal of the Medical Sciences. The patient has since died and the history was made intensely interesting by the exhibition of photographs taken at different times, and of pathological specimens of almost the entire skeleton. Acromegaly is a rare disease. It has been treated of most extensively by Marie who was the original investigator of this dis-

ease. Dr. Osborne's case is the eighth one recorded in America. The disease is characterized by enlargement of the bones, more particularly of the hands, feet and lower jaw. Its cause is disease of the pituitary body. This case was reported in 1892 and was perfectly typical. The condition is allied to giantism. All giants have an enlarged pituitary body; a normal bone growth gives giantism, an abnormal development, acromegaly. It is of long duration—fifteen years, even twenty or thirty. Some cases grow to giantism, some to acromegaly. Photographs were exhibited, some taken in 1892, others in 1896, showing the characteristic prognathism and enlargement of the superciliary ridges. There was enlargement of the thyroid gland. The photographs showed a perfectly typical case of acromegaly. The man died Dec. 28, 1896, aged forty-seven. He had had his disease for twenty-three years. The diagnosis, first made, in 1888, was that of cerebral tumor. There was some derangement of the intellect and ringing in the ears. But there is generally optic neuritis in such cases. There was severe pain on the top of the head. The patient weighed three hundred pounds, was five feet, nine inches high. There was an enlargement of all the organs excepting the brain. The liver weighed seven pounds, two ounces; the spleen, four pounds, two ounces; the heart, two pounds, nine ounces. There is but one heavier heart on record in the world. The thyroid weighed more than a hundred and one grams. Experiments made in the removal of the thyroid of dogs resulted in the death of the dogs, if the gland was removed at once; but they lived if the thyroid was removed by pieces. The sutures of the skull were ossified, the humerus was enormous but the most interesting bone was the spinal column. This was completely ossified and brittle and extremely curved. The joints of the body were roughened in their cavities. Skiographs of the hand showed enlargement of its bones. The pituitary body contained a cyst besides a large pulpy

mass sarcomatous in character. The nerves of the body were normal. The man died unexpectedly with syncope, as Marie says is the usual manner, but he had had edema of the lower extremities and his kidneys were slightly damaged.

Dr. Wordin then read a paper giving some facts in connection with the earlier history of the Connecticut Medical Society.

Two others finished the reading of papers for the afternoon—one by Dr. T. G. Wright on Four Cases of Placenta Previa, and one by Dr. Wiggin, Five cases of Uterine Retrodisplacement treated by Vaginal Fixation.

Dr. Conley who had been absent at the reception of Delegates was now called upon and said the New York State Medical Association sends greetings. I have been much interested in the proceedings, both of last evening and to-day, I have been particularly interested with the description of the case of acromegaly. This is a rare condition—so rare that very few have ever seen a case. The most interesting feature of it is the extraordinary hyperostosis, at the very extremities of the long bones. The term is almost a misnomer, for the disease affects not only the extremities but all the bones of the body, also the internal organs and the ductless glands, as was well illustrated by the photographs. Another interesting feature is the thoracic thyroid body so fully described by Dr. Osborne.

I was much impressed with the address of the President of the Society and also with the speech of the Governor of the State last night. Your Governor is certainly a good staunch friend of the medical profession and I wish he would emigrate to Amsterdam. We have not one such there and the medical profession would indeed give him a good reception.

Another subject of interest to me is appendicitis. I make protest against the term but it is familiar to the people and I suppose it must be used. The best term

was proposed by a Massachusetts man, but I have improved upon it. Typhlenteritis is more descriptive. It has the same number of letters and syllables. Why should a bad term prevail ? I have taken a great interest in the operation as well as the medical treatment. Parker first proposed the operation and that it should be done on or about the fifth day. This was long before the days of antisepsis. A few years after Parker began I did it myself; without antiseptic precautions. During the last decade only has it been done freely. It has in fact been performed too much. The vast majority of cases may be treated without the use of the knife. But if an operation is to be done it gives a better chance to operate between attacks. There is another class of cases where there is perforation. Here you must operate at once to save life.

The following papers were then read by title and referred to the Committee on Publication:

"Sign Posts in Medicine," J. W. Wright, Bridgeport.

"Serum Therapy," T. L. Axtelle, Waterbury, and F. W. Wright, New Haven.

"The Value of Correct Sitting as an Exercise for Invalids," F. K. Hallock, Cromwell.

"Use of the Bicycle for Women," Kate C. Mead, Middletown.

"Chronic Paroxysmal Headache," Gustavus Eliot, New Haven.

"Diarrhea in Young Children.

Its Etiology, O. J. D. Hughes, Meriden.

Its Dietetic Treatment, O. T. Osborne, New Haven.

Its Medicinal Treatment," N. R. Hotchkiss, New Haven.

"X Rays from a Practical Standpoint," A. G. Cook, Hartford.

"Notes on the Use of X Rays in Cases of Fracture," J. E. Loveland, Middletown.

"An Obscure Case of Abdominal Tumor," M. C. Hazen, Haddam.

"Laparotomy at the Hartford Hospital, 1896," H. G. Howe, Hartford.

"Treatment of a Case of Profound Opium Poisoning," F. E. Potter, Portland.

"Disinfectants—Report of Hartford County," S. F. Irving, New Britain.

"Some Essentials in the Diagnosis of Insanity," Edwin A. Down, Hartford.

"Our New England Stomachs," George C. Jarvis, Hartford.

"Posture During Labor," E. J. McKnight, Hartford.

"The Forceps in Labor," R. W. Kimball, Norwich.

"History of Tuberculosis to the Time of Koch," N. E. Wordin, Bridgeport.

"Discovery of the Tubercle Bacillus by Koch and a Study of Tuberculosis," C. R. Haxemer, Stamford.

"A Study of the Contagiousness of Tuberculosis," W. B. Cogswell, Stratford.

"The Pathology of Acute and Chronic Pulmonary Tuberculosis," F. C. Graves, Bridgeport.

"The Pathology of Tubercular Bone and Joint Diseases," B. W. White, Bridgeport.

"The Sowers of Infection of the Tubercle Bacillus—Heredity," F. M. Tukey, Bridgeport.

"The Bacteriology of Tuberculosis," C. F. Craig, Danbury.

"The Theories of Immunity, Phagocytosis, Autoinfection," F. M. Tiffany, Stamford.

"Clinatological Treatment of Tuberculosis," G. S. Ford, Bridgeport.

"Treatment by Medicinal Substances," F. L. Day, Bridgeport.

"Surgical Treatment of Tuberculous Diseases," G. R. Topping, Bridgeport.

"Prognosis in Tuberculosis," J. C. Lynch, Bridgeport.

"Early Diagnosis of Tuberculosis," C. N. Haskell, Bridgeport.

"Some Early Connecticut Medical History," N. E. Wordin, Bridgeport.

The one hundred and fifth annual meeting then adjourned.

The reception given in the evening by Dr. G. P. Davis was exceedingly pleasant and very much enjoyed by all who attended it.

N. E. WORDIN, Secretary.

PRESIDENT'S ADDRESS.

PRESIDENT'S ADDRESS.

Personality in Medical Science.

Gentlemen—Members of the Connecticut State Medical Society.

I call your attention to a subject but little discussed in medical literature, yet of great practical interest to the physician who would reach the highest acme of success in his work of saving life and alleviating suffering.

The modest physician is chary about discussing with others the matter of his own personality in the sick room, hesitates and shrinks from the attempt even, to measure in force-units, the weight of that personal presence without which his purely medical and dietary means would be shorn of much of their value.

At a time when surgery dazzles us with the brilliancy of its operations, it is fitting that our attention be directed to a no less important, if indeed a less tangible subject; a subject fraught with much weal or woe to our patients, and by direct reflection to ourselves.

Many of us, I am sure, are fully aware how much more our patients depend upon us than upon our drugs: how much more our presence of good cheer tones up the flagging spirit, than the tonic prescription of yesterday.

We also realize to our lasting regret, how on some days we have thrown over them the wet blanket of depression. In fact, we have taken our own personnel from which we cannot escape, into the sick-room with us, and it has done its work as a tonic, or depressant, according to the universal law of force.

We keep our armamentarium in perfect order that we may meet well prepared, emergency cases.

Do we keep ourselves equally well prepared, equally

well guarded, that our personal influence may, at the opportune moment be to our patient a healing balm instead of an irritating plaster ? Do we realize how much they depend upon our coming at an expected time, how sadly disappointed at any delay, how every look and word, guard them carefully as we may, sends a thrill of life or a pang of disappointment through the sick being of each sufferer ? So much indeed hangs upon the personal manner of the physician in the sick-room, that one often questions whether one doctor without medicine or with medicine, almost if not positively contraindicated, may not have better success than another, though aided by the best therapeutic agents in the pharmacopœia; the one being born to inspire confidence and respect, to allay nervous fear, to quiet that unstable equilibrium, the cause of so much mental and physical disturbance; the other born distrusting himself, inspiring the same distrust, and in fact depressing his patient by his own want of self-poise.

It is a trite saying, that physicians are born, not made, and the true physician certainly needs first to be well born, and afterwards well trained for successful work.

If to become a high-grade mechanic, it is necessary that the child should show a mechanical bent in his make-up; if to become a fine musician, the child should possess an ear sensitive to musical sounds; if to become a linguist, the child should possess a passion for words and their various shades of meaning; so should the physician who would reach eminence, possess by nature a heart responsive to the demands of suffering, a sympathy strong enough to reach down into the sick soul, and touch with healing balm the diseased emotions of human lives.

The true physician should be born to command not only himself, but others; should not only be brave, but better still, be strong. If bravery consists in daring to lead where others dare to follow, true strength consists in compelling others to follow where one may dare to

lead. Many a man has failed, because though brave enough to lead, he was not strong enough to compel the following necessary to success. All through the historic progress of the world is this true. Men have bravely plunged into the misty realms of the unknown, climbed the rugged path of discovery and failed, lacking the power to inspire their followers with the courage of their own convictions.

Medical skill consists in properly adjusting that equation, upon one side of which is the personality of the physician and his remedies; upon the other, the personality of the patient and his diseases. Every physician has felt the need of assertively predicting the effect of a given drug, and thus establishing a confident expectation in the mind of his receptive patient. Call it what you may, unconscious hypnotism, the sway of one mind over another, or a strong will over a weaker one, it matters not. The fact remains, and cannot be ignored, that dominant assertion and confident acceptance are two strong factors not to be easily set aside. This secret bond of sympathy between strength and weakness, plays a more important role in the sick-room than most of us dream of. The sight of the physician in whom the patient has faith, quiets the palpitating heart, allays nervous anxiety, gives sleep to the restless brain, puts activity into the various glandular organs of the body, and even gives the dyspeptic stomach a power of digestion beyond its wont.

As in the commercial world, confidence in governmental stability is of prime importance, so health, mental and physical activities, are promoted by confidence in the prescribed regime, and a line of treatment not to be too lightly set aside, or changed for something else. The doctor who changes his medicine on every visit, soon finds his patient inclined to change his doctor. He has caught the idea that the method pursued has not been satisfactory to the man prescribing as physician, and it has become unsatisfactory to himself as patient.

Of the many lines of study which go to make up the science of medicine, no one perhaps is of more importance than that of temperament, the individual temperament of the patient treated.

We may know much about the pathology of disease, much about the therapeutical action of drugs, but we are baffled in our treatment, unless we know our patient. I am not speaking of such personal acquaintanceship as men upon the street or in social life have of each other, but of such knowledge of temperaments, that though the patient before us is an absolute stranger in the above sense, we are able to read his life's history and record, his past, present and future needs, and thus successfully apply our therapeutics, our dietary, our personal supervision; in other words, successfully adjust the environment of our patient to his individual needs. Many, many times, have we been sorely tried in doing this, our own personal influence being neutralized by some other personality over whom we could exert no influence, and whose influence over our patient had been pernicious.

But I need not enlarge upon the personnel of the physician and its influence upon the individual patient, as they come together in the sick-room. You know all about it. Your experience every day is a constant reminder of this play of forces between doctor and patient, and the success or failure depending upon it.

I would call your attention to the personality of the physician as it affects society at large, as it affects the medical profession itself, for the leaders in medical science are to-day being subjected to as rigid criticism by the laity, as the religious leaders of the world are subjected to criticism by the pews. The questioning spirit of the religious world only needed the personality of a Martin Luther to start a reformation, whose adherents to-day are numbered by millions. Into the tree of Protestantism which he planted, many thriving branches have been grafted by the personal force and character of

such men as Calvin, Wesley and others. So questioning faith and doubts in Medical Science as it was less than a hundred years ago, made it possible for the assertive personality of Hahnemann to establish a new school of medicine, whose tenets but few if any of us present can give assent to, yet to-day its followers stand upon an equal footing with us before the law.

Some of you remember the days when a certain Dr. Thompson in our State, had a following styling themselves "Thompsonians," until they lost the name of their leader, by merging themselves into the society of Eclectics, whose chief aim seemed to be a fight against all mineral and for all vegetable medicines. As Eclectics, they stand equal before the law with what we are pleased to term rational medicine.

One may read in Oliver Wendell Holmes' Medical Essays in an article entitled "Perkins Tractors and Kindred Delusions," that while the Medical Society of Norwich, Conn., was expelling Dr. Perkins for quackery, Europe was going wild over the metal tractors of this same Dr. Perkins. This was not confined to the sick and suffering, who might be excused for accepting anything that promised relief, but the medical fraternity itself seemed to have become infatuated with them. Medical societies and learned bodies went through a kind of investigation of their pretended merits and gave them their support and recommendation.

The demand outstripped the supply. Cures were reported without number. Workshops were built for the express purpose of manufacturing these two wonderful pieces of metal. This enthusiasm continued until some man, in order to swell the profits, conceived the idea of substituting wood for metal, thus killing the goose which laid the golden egg, and bursting the bubble of success.

Surgery itself, with power to demonstrate its work to the sense of sight and touch, is not free from this questioning doubt on the part of the public. Many a patient

with badly broken joints, failing to get from the skilled surgeon the perfect results demanded, puts himself into the hands of the "Natural Bone-Setter," and accepts with unquestioning equanimity the results, be they good or bad, and to-day, nearly every city of any size, in the State of Connecticut, has its Dr. Sweet, claiming direct descent from the original natural bone-setter of Franklin, and they hold in a greater or less degree a goodly share of public confidence and patronage.

The neurologist after spending years in studying the dynamics of nerve-force, the physiological action of drugs upon the animal and human brain in health and disease is suddenly confronted with the fact that the patient whom he failed to cure with his scientific application of drugs, has been cured successfully and perfectly by some mind-cure doctor or doctress, weak in the knowledge of drugs or disease, but strong in the personality of assurance by which and through which the cure has been brought about.

There is no school of medicine, regular or irregular, no system of quackery, honest or dishonest, no clique of fads, whether they walk barefooted the city parks at sunrise, live on meat or vegetables exclusively, wear silk or sacking as the only means of storing up or generating human magnetism, but there is a strong personality behind it. We cannot conceive of any force without unconsciously ascribing a personality to it.

But one may ask pertinently, why this want of confidence in the medical profession on the part of the sick and suffering public? We need not go far to find some of the causes. First, there are too many men practising without being in any sense qualified to deal with life and death. They do not give all that medical science has to give. In other words, they do not do medical science justice.

Our schools have turned out too many badly equipped graduates. Our laws, or want of laws, have allowed too

many charletans to thrive upon the credulity of the public and finally, Medical Science is still in its youth, as one may say, and cannot do now what it will do when it has reached its manhood. Our list of incurables is still too large. Our patients are restive under the assertion that they have an incurable disease, and can only be made comfortable during the inevitable decline. They naturally seek some one who ignorantly or with intent to deceive, promises something better. It is true that year by year, slowly but surely, we are transferring, one by one, these hitherto thought hopeless maladies to the curable side of the chart of human life: still, it is too slow to satisfy the suffering ones demanding the impossible. I say the impossible, at the present time, for does not our past and present progress promise a glorious future, when the incurable side of the chart shall be wiped out, when for every toxin there shall be an antitoxin, for every disease a specific, and when there shall be one and one only cause written upon our death certificates, the natural decay of a comfortable old age ?

As I have said before, every medical ism or fad has had a strong personality behind it, and the best showing of this personality during the last century is in the regular profession itself, and not outside of it. Let me call your attention to some of the strong men whose aim has not been to establish new schools and theories, but who have given their efforts and lives to the growth and development of rational medicine, pulling the profession out of the ruts of habit and routine and giving the car of progress new impetus.

I may mention a few only, of the many whose lives stand out as monuments along the path of progressive medicine. It is fitting that Harvey demonstrating the "Circulation of the Blood," should be found hanging upon the walls of the physician's office; that Jenner should not fail of recognition as the pioneer of the antitoxin treatment, and as a savior of humanity, practically stamping

out of existence that most loathsome of all scourges, small-pox.

Who can divine the thought of the elder Warren as he performed painlessly the first operation under ether? Did he catch the dim outline of that brilliant future of surgery, made possible by anesthetics and asepsis?

Did he dream he was writing history with his scalpel and that his name would stand on record as one who dared to follow his own convictions? Think of the many members of the regular profession who have toiled on patiently and with unflagging persistency, working out the germ theory of disease, meeting and silencing all opposition, until to-day it stands on as firm a foundation as the theory of gravitation itself. And when the germ-theory had been established it was fitting that the next step should be the finding of a specific poison for the germ producing a given disease; hence our specifics and antitoxins. To-day we have many working in the same field of research, where formerly but few had to glean almost single-handed.

There is no grander picture in all history, than Dr. McDowell in the presence of an angry mob, kneeling at the bedside of his patient, praying for strength to do that first ovariotomy, which meant disgrace, possibly violence to himself and death to his patient, or fame to himself and life not only to this woman but to untold numbers in the future.

When Marion Sims builded in the City of New York, the first woman's hospital, he laid the foundation of a woman's hospital in every leading city in the civilized world, and no man can count the lives saved to their families where before no hope could be given.

I would call your attention to Parker opening the abdominal cavity for the offending appendix at a time when abdominal surgery was in its infancy: to Sayre in his first successful exsection of the hip-joint; to Bowditch with his aspirating needle drawing fluid from the pleural

cavities; to Bigelow crushing stone in the bladder and washing out the broken fragments in place of the cutting so much dreaded by both surgeon and patient. I would call your attention to the men who are patiently working out the problems of brain-surgery, to those who as persistently are striving to find a way to the destruction of that much dreaded disease, tuberculosis; to those who are clinically and chemically examining the contents of stomach and viscera in an effort to find a peptone that shall supply nature's deficiency. I might mention one of our own beloved honorary members, Dr. Marcy, whose monumental work on the radical cure of hernia stands as the most exhaustive work on the subject in any language.

Time and space will not permit me to give you the names of the many who at the present time are stamping their individuality upon the medical profession in their work of investigation and research. Suffice it to say, that our rapid progress in the past and present is due largely if not entirely to the work of individuals, pushing in their own way their several lines of investigation and compelling others to accept their conclusions, by the irresistible force of their logic and demonstrated results. Just here one may ask, is this work of the individual investigator fully appreciated, and due credit given for it, by the medical profession and the public generally ?

It has been said, "That nothing is so difficult as to teach a generous and impulsive man that the friend for whom he has done too much may suddenly become incapable of bearing the burden of obligation and gratitude." Never was a truism better expressed and no better illustration can be found than the physician who has given the best part of himself, physically and mentally, that his patients may live; yea, live to show their incapability of bearing the burden of gratitude and obligation.

Communities even for whom the sanitarian has sacrificed his own interests, that they may be better protected, find themselves incapable of bearing the debt of obliga-

tion and only after two or three generations is justice done. This is not confined to the medical profession. It is true in every department of Science. Bruno burned at the stake, in 1600 for teaching that the earth was not the center of the universe, has only now in the nineteenth century had the debt of gratitude due him acknowledged by the erection of a monument to his memory.

It is not difficult to understand the reason of this. The patient sees only the cheery and assuring face of his attendant, knows nothing of the anxious care masked beneath it, can in fact know nothing of the laboratory work and office study of the physician for his sake. Communities occupy almost the same position in regard to the work done by the sanitary investigator: hence the indifference and almost opposition to it. In order to be quickly accepted, the thing done must be dazzlingly plain to the public eye. It is a common occurrence to see in our daily newspapers the assertion that progress is limited to surgery, and the question is asked, why does not therapeutics keep pace ? That surgical progress is more rapid than medical, is more apparent than real. Things that can be illustrated and brought into prominence through pictorial illustration, are apt to be more impressive and striking than the things brought to the mind through reasoning alone. This however, does not necessarily show them to be greater or of more import to the world at large.

A few illustrations will exemplify this. No surgical operation however brilliant can vie in the number restored to health, to the millions saved by vaccination. Who shall undervalue asepsis and antisepsis, which as truly belong to the medical as to the surgical side of medicine. The time has come when Pasteur's studies in bacteriology are bearing fruit in the prevention of epidemics, which at one time threatened to depopulate periodically, many parts of the world, and paralyze the industries of nations. Certainly to no one does the world owe more. An enthusiastic admirer exclaims, "His scientific career is a

luminous track in the profound night of the infiniment petit, on the lowest levels of being where life originates." He is our ideal in the work of preventive medicine, and when the day of preventive medicine shall reach its zenith, then shall the surgeon and physician take second rank, and he who can prevent disease, instead of treating it, shall be regarded as the "noblest Roman of them all."

The time is not far hence, when the ovariotomist will not be he who opens the abdominal cavity to remove the diseased mass, but he who can discover the incipient germ-cell and destroy it with its antitoxin complement. The neurologist will not be he who cauterizes, pinches, stretches or cuts the aching nerve, but he who can so adjust the delicate nerve filaments that they shall be like the "Lute that's sweetly played in tune."

If surgery has hitherto been the most brilliant, the time is now here when it shines as one only of the brilliant facets that make up the many-sided diamond of medical science.

From the personality of the physician as affecting the patient, the profession and medical science as a whole, it is but a step to that personality of public opinion which strides a threatening demon or a guardian angel, by the side of every one who dares to investigate and give the results of his investigation to the waiting multitude. Thrice happy he who finds that personality in accord with his message of truth, and thrice condemned he who feels the relentless and grinding teeth of public condemnation.

But time forbids my going into a field fraught with so much of interest to us all. Our work is so inextricably woven into the welfare and interest of the community in which we live, that it would require a separate paper to study it in its different bearings upon ourselves, and the profession we represent.

DISSERTATION.

FOREIGN BODIES IN THE EYE.

A. N. ALLING.

FOREIGN BODIES IN THE EYE.

A. N. ALLING, M.D.

NEW HAVEN, CONN.

While the lodgment of a foreign body in the conjunctival sac is a most trifling accident, a foreign substance within the eyeball is not only liable to destroy the injured eye, but may cause the loss of both, for in such a case we have to deal not alone with a perforating wound, which exposes the eye to infection, but also with an added danger from the presence of the foreign body.

It will be our purpose first to review in a cursory way the various characteristics of foreign bodies which are retained in the conjunctiva, on the eyeball or within the eye itself.

The most common are of a mineral nature, such as emery, steel, iron, lead, brass, stone, glass and powder, or may be vegetable, as parts of plants—thorns and splinters, or animal like bone and parts of insects.

Objects naturally vary greatly in size; Chisholm relates a case where a piece of iron which filled the whole eyeball was retained in its place for two years, while the minutest particles on the cornea may escape detection. As to shape, if the body has a cutting edge or sharp points, other things being equal, it is more likely to penetrate the tissues. The density has a direct relation to the penetrating power, and the velocity with which the eye is struck, is also to be noted. The product of the mass and the velocity gives the momentum. Thus it may be stated that the size, shape and momentum are the three elements which determine the penetrating power. The chemical constitution is sometimes to be considered, for the oxidizable metals have been shown by Leber and Gruber to have an irritating effect not caused by sub-

stances chemically inert. The magnetic properties interest us in view of the prospect of removal by the magnet, while the temperature may also be noted, for some objects are hot when they meet the eye. The added injury thus induced is generally more than compensated for by the aseptic conditions. Whether the body is septic or not is of the greatest moment in reference to the welfare of the eye. The course, prognosis and treatment, will largely depend on this point. Aseptic bodies of some size may be retained within the eye and the sight be preserved, while the smallest septic particle might cause its complete destruction. Vegetable substances like wood, are more likely to carry infection to the eye, but chips of steel as they leave the hammer are generally aseptic. Shot are also free from germs as shown by recent investigations of Ovio and Tornatoli. Brass and copper, especially when in the form of gun-caps, are apt to be covered with grease and infected.

Place of Lodgment.

The conjunctiva, especially under the upper lid, is a favorite place of lodgment for a foreign body. If retained for some time, important changes may occur. I have seen a piece of grape stem, which remained for three weeks in the lower conjunctival sac of an infant, produce immense hypertrophy of the conjunctiva and purulent secretion. Yet sometimes, on the contrary, an object like an eyestone is found in the upper cul-de-sac, never having caused irritation. Hunt reports a case in which a spear of grass was retained three months; Fraenkel, a splinter in the conjunctiva two years, causing only discomfort; Berry, two cases of ulceration of cornea caused by the retention of a fly in the conjunctival sac. Caterpillar hairs are known to produce a disease first described by Saemisch, which is characterized by the formation of nodules on the bulbar conjunctiva and even on the iris. I once removed an hypertrophied caruncle and found a particle

of sand in its center. Eyelashes curiously enough, sometimes get into the punctum lachrymale.

Foreign bodies imbedded more or less in the sclera are usually of little importance, although they may be long retained.

The peculiar structure of the cornea, makes it a common lodging-place. Foreign substances may lie on the surface, as I remember a piece of the sheath of a bird-seed, resembling a pustule, which remained with its concave surface on the cornea for many days. Hilbert gives a case where the wing sheath of a beetle lay on the cornea for over a year. Bodies may penetrate more or less deeply into the substance of the cornea, and thorns or splinters may even project through into the anterior chamber.

In 1884, Francke collected one hundred and twenty-five reported cases of foreign bodies in the anterior chamber and iris. Later, Blessig, in 1890, found twenty-six in addition, all of which had remained in the eye longer than one year. Since that time occasional records of such cases are to be found.

It is not uncommon to find mention of eyelashes being carried into the anterior chamber by the body inflicting the wound, and there are at present somewhat over thirty cases of this sort on record.

A case was seen at the New Haven Dispensary, in which a small remnant of the lens lay in the anterior chamber suspended by shreds of capsule from the pupil, and yet would sometimes pass through the pupil and lie in the vitreous. By contraction of the pupil with eserine, I was able to retain the body within the anterior chamber, and extracted it through a corneal incision.

In the posterior chamber between the iris and lens, foreign bodies are very rare.

If a body passes either through the iris or pupil, and lodges in the lens, it is there less liable to cause distur-

bance than in any other part of the interior of the eye. If aseptic, it may lie for years without causing other change than traumatic cataract. It is even possible that this may not take place, for if the wound in the capsule is small, it may heal at once without causing opacity. This is very rare. Berger, 1887, found only six cases where a foreign body remained in the lens without causing cataract. Down, Dujardin and Snell, have each recorded a case since that time.

I have seen an eye, where, three years before, a small piece of stone, evidently quartz, lodged in the lens at the upper pupillary border, as shown by a slight nick and adhesion. The body now lies in the lower part of the lens just behind the anterior capsule, having gradually worked its way downwards, leaving a track clearly visible.

In the ciliary body, foreign bodies are most dangerous on account of the vascular character of this region, and the predisposition to sympathetic ophthalmia.

A foreign body which has the requisite size, shape and momentum, may pierce the tunics of the eye and lodge in the vitreous chamber or in the fundus. It may reach this situation by two routes, (a) either through the sclera and then through the ciliary body or retina, or (b) through the cornea, iris or pupil, lens or suspensory ligament. On the ground of the relative area exposed in the palpebral fissures where most bodies enter, the danger is about equal for the two tracks. It is interesting to note in this connection, that the reaction time is so long between the sight of the approaching body and the reflex closure of the lids, that eyes are usually open when struck, even though the object be large.

Foreign bodies usually become arrested in some part of the fundus, or fall to the bottom of the vitreous chamber.

It is very rare that a body finds a resting place in the nerve head. Hillmann collected eight such cases and another has been reported by Adler.

Diagnosis of the Presence and Position.

It is often of the greatest importance to decide whether a foreign body lies within the eye. Great care should be exercised in obtaining reliable information concerning the circumstances under which the accident occurred, and whether the tool used in hammering, for example, shows a piece gone, or whether the object which struck the eye has been searched for and found. It is certainly a fact that the patient's opinion carries very little weight, for since he often feels no pain, he will, as a rule, insist that there is nothing in his eye.

Upon examination, a foreign body may be seen in some part of the eye or there may be found an entrance wound on the cornea or sclera, a perforation of the iris or lens capsule and track through the lens, or a trail of blood through the vitreous. An air-bubble in the vitreous is very rare, but it is pathognomonic.

It is well to note that even though the media are clear, a very small body will be invisible when it has fallen into the iritic angle of the anterior chamber. Further, we are unable to reach with the ophthalmoscope, the periphery of the lens and only a little anterior to the equator of the globe, in the fundus. Thus we cannot see a foreign body in the anterior part of the retina or in the ciliary region. On the other hand, even if it lies in a portion accessible to view, it may be hidden by hemorrhage, or if the lens has been pierced, a cataract will form sooner or later, and shut out the interior. In cases of some time standing, exudation of lymph and formation of new tissues cover over and obscure the body.

If we suspect the presence of a foreign body, and it is invisible for any of the reasons just stated, there are other methods by which we can confirm our suspicions.

The magnetic needle has been used with what may be called indifferent results. The subject has been developed by Pooley, Gruening, Pagenstecher, Frohlich, Dickman,

Asmus and Gallemaerts. Two elaborate instruments are now in use on the Continent, and according to reports, seem of considerable value. The principle involved is the variation of a delicately suspended magnetic needle by the presence of iron or steel, a microscope being used to note the readings. Asmus, with his Sideroscope, claims the ability to definitely locate a body, while Gallemaerts, who uses the astatic needle, can determine the presence of a piece of steel weighing as little as half a milligram.

When the Roentgen Ray became known to the world a year and a half ago, ophthalmologists naturally thought of its applicability to the eye, but, surrounded as it is by bony walls which are opaque to the rays, there seemed little chance of getting help from the discovery. Nevertheless, a few successful attempts have been made to locate foreign bodies in the eye. First, Williams and Clark each had a case of this sort. Lewkowitsch in England made experiments by placing a foreign body in the conjunctival sac, but only reached a small portion of the anterior segment of the globe, which would be of little use. Van Duyse believed that the interior of the eye was inaccessible. Oliver, DeShweinitz, Sweet and others in Philadelphia have had successful cases, and have attempted a method for localizing the body. Fridenberg passed the rays through the entire skull but the time of exposure is very long by this method.

Through the kindness of Professors Smith and Ferris, of the Yale Medical School, I have been able to make experiments in order to determine the possibilities in the case. It seemed that by passing the rays over the bridge of the nose, nearly the whole eyeball could be exposed on a plate which would lie on the temple, for the outer wall of the orbit is very thin and although the space between it and the skin is filled with the temporal muscle, this would offer little resistance. An eyeball which had been hardened to keep its form, was pierced with three needles at right angles, and inserted into the orbit of a cadaver,

so as to occupy the normal position. A series of pictures was taken under various conditions, and the result has been, that it seems possible to reach a foreign body in any part of the eye by this method, and with the time of the exposure less than three minutes.

A young man came to the New Haven Dispensary complaining that while hammering, something struck his eye. He forgot about the accident until after two weeks his sight began to fail. On examination, a traumatic cataract was seen to be forming, while a small piece of steel could be made out in the posterior portion of the lens. The cataract developed slowly, until two weeks later the patient came complaining of pain in the eye, when the rent in the capsule was found to be much enlarged by the rapid swelling of the lens. The steel had been pushed forward in a remarkable way, and apparently was in the greatest danger of being delivered through the capsular wound, and falling into the anterior chamber. The lens, and with it the steel, were removed on the same day. The eye regained perfect sight. An X-Ray picture was taken, showing the steel while it was lying in the cataractous lens.

A further point in diagnosis is the field of vision, which immediately after the accident may be deficient on account of hemorrhage. Defects appear later when changes have taken place such as exudation, atrophy or detachment. Localized tenderness is spoken of as an indication, but is of little use. A probe is only rarely justifiable. In a later stage, perhaps a year or two, discoloration of the iris may point to iron in the eye. Pain in the presence of a large magnet is evidence of a magnetic body.

Finally, a practical point in diagnosis of a great deal of value, is the character of the reaction after the injury. The wound is often insignificant, and if we find a serious inflammation setting in, out of proportion to the actual traumatism, the behavior of the eye will

many times lead to the diagnosis of a foreign body, and to enucleation.

Progress of the Case.

A foreign body which has lodged in the eye may be absorbed, expelled, may remain innocuous or may cause irritation.

1. The absorption of foreign bodies is a very rare occurrence. Mackenzie in 1833 stated that the points of cataract-knives which, he says, occasionally break off in the anterior chamber, are seen to gradually disappear. Leber found that finely powdered oxidizable metals introduced into the anterior chamber of a rabbit's eye were absorbed. Spierer relates a case of a piece of bone in the anterior chamber disappearing by absorption.

2. They may be expelled from the eye. The majority of foreign bodies in the cornea if left alone will produce a localized ulceration and be discharged. Nature undoubtedly many times seeks to be rid of irritating bodies in this fashion. They are sometimes even thrown out from the interior by an acute suppurative process, or after remaining for some time, have been known to be spontaneously discharged. Spectenhauser collected five cases of guncap injuries where after an extended period of quiet, the metal was discharged through the sclera, by suppuration about it. I find another such case by Berlin and one each, lately recorded by Milliken and Hoor. Hansell speaks of a case of spontaneous discharge through the cornea.

3. They may remain innocuous. Literature is full of the records of cases where foreign bodies have been tolerated in the eye. For example, Wilson operated for chalazion and found an eyestone, after thirteen years retention. Armaignac tells of a thorn retained thirty-two years in the sclerotic: Bickerton, glass in anterior chamber, twenty years: Snell, steel in lens fifteen years. Knapp, in 1882 collected thirteen cases of retention of

foreign bodies in the fundus with good vision. Tweedy showed a case which I saw in London, where one eye was destroyed by glass from an explosion; the other retained good vision although pieces of glass could easily be seen in the interior.

The ordinary methods by which a body remains innocuous are by healing in the original wound or by becoming encysted, a seroplastic inflammation taking place in its vicinity with exudation and the forming of new tissue. A metallic capsule has even been known to form by the solution of a metal. Eyes which contain these encapsulated bodies however, are never free from danger. The tissue which holds them is by no means firm and is very liable sooner or later to release its prisoner. The common history of these cases is, that after the reaction following the injury has subsided, and the object has become encapsulated, the eye remains quiet for a varying period. Then the foreign body becomes loosened, falls to the bottom of the eye, inflammation follows and enucleation is generally necessary.

As to change in position: there are three ways in which this occurs:

By its own weight it may work loose; by septic or chemical action it may break down its attachments; detachment of the retina, or tension of bands of new formed tissue may dislodge it.

Denig has recently reported a case in which a piece of guncap wandered about in the eye in a very anomalous manner. Priestly Smith records a case where a piece of copper was observed to be slowly moving across the fundus, during the space of a year. He also observed the retinal vessels covered with a shining metallic deposit, which is known as Chalkosis (Goldzieher). Tangemann found a piece of metal in the anterior chamber which previously had been located in the vitreous and supposed that it had eroded a passage through the iris. The movements of the iris, the lymph currents, the swelling of the lens

substance, might in exceptional cases help change of position.

4. By far the most common result is that the foreign body causes irritation, and it does so in three ways; mechanical, chemical or septic.

Thus, it may set up a primary traumatic inflammation from the effects of the original injury, or a secondary process may occur by the shifting of the body in its place. This being mechanical, can never be a purulent inflammation, so long as we exclude pathogenic bacteria.

While it is possible for an aseptic body to remain in the eye indefinitely without causing material change, yet the highly organized tissues of the eye are exceedingly prone to degeneration from disturbances which are purely mechanical in their origin, and different in results from those caused by infection.

Ever since Leber published his elaborate experiments on animals it has been acknowledged that chemical changes may play an important part in the causation of inflammation. He found that oxidizable metals, as copper, brass and especially mercury, when introduced under aseptic conditions were most likely to produce such an effect. Iron and steel are less active, and lead, glass and porcelain scarcely at all. Leber asserts that these substances are capable of producing pus in the anterior chamber and vitreous, without the presence of micro-organisms. Some would prefer to call this a puriform deposit, since it does not produce infection when transferred to another eye. Although such effects are undeniably produced, yet by far the most important source of irritation is from sepsis, which may occur under the following conditions; by introduction of germs with the foreign body, by secondary infection taking place through the wound, and by endogenous infection from germs brought by blood or lymph. The severity of the inflammation is probably dependent upon the number of germs introduced and upon their virulence (or that of their products) as well as upon

the power of resistance which healthy tissues offer against the spread of infection.

The normal conjunctival sac, in spite of the cleansing and antiseptic action of the tears contains many micro-organisms, about thirty having been described, some of which are pathogenic. This subject has been investigated by Bach, Francke, Knapp, Bernheim, Marthen, Hilderbrandt, Foote and others. That the conjunctival sac is not aseptic, in fact cannot be made so, is the accepted opinion. In two hundred and seventeen cases, Gayet, even with the use of antiseptic measures found the conjunctival sac in one hundred and seventy-two to contain microbes. Francke states that a conjunctiva free from bacteria is impossible. Foote, after careful experiments came to the same conclusion.

In view of these facts it would seem strange that wounds are not more often infected before they are closed by nature, but the constant flow of tears helps to cleanse the sac and in perforating injuries of the cornea, the flow of aqueous, which has been shown by Nutall and Buchner to be highly antiseptic in animals, is always outwards, and tends to purify the wound.

The appearance of suppuration about a foreign body at a later stage, when the wound is closed, has been explained in a novel way by Wagenmann, who has attempted to show that it is possible for bacteria to enter the eye through a scar. He examined eighteen eyes and found pus-cells in the scar and traced them to the foreign body.

Yet we must admit still another source of infection; namely from within. Such a probability is not without analogy, for an injury in other parts of the body without external wound may be followed by an infectious process. If we regard the eye, especially the parts about the foreign body, as the locus minoris resistentiae, germs in the circulation, and we might even say irritating substances perhaps from another focus, may here get a foothold. Thus, individuals with a rheumatic diathesis for example, are subject to inflammation after traumatism,

Whether the immediate cause of the destructive process is evident or not, we may divide pathological conditions commonly seen after the lodgment of a foreign body into three heads:

1. An acute suppurative inflammation which is unquestionably infectious, coming on as a rule within two days of the time of the injury, and either a panopthalmitis or suppuration of the anterior segment of the globe, or a localized process about the foreign body.

2. A chronic irido-choroiditis, probably infectious, which may begin at once and commonly goes on with exacerbations to the destruction of the eye, through the formation of opacities, exudation, new tissue, detachment and phthisis bulbi. Different varieties and degrees of this type occur, but the most important is the slow-going irido-cyclitis, which produces sympathetic ophthalmia.

In view of the conflict of opinions regarding this latter disease it must be acknowledged to-day, that we are in ignorance concerning the exact nature of the process in the exciting eye, also of the sort of irritation and the track along which it is propagated to the other eye. Early opinions represented by Mackenzie, while recognizing the ciliary nerves and blood-vessels as possible routes, regarded the optic nerve as the most probable means of communication between the two eyes. Later, the irritation or ciliary nerve theory, which considers the disease as a neurosis found favor, until in 1881 the microbic origin was advanced by Leber, Snellen and others. Experiments of Deutschman on animals, which seemed at the time to decide the question finally in this way, have been shown later, by a line of investigators to prove nothing, since general infection had taken place when the second eye became affected. Schmidt-Rimpler suggests a plausible modified ciliary nerve theory, according to which the irritation of the ciliary nerves of the first eye causes modifications of the circulation in the other, which render it susceptible to pathological changes and open to in-

jurious influences of whatever nature. Wherever the truth may lie, it especially concerns us now to remember that an eye containing a foreign body in which a more or less active inflammation, typically an iridocyclitis, is present, offers a most favorable condition for the outbreak of sympathetic ophthalmia. The disease itself in the fellow eye, although it may begin as an optic neuritis in perhaps ten per cent. of cases, generally shows at first a little ciliary congestion, a slightly discolored sluggish iris, a few deposits in the pupil, and tenderness over the ciliary region. With the disease once established the prognosis is exceedingly grave. It is important to bear in mind that so-called sympathetic irritation is undoubtedly a distinct affection showing photophobia, lachrymation with some congestion and pain, which enucleation of the irritating eye will cure.

3. Besides the two distinctly inflammatory forms of disease, there may occur a degeneration of the interior of the eye, due to the presence of an aseptic foreign body, or to the disturbance which it creates by its entrance. This leads to the formation of opacities in the vitreous, detachment of the retina, and, if the object is large, to the condition of phthisis. Such changes seem purely from a mechanical cause, since it is well known that disturbance of the vitreous such as might occur in operations, may have this effect.

A peculiar well-recognized change at the macula due to the presence of a foreign body within the eye, may be mentioned here.

Treatment.

The first question which naturally arises in these cases is the practicability of removal of the foreign body from the eye. One must be provided with a pointed lance-shaped needle and a blunt spud in order to remove foreign bodies from the cornea. If the instrument is aseptic, it need not cause anxiety, if a very large excavation

should be made, at all events, it is better not to stop short of complete removal. It might be necessary under unusual circumstances to insert a broad needle into the anterior chamber, to work against, in case one fears that the body be pushed through the cornea in the process of extraction.

If a foreign body lies in the iris or in the anterior chamber, its removal through a corneal incision may sometimes be accomplished by the forceps, blunt hook, or with the magnet. An iridectomy, with the body enclosed might be advisable at times.

If in the lens, it is better to wait until it becomes cataractous before removal, except when the rapid swelling of the lens demands immediate action. The foreign body usually comes out with the lens without difficulty.

If, on the other hand, we have to deal with a foreign substance in the vitreous chamber, the question of removal becomes a momentous one, for we know that if left alone the great majority of such eyes are lost. This procedure has become common only within a few years, for Zander in 1864 found only six cases of successful extraction from the vitreous. Knapp in 1878 found twenty. Recent developments have been due to the use of the magnet. The first record of its use for this purpose, according to Hirschberg, is of one Fabry, two hundred and fifty years ago, who used the natural magnet. So Dr. Meyer, in 1840, drew steel from the interior. Mackeown of Belfast in 1874 demonstrated its practical use, but Hirschberg in 1879 was the first to use the electro-magnet, and since has acquired an extensive experience, his cases numbering last year one hundred and eighty. The whole number of such operations must now reach over a thousand, for many are not reported.

The different forms in use are the permanent magnet, such as that of Gruening, the small portable electro-magnet of Hirschberg and the powerful stationary magnet of Haab. The method of Hirschberg is, with the patient

under chloroform (which is not necessary), to make a meridional incision through the sclerotic. The tip of the magnet is then introduced into the vitreous under the strictest aseptic conditions and the steel withdrawn clinging to it. The object of the Haab magnet is to draw out the steel through the original wound, enlarged if necessary by bringing the eye in proximity to the pole of an immense magnet or pull it forward into the anterior chamber where it can be more easily extracted. This method is probably especially valuable when the foreign body is not visible and where the eye presents a healthy appearance, or where it seems possible to bring a large piece of steel, the wound and the magnet, into the same straight line. The results of the treatment of eyes containing foreign bodies, since the use of the magnet, have been improved to a marked degree as shown by Hirschberg. Yet it must be remembered that a year or two should elapse before the results can be assured, since sometimes opacities of the vitreous develop at a very late day.

With bodies not affected by the magnet, such as brass, copper and wood, removal is very difficult, and the prognosis is exceedingly poor, since with these infection is apt to be present as a complication. Lead however, is usually aseptic and rarely causes sympathetic ophthalmia. When, for any reason, an attempt at removal does not seem advisable, such as the uncertainty of the presence or position, or in the case of a very small body with the eye in good condition, one may legitimately try to secure encapsulation. To attain this result the patient should be kept in bed, with antiseptic treatment for three or four weeks, but even under the most favorable circumstances, it must be acknowledged that the eye is never safe. There remains to us, however, still another remedy for the most serious case if seen early:—when the sight is gone, when pain and inflammation have set in, when the fellow eye seems threatened, our last resort is enucleation.

I have attempted in the foregoing sketch only to outline our present knowledge of this subject and will append a few of the principal references, which one who may be interested might find of some service.

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Dr. Swain commented on the case of taking out the lens which Dr. Alling referred to. He also had attempted it. There were two foreign bodies, one in the right eye, one in the left which he couldn't see. It was in the vitreous and way down. He could not develop it with the X rays. It is in such cases that we are in greatest need of the X rays, and it is in such that they leave us in the lurch. He had seen, in a German paper, the statement that the X rays

had been made to traverse through the entire head. He had developed it in the vitreous only once.

As to the electric magnet, it seems as if we could successfully use it. But it fails many times because of adhesions to the sclera. It may be useless unless the instrument is large enough to draw a weight of a number of pounds. This sometimes imperils the sight, but it may save an enucleation. Dr. Alling has given a learned and useful treatment of the subject.

Dr. J. W. Wright.—Is the eye closed during the exposure ? Does the X ray affect the skin ?

Dr. Loomis.—Tessler has written a work on the injurious effects of the X rays. He says that a damp cloth spread over the skin will stop any inflammatory action.

Dr. F. M. Wilson.—A number of cases of foreign bodies in the vitreous were shown at Washington. It is a difficult thing to remove such bodies. The surgery of foreign bodies in the vitreous is not encouraging.

REPORT

OF THE

COMMITTEE ON MATTERS

OF

PROFESSIONAL INTEREST

IN THE STATE.

I. STERILIZATION OF MILK.

II. THE RECENT TREATMENTS OF TYPHOID FEVER.

III. INTERESTING CASES IN PRACTICE.

IV. DISINFECTION.

REPORT OF THE COMMITTEE

ON MATTERS OF PROFESSIONAL INTEREST IN THE STATE.

I. STERILIZATION OF MILK.

Although milk is older than the race it is only at the present time that it is beginning to receive the attention it deserves as to the production and care of it, and preparation of it as aliment for children and sick persons. It is probable that even now we have only the initial studies of the adaptation of milk and the constituents of milk to the idiosyncracies of individuals.

Very little interest in the later work that has been expended on the subject of milk is manifested by those who have responded to the questions of the circular of the Committee. This is explained in part by the fact that only eleven reply that they have had to protract the use of sterilized milk in the nourishment of their patients. Fourteen reply that they have found repugnance to sterilized milk and only nine have been obliged to discontinue it on account of distaste. One replied that these objections to sterilized milk could be avoided by introducing a flavoring ingredient. Apart from these obstacles to the use of sterilized milk seven say they have found it fail to nourish children, one specifies that a condition of scurvy was induced, one disallows any influence upon the nutritive value of milk from sterilization by saying that in such cases the trouble is essential, because the milk is poor.

The treatment the milk has received has varied greatly. One petulantly disclaims all allegiance to such ideas and purposes as sterilizing milk by saying he scalds it; what the purpose of scalding it is he does not intimate. One boils the milk for twenty minutes, one boils it under pressure, one keeps it for thirty to sixty minutes at a

little below the boiling-point. Most of the correspondents did not specify their methods beyond the application of a high degree of heat.

Physicians who have given special attention to the nourishment of children have become convinced that the older practice of sterilizing milk by boiling it induces necessarily certain changes in its physical, chemical and physiological properties and that some other method of sterilization must be sought. This is found not only in subjecting the milk to a lower temperature at which the undesirable changes are not produced, but by sustaining that temperature for an interval of time sufficient to devitalize noxious germs if they happen to be present in the milk. The germs of the air are destroyed at 155° F. It has been found that the most resistant of pathogenic germs that are likely to be in milk, the bacillus tuberculosis, is devitalized at a temperature of 158° F. after an exposure of ten minutes, or 176° in five minutes. At 176° the essential changes in the milk are discerned. A point highly recommended is 167° This may be sustained for ten minutes, while a longer interval is practicable to the certain destruction of all germs that have been experimented with, and without any modification of the milk. Sterilization of milk thus at a low temperature has received the name, pasteurization. Thirteen of our members report that they have employed this method. Some of them have not yet become strong advocates of it, but a number have found the inconveniences above alluded to obviated and the nutrition of the users of such milk better maintained, and have found in cases that the pasteurized milk has been well taken with improvement in condition of the users when the boiled milk had seemed repugnant and inadequate. Two principal opinions have been advanced in this connection, one that it is a change in the coagulation of the solids of the boiled milk and not of its physiological properties that makes it less digestible, and another that the pasteurized milk nourishes better because it is taken more freely.

II. THE RECENT TREATMENTS OF TYPHOID FEVER.

The recorded history* of typhoid fever in the State of Connecticut for the years 1855 to 1895, both inclusive, is that there was a mortality of 13,478 cases. For the first twenty-one years there was a tendency to an increasing number of deaths, while during the last twenty years the tendency has been the other way. During these forty-one years the population of the state has increased from 400,000 to 817,000. The number of deaths now is just what it was forty-one years ago, while the per centage of deaths by typhoid to deaths from all causes is only one-third what it was in 1855. The number of deaths per year has fluctuated greatly; a very high number one year has been followed by a very low number the next year. The highest number, 548 in '65 was followed by 332 in '66; in '67 it was 415; in '68, 366; in '69, 458; 352 in '71 was followed by 506 in '72, 430 in '73, by 370 in '74; 244 in '86; by 195 in '87 and 292 in '88.

As was stated in the circular of this Committee to the members of the Society, during a recent twelve months, typhoid fever was reported in all the one hundred and sixty-eight towns of the State but forty-two; twenty-three of these had a population of one thousand or less, and thirteen of less than six hundred; cases were reported every month during the year.

During the year 1896 the total number of cases in the State was 1,036, with a mortality of 221. The records of 1896 disclose a surprising as also important fact—that the mortality does not fluctuate equally with the number of cases. During August, September and October, the number of cases was 651, with 86 deaths—that is, 13.2 per cent.; while during March, April, May and June

* State Board of Health, Registration Report, 1895, p. 10.

the number of cases was only 97 with 35 deaths—that is, 36 per cent.; the mortality for the year was 21.33 per cent.

Such is the behavior and such are the ravages of this disease. The fact that this disease is preventable tinges all records of it with a degree of shame; yet this point does not concern this report. It appears however from the records that inasmuch as the percentage of deaths from typhoid fever is only one-third what it used to be, either the proportion of cases to all cases of sickness is very much curtailed, or the severity of the cases is less, or the treatment is better. There are no records as to the first two of these hypotheses.

During the past five years there has been a great deal said about new treatments of typhoid fever. It has been claimed that the disease can be shortened, its victims thus can be more promptly recovered to health and activity and the mortality reduced to a minimum, absolutely reduced if cases are taken in time. It has been the misfortune of this theory that its advocates have not been men of authority or of national reputation, while the men of national reputation whom we look to as authoritative teachers have disallowed this claim and asserted that typhoid fever aborted was not typhoid fever and that cases of typhoid fever that recovered under the abortive treatment would have recovered without that treatment or indeed any other.

Simultaneously with the abortive treatment has come into prominence the eliminative treatment which has had a very strong advocacy by certain writers but yet has lacked the endorsement of our accredited teachers. The claim is not strictly and simply that this treatment eliminates the bacillus typhoides and the bacillus coli communis which is rendered virulent by the presence of the bacillus typhoides and thus under another name aborts the disease, but that it keeps up competent activity of all the excretory organs and eliminates day by day, besides

the bacilli that are present and ever propagating in the intestine, the poisons that are constantly produced by them during the course of the disease, and restricts the elaboration of those poisons; as a consequence the toxemic influence is kept at a point which is tolerable to the body until the period of immunity is reached; the patients go on to recovery with less damage to their tissues, less suffering, less exhaustion of their powers, with fewer fatalities and shorter term of disability.

These two treatments employ to a considerable extent agents that are essentially antiseptic, but there is another treatment that does not follow the lines of the abortive and the eliminative, which is called the antiseptic.

The iconoclast in therapeutics labors under the great handicap, as also does his decrier, of not being able to prove what would have been the course of a disease process except for his particular intervention, so it requires a vast amount of material before any reliable deductions can be made from the results of new lines of work before it is certain what can be reasonably attributed to them. Because results are contrary to former experience or to expectation does not make them unreasonable. We are every day observing the folly of a premature judgment in therapeutics which settles down into a prejudice which blinds one to the advance which all the rest of the world is making.

So attractive are the claims of these treatments that it is not to be wondered at that they have challenged general attention. It was apparent to your Committee, as results have proved, that the physicians of our Society had not been indifferent to the currency of the ideas underlying these modifications in the treatment of typhoid fever. It seemed moreover that time enough had elapsed to give some reliable suggestions as to whether the new methods deserve to be more confidently recommended to all practitioners or whether they are delusive and may better be abandoned. Our circular was accordingly

drawn up to elicit a statement of the comparative results between the new and the old methods of treating typhoid fever, the results upon the specific symptoms and conditions.

With such a theme as this before them it was hoped that the interest of every practitioner would be enlisted, especially that men who had seen most of the disease, who have been through extensive experiences would contribute to the solution of the unsettled questions. But it has not been so. Many correspondents who could contribute nothing, especially specialists, have expressed the greatest interest in the investigation, but from those from whom most could be reasonably expected the least has come. From Stamford where there has been within two years an epidemic of four hundred and six cases only one response was received; very many of our leading practitioners in both city and country have kept their knowledge to themselves. This is not what the Connecticut Medical Society was organized for; this is not the normal attitude of the profession. It required only the expenditure of a little thought and time on the part of each one to make a strong showing that would be creditable. Something cannot come from nothing in medical investigations any more than in agriculture or commerce.

A circular eliciting data was sent to each member of the Society February first and a duplicate circular to half the members April first. Replies that they had nothing to contribute to the investigation, were received from seventy-five members while only seventy-one contributed the material which the Committee now generalize before you; less than twenty-four per cent. of the members noticed the circular.

Although it may be hailed by many members of the Society as a proof of discretion and soundness on the part of the great body of our members, it is surprising that only nine of our correspondents confess that they have been seduced into employing the abortive treatment of

typhoid fever as prescribed by Woodbridge. Only four have followed it strictly; the others have modified it by going beyond it. One modification has been the production of more active catharsis at the very outset of treatment; another, the employment of intestinal antiseptics, as salol, zinc, toxine, bichloride of mercury and carbolic acid, in addition to the antiseptic capsule. Employment of this treatment has impressed these physicians very favorably. While some of them recognize the claim that the disease is aborted, others do not; they allow that the course of the disease is shortened and the patients are carried through with less stress and damage; for this reason they would encourage the employment of this method. One member says his results have been no better than with simply calomel and salol. The member who has had an extensive experience with the abortive treatment and has carried it out punctiliously, even to the extent of special correspondence with Woodbridge and purchase of the capsules of Woodbridge's pharmacist, considers it the only treatment. Special remarks are— "By this treatment there is less need of cardiac stimulants; two identical cases occurred in the same family; for a contrast one was treated by this method, the other not; the former made a much more rapid recovery." While some of these correspondents report that their cases were shortened to even twelve days, others allowed that theirs required even four weeks. Seven of this group of reporters say that they resorted to cool sponging of the body to reduce temperature. The one of greatest experience states that cool sponging was used only in a few cases which exhibited stupor. Under the head, "What established the diagnosis typhoid fever?" one replies, although he considered the cases typhoid the results of the treatment were so astonishing I have never positively accepted my own diagnosis." It would be unreasonable to deny the diagnosis to these practitioners from their detailed descriptions, while some of them were confirmed

by the presence of other undeniable cases in the same families and by the culture and Nidal's tests.

Some four members commend very highly the simple use of calomel and salol as the routine treatment.

Another applauds very highly, and so confidently that he would have himself subjected to it if occasion arose, the use of calomel in five grain doses as may be required for specific effects, with the use of phenacetin in ten grain doses every three hours day and night throughout the treatment. By this treatment the temperature has been limited to 101.5° and the symptoms are very light. The only questionable effect of the phenacetin has been that for a few weeks after recovery the pulse has been somewhat accelerated. There has been no need of stimulants, and no mortality. This treatment has been pursued for two years and stands in the boldest contrast with a former experience of eleven years with the expectant plan during which there occurred several deaths and many hard cases.

A small group of three members has not been inveigled into tampering with any of the modern specific treatments of typhoid fever; one of them with an observation of forty years finds no recommendation in the recent treatments. These men all use salol, and abundant water internally. They are not surprised if some symptoms are severe, and question the efficacy of drugs to palliate them. In remarking on the type of typhoid fever in his town, one says, "The temperature does not rise as high as it used to thirty years ago; there used to be more delirium and diarrhea; the course used to be shorter; there used to be more relapses;" he does not state the comparative mortality.

The eliminative treatment as detailed by Thistle has not been followed strictly by many members. While sixteen respond that they employ the eliminative treatment the majority are satisfied with less profuse discharges daily than Thistle recommends: usually it is only to empty the

bowels of their retained contents, whereas Thistle's eliminative treatment contemplates the use of purgative drugs sufficient for the production of four or five discharges daily.*

Thirty-five members acknowledge allegiance to the antiseptic treatment but the number that actually use intestinal antiseptics is far greater than that.

We now come to a grouping of our correspondents on a new basis, viz., those who have accepted the use of calomel in the treatment of typhoid fever. Of the seventy-one replies received sixty-two confess to this practice. This practice is brought into contrast with the practice of not using calomel, which used to prevail and of which as has been stated three of our correspondents are still advocates. The remaining six use the Woodbridge treatment.

The use of calomel as reported is very variable, both as to dose and manner of employment. It is so variable that when viewed as a whole it becomes fantastic. The dose varies all the way from one twentieth of a grain to fifteen grains; the intervals of administrating small doses of one twentieth to one tenth of a grain from fifteen minutes to two hours; larger doses from one to several hours, or in single doses. The following are details: Protracted use of one twentieth grain doses every fifteen minutes; one tenth grain every hour until free action is secured; one tenth to one grain until free action is secured; one tenth grain every two hours; one-tenth to one fifth grain until one grain is taken; one twentieth to one tenth grain every four hours at times during the course of treatment; one tenth grain every half hour ten times every third day; one fourth grain for seven doses; one half grain until free evacuations are produced; one fourth grain seven times, the eighth dose two to five grains according to the degree of prostration that is seen; three to five grains at the beginning and at intervals later; two to five grains one day;

*Medical Record, Sept. 14, 1895.

two to five grains two or three days; two grains hourly; five to seven grains; five to ten grains; first dose ten grains, repeat in five grain doses until there is free elimination; one dose of fifteen grains; a single dose of four to eight grains; a single dose of eight grains some time during the first week; one or two doses of six grains, some later; seven say that they use it only to clear the bowels once. Frequently it is stated that soda is combined with the calomel. A very few employ at times blue mass. There was noticed even the use of calomel on a wholly different principle, viz., whereas in these uses that have been enumerated the purpose was to produce evacuations, it is occasionally guarded by opium that it may not produce that action. Another peculiarity is to administer one tenth grain doses before the diagnosis is sure.

It thus appears that the employment of calomel by the members of our Society does not rest on any well-defined principle. If the doses of one man are correct those of another are unpardonably large; if the large dose of one is required the minute doses of others must be indifferent. It would seem from this presentment that there is a natural antagonism (to speak in popular language) between typhoid fever and calomel; if only calomel is used the disease respects it, and the body tolerates an abuse of the drug if it is made.

Another observation is pertinent—nearly all the users of calomel applaud it and find great amelioration of the course of the disease as compared with its course before the past decade. This is equally so with those who use the smallest doses and the smallest total quantity and those who use the largest doses and the largest total quantity; again, those very few reporters who speak with less ardor of the influence of calomel are some who use the largest quantity and some who use the smallest quantity. However irrational the use of calomel by our members as a whole is and by whatever means a creditable uniformity in the use of it is to be attained it cannot be allowed that

the use of calomel is a fad, as later revelations of this investigation will show.

(It would be overburdensome to produce as many heads for discussion as the changes recorded by the correspondents would allow, hence we generalize some points.)

A few members, four, often use with the calomel jalap or a derivative or a compound of jalap, or compound cathartic pills; five use with the calomel quinine either in tonic or in constitutional doses. A very few use cascara or castor-oil; some use castor-oil every few days.

Fourteen members follow the suggestions of the eliminative treatment by producing for a protracted time free discharges from the bowels by methods other than those that have been cited, viz., by the use of citrate or sulphate of magnesium, seidlitz powders, Hunyadi water. The practice is almost universal of emptying the lower bowel at least every other day. A few employ glycerine; very many, enemata of simple water; a few medicate this water with antiseptics. While generally it is only to empty the bowel we have such specifications as "large enemata;" "as much as can be injected very slowly;" "two quarts at a temperature of 100° or 110° F daily at 4 P. M." Six members go beyond this and irrigate the bowels for the purpose of ridding them of poisonous matters which might otherwise be absorbed. Eighteen make no mention of the use of enemata; three who use much calomel use little water by enema; ten who use much calomel, use much water by enema; nine who use little calomel, use little water by enema; seven who use little calomel use much water by enema.

The point of intestinal antiseptics is not neglected. A few consider calomel the best intestinal antiseptic. Others who do not use calomel continuously employ a long list of drugs. Twenty-four use salol; eight, the zinc preparations; others ring the changes on twenty-eight other drugs; sixty correspondents ring the changes on thirty drugs; none who use the greatest variety of the

furthest fetched drugs speak with any more satisfaction of the results than do those who use simply salol or phenacetin or mineral acid.

Thirty of our seventy-one correspondents have adopted the practice of prescribing large quantities of water by the mouth; only fourteen sterilize the milk, only six of these do it at a low temperature; it is only rarely that mention is made of any modification of the milk. Seventeen state that they sterilize the water, a few others are careful to procure water from what they consider reliable sources.

Now what has been the influence of these recent innovations on the course and on the individual symptoms of typhoid fever? The exceptions are so few that we may without presumption ascribe them to imperfect application of the methods and ignore them and answer a universal, most gratifying amelioration of the course of the disease and lessened intensity of all its phenomena.

The temperature is kept lower; the period of its highest degree is abbreviated; the digestion is better, the nutrition of the body is better maintained; the old-time dry, cracked, coated tongue with sordes of the mouth generally is absent; all the nervous phenomena are in lighter degree and of shorter duration. Commonly they require no direct treatment; that generalization, "the typhoid state," is inapplicable in very many cases. The exaggerated imbibition of water induces better circulation of the blood generally and especially through the kidneys with abundant excretion of urine which carries its share of toxic matters which have been streaming through the entire body. Many of our reporters have not made careful investigation as to enlargement of the spleen in their cases. Others say there is less enlargement; others that the enlargement is inversely to the evacuations from the bowels; others specify inversely to the evacuations produced by calomel.

The typical abdominal symptoms, hemorrhage, the

complications and sequelae all give less annoyance to the patient and less anxiety to the attendant. There is quite uniform testimony that there is less necessity for both alcoholic and other stimulants, although very many practitioners employ them in routine.

The Duration of the Disease.

The opinion that typhoid fever is aborted gains no encouragement from our Society. A few members think it is aborted; a few think persons would have had a run of typhoid fever but for their specific interference, but the weight of opinion is uncompromisingly against that view. A few limit the duration of the disease as a minimum to three weeks but the great majority write it four weeks or longer; relapses are very rare.

Mortality.

It is surprising to read how very low the mortality is among the cases that come to the notice of our members. While the mortality in the State is 21.33 per cent., our members report very few deaths; some have had very few in their lifetime, some none for several years, some none since they have pursued their present treatment. It is worth recording that in the year 1890 the proportion of deaths by typhoid fever to deaths from all causes in this State was 2.38 per cent. This has decreased until in the year 1895 it was only 1.78 per cent.*; that is, a reduction of 25 per cent.

All our members reduce temperature through the agency of cool water. The question as to the relative necessity for artificial cooling of the body was overlooked in the interest that attached to a statement of the present practice alone.

In anticipation of just such a showing as the foregoing has been, the Committee felt obliged to eliminate

*State Board of Health, Registration Report, 1895, page 10.

from the problem all doubt as to whether our members have been treating typhoid fever with these gratifying results, or more trivial forms of indisposition.. The question was accordingly asked, "Do these cases of typhoid reported as running such easy courses make an unusual number of cases of the disease for the seasons in which they were observed ?" The response from the seventy-one correspondents is, " They do not." If these easy cases are stricken out there has been no typhoid fever in the practice of our members since they have adopted the new treatments, while their neighbors who have kept on in the old ruts have had cases of the disease and severe ones with a mortality of over 21.33 per cent.

This point was pushed further and the question wasasked, " What established the diagnosis of typhoid fever ?" It seemed a little indelicate to put men on their defense to this degree, but it was felt that to give the results of this investigation any value there must be no doubt as to the diagnosis. The question was received in good part and we thank the members that not one of them dodged the question. It would seem that there can be no possible suspicion that the cases have not been typhoid fever The typical early conditions and behavior have been present, several members have employed the diazo, the culture and the Widal test, as also the microscope for the bacillus typhosus. The presence of rose spots is reported very variably; some observers find them as a rule, others in varying proportion to one half the cases.

Special attention was called in the circular to confusion that might arise by not excluding continued malarial fever in deciding the diagnosis. Twenty-seven members say they have found this condition in their practice and thirty-nine say they have excluded the possibility of its existence in the cases they have denominated typhoid.

Fourteen members admit that they have found that presumptive cases of remittent fever were actually typhoid fever; eight of these report that the course of their

cases was of severe character; four that it was uneventful. The cause of this erroneous diagnosis is confessed to have been in some cases a willingness to formulate the diagnosis too hastily; in others, it was remissions following exacerbations for seven to ten days; in others, late appearance of some symptoms ; in others, the typhoid element was at first eclipsed by old malarial contamination.

As is apparent the type of typhoid fever reported by our observers has been mild; many of them know nothing of the cases in their towns which they did not attend, while again some knew that their colleagues who pursued the old methods of treatment met more severe cases. As the last sentences indicate, most of our members have not had opportunity for contrasting the different modes of treatment. Those who have watched the older and the later modes of treatment in their own cases or as between their own cases and those of colleagues speak unqualifiedly in favor of the modern treatments.

As it is only two years since this Committee reviewed the whole field of typhoid fever it was expressly intended to confine the study this year to the results of the recent treatments and so no request was made for personal opinions of the members nor for their treatment of the various conditions and symptoms that are characteristic of the disease. But very many corespondents have communicated their present comprehensions and convictions concerning various points of interest suggested by this investigation and their conduct of their cases. As it will be a decade at least before this subject will be brought again to every member of the Society that he may express himself for the good of all and for the enlightenment of the medical profession throughout the world, it would be an unpardonable waste not to review salient points and striking remarks of those who have had enthusiasm enough to make them.

In spite of all the teaching of the current years concerning the desirability of free and even forced evacuations

from the bowels during the course of typhoid fever, there are still those who jealously guard against this free action when it is spontaneous, and others use enemata only for periodic unlocking of the bowel when it is inactive. The opinion is expressed that tympanites and enlargement of the spleen are inversely proportionate to the freedom of evacuations from the bowels. Tympanites is met by turpentine, externally and internally. It is noticeable that those who expect tympanites, and consider that tympanites is little influenced by treatment, are those who make less of free evacuations from the bowels. The opinion is expressed that the nervous symptoms are likewise relieved by thorough evacuations. Only half a dozen members say that they use digitalis or its derivative. The use of alcohol varies greatly; nothing can be generalized from the reports. We find that one-half the members do not use alcoholics at all or use them very sparingly or very rarely or only in extreme cases or only after the course of the fever is run. Some of them have pursued this course for years, and have never used over a pint in any case, while others frequently use over a pint a day. Other stimulants are used very generally. Strychnia is mentioned more often than any other drug of this class; coffee receives recommendation from several.

Tub-baths are almost unknown among our reporters; only three times are they mentioned; a few members think the use of the tub is risky. The blanket bath is once mentioned, the ice-water coil, four times; the pack, eleven times. Forty-nine members rely on sponging. The maximum temperature which is allowed before means are taken to control it, varies from 103.5° to 102°.

The controlling opinion is that typhoid fever is not aborted; likewise the opinion is very common that the duration of the disease is little abreviated even though the course is milder. Members who review a period of

forty years express this opinion. The opinion is explained that those cases that appear to have been aborted, need constant oversight for the usual time of the course of the disease, and that they are very apt to relapse.

Quite to our astonishment we are warned that not more than one half of our alleged cases of typhoid fever are typhoid; they are rather remittent.

In defence of the Woodbridge treatment it is remarked that its devotees cannot be mistaken every time.

One member thinks that "the only gain as to treatment in late years is the introduction of the tub and the coil;" another that "the proper management of milk diet is the best treatment of typhoid;" another, "elimination by mercury and other cathartics has been pushed to a dangerous extent, rendering cases more liable to perforation and exhaustion." The opinion is more frequent that the course of the disease is little modified by drugs, yet it is confessed that the symptoms are lighter than in former years. An observation is given that since the greater prevalence of malaria fifteen years ago the type of typhoid has been less grave and the grave forms of fifty years ago are not seen. This member lives in the valley of the Willimantic River, Tolland County. It is astonishing that typhoid should be the only disease whose course is not modified by drugs. If that opinion is not arbitrary and incredible we must rejoice that typhoid fever is running out; is there any other logic in the premises?

The confusions which arise as to continued malarial fever and remittent fever have been duly discussed by our correspondents. While the opinion is held by some that continued malarial fever is typhoid, that is not the general belief. The views as to these fevers vary with the district in which the correspondent lives. In one district, "the malarial types are more frequent than the typhoid;" in another, "the typhoid is more prevalent and the presumption in any case is that it is typhoid."

An opinion which is the result of thirty years observa-

tion in the Connecticut River Valley is that there is no typical remittent fever in Connecticut. Another is, "The remittent forms are more frequent and occasionally a typical remittent proves to be typhoid; in malarial regions this confusion must happen." In the observation of one, "the typhoid of remittent type is likely to relapse and have severe hemorrhage;" of another, " the remittent forms like typhoid with enlarged spleen have slow recovery;" of another. "a typhoid of three week's course seemed to be engrafted upon a remittent of two weeks."

The microscope is beginning to differentiate these cases. One writes that although doubtless in years past when malaria and typhoid were both rampant the plasmodium malariae and the bacillus typhosus might have been found in the same patient, at present he does not find them together, and he argues an incongeniality of the products of the bacillus typhosus towards the plasmodium malariae.

Our correspondents have divided themselves into two classes—those who treat the patient and those who treat the disease. One specializes his treatment so thoroughly that he was helpless when he began to set down his treatment of typhoid fever. We read constantly, "p. r. n.," "as needed," "as the individual case requires," "I more and more modify this according to the case in hand."

On the other hand we find very many who treat the disease; because it is typhoid they "use baths daily, even if only for general effect," they "always use alcoholic and other stimulants." On the other hand they "do not use alcoholics" because it is only typhoid fever; in their judgment the disease does not require them.

In view of the constantly growing opprobrium against the principle of treating the disease as has just been exemplified we do not expect any one will be so captious as to claim that any of the treatments we have been discussing is a treatment of the disease. They are treatments of the patient suffering from the disease and are never

expected to be elaborated by weight and measure and a yard-stick or an hour-glass irrespective of reasonable indications, rather in spite of reasonable contra-indications. A certain pathology underlies the disease-process; that must be recognized and its tendencies and effects must be combated and met. In this sense every disease must be treated; the quantum of treatment is what the case in hand decides.

The conclusions from this study would seem to be that although the treatment of typhoid fever in this State as reported exhibits a gratifying advance over all former treatments it does not as a whole proceed from any definite basis as to the nature of the disease-process and that it is not carried on in accordance with any pertinent therapeutic principles; that the issue too often is independent of, coincident with, or in spite of a large part of the treatment. This gives large opportunity for the pessimistic views and nihilistic therapeutics that are so often slung out by certain writers on typhoid fever, and the skepticism that exists as to the details of treatment and the necessity of treatment in certain directions as has been repeatedly remarked by our correspondents. Not only is it unreasonable that typhoid fever should be the only disease that is uninfluenced by treatment but the details given by our correspondents afford the highest encouragement to continue their more recent lines of treatment with the elimination of that which is superfluous and fussy, and retention of that which is found to be essentially pertinent.

Conscientiousness here is not to be measured by resting content with one's own observations and doing "what one conceives to be best for his patient." Life is too short and opportunity too brief and circumscribed for that. In a former age men had to rely largely on their own observation, but in this age of advancement and of diffusion of knowledge such a course is heresy in principle and suicidal in practice. Conscientiousness rather conspires

to diligent study of the literature of the subject and of the teaching of men of master minds who have wider fields for observation and a greater mass of material for generalization, whose methods are in accord with the latest revelations which are made by the bacteriologist and the pathologist, whose work commends itself by its results which at the same time are in accord with reason. It may be one will find that his work needs only a little adjusting; he ought to be thankful if he finds he has been plodding only a by-path but is now brought onto the King's Highway.

J. C. KENDALL,
C. J. FOOTE,
L. B. ALMY,
Committee.

In discussing the Report, Dr. Lindsley said that there is a lessening in both the number and mortality of cases of typhoid fever in late years. This is not explained by the treatment. Not many years since attention began to be called to cases having drinking-water and milk as their cause. Not all of us would be subject to typhoid fever if we drank the germs. Some persons are able to counteract the effect of the germs but there is a limit and when that is passed the patient succumbs. Of late more attention has been paid to the purification of drinking-water. It is not so much contaminated as it used to be. In Stamford there has been an epidemic the cause of which was contaminated milk. There were four hundred cases, many of them fatal. It was the same with the epidemic in New Milford. The number of cases is not so great as it used to be but the mortality is still large in proportion to the number. Another example of an epidemic caused by impure milk was the one in Waterbury. Again, in New Haven the prevalence of the disease was limited to one ward and the cases were mostly mild. The

milk was not as thoroughly contaminated as in the previous epidemics.

In Lawrence, Mass., there is three times as much typhoid fever as in any city of its size in that State. It has always started just after the appearance of the disease in Lowell, on the Merrimac thirty miles above. For the past two or three years the water of the river has been filtered before being distributed to the people of Lawrence. The bacilli have been destroyed. Filtration destroys them, and this accounts for the diminished number of cases. Dr. Charles Hooker used to say that he didn't remember the time when he was not seeing typhoid fever. He had a large practice but if one man is seeing cases all the time it is some indication of its presence. The frequency of malaria changes. When malaria has been present in New Haven typhoid has diminished in like proportion. Whether there is an antagonism between the diseases was not determined and he would not venture to oppose the theory. But certainly there is less exposure to typhoid fever now because so much attention has been called to the condition of the water and milk supply. Where sporadic cases occur there is less concentration of the poison, so that the disease runs out.

Dr. Fleischner remarked that statistics are of not much value, those of typhoid fever less than others. We cannot formulate any satisfactory results. Typhoid fever must be considered a disease to be treated, each case on its own merits; the age, the resistance, the response to stimulants, which the patient shows. He had seen statistics where there was no mortality in a long list of cases—fifty or sixty continued without a death. But he has no such result and he doesn't believe he mismanages his typhoid cases any more than other diseases. We don't know how to treat typhoid fever any better then our forefathers. He remembered when it was treated with camphor mixture or some similar simple preparation. In typhoid fever the

blood is fluid. An alkaline mixture is irrational; but patients do well with it. We give acids, we use the ice-coil, we use all sorts of things. We don't know how to treat typhoid fever; he thinks we never will. The disease has a certain virulence. He doesn't see how any discussion on the method of treatment can be profitable.

INTERESTING CASES IN PRACTICE.

The By-laws of the Society ordain that each County Association shall appoint a Reporter for the County as local assistant to the Committee on Matters of Professional Interest in the State, who shall transmit suitable material for the report of this Committee. Practically there is a certain amount of overlapping of the duties of the Reporter and the Clerk of the County Associations, whereby it has happened that material has gone to the Secretary of this Society through the clerks. We have received from New London County one paper, "A Case of General Eczema from Suppression of Urine and Glycosuria," by Dr. E. P. Douglass of Groton; a case of "Trauma to the Superior Longitudinal Sinus," by Dr. Lander of Bridgeport; two cases of "Gunshot Injury to the Lung," anonymous. Nothing has been received from five Reporters.

CASE OF GENERAL ECZEMA FROM SUPPRESSION OF URINE AND GLYCOSURIA.

E. P. DOUGLASS, M.D.

GROTON.

W. H., aged forty-seven years, farmer by occupation, family history good and no previous serious illness, consulted me December fourth, 1896 for eczema of the genitals, of an acute type: otherwise felt perfectly well. Patient did not consult me again till January twelfth and then I found the eczema had extended from the genitals to the flexures of the knee-joints, with isolated spots on the nape of the neck, the abdomen also becoming involved.

On examination of urine I found the specific gravity 1035, one per cent. sugar, thirty ounces voided in twenty-four hours. Under soothing lotion and antiseptic ointments, mild diuretics and codeia the skin-lesion remained about stationary, alternately improving and relapsing till February first, 1897, but the urine gradually lessened in quantity to twenty ounces.

From February first to February third, there was a rapid extension from these isolated spots till the whole body was involved, not excluding the hands and feet, accompanied by intense hyperemia and induration of the skin, and following in its wake tumefaction of the skin and subcutaneous tissue, all over the body, the edema being the most marked over the legs, abdomen and loins.

The pruritus was so intense that the patient could get no comfort day or night, even when large doses of hypnotics were given. Coincident with the skin-lesion the urine continued to decrease to eight ounces, February fifth, specific gravity 1040, two per cent. sugar, in spite of the ingestion of two to three quarts of water, two quarts of milk per diem and large doses of acetate of potassium and salines.

The edema now amounted to anasarca, scarcely a point on the whole body not pitting on pressure.

Persistent use of lotions and ointments with protection of the skin by bandages, which usually serve us so well, proved of no avail except to allay pruritus for a time. Although large quantities of serum would exude from different parts of the body, there was no appreciable diminution in the tumefaction of the tissues, the process not advancing to the stage of desquamation.

By this time the patient was becoming weak and anxious and indications were so prominent that by this suppression of urine and retention with absorption of excrementitious products, autoinfection was taking place, which would result in intense and wide-spread skin lesion I determined to use more vigorous measures to make the kidneys respond.

February fifth I began with the old fashioned pill of calomel,squills and digitalis, of each one grain every three hours, with large doses of salines and copious quantities of water internally, till the ninth, with no increase of urine.

I then increased the digitalis and squills to one grain and a half each, calomel one grain and even then not until the twenty-first, six days after this pill was first given and forty-eight hours after the increased dose was given, was rewarded with an increase of urine, which amounted to ninety ounces in twenty-four hours.

February twenty-second there was a copious flow of one hundred and twenty ounces. I stopped all diuretics, except water and began the use of strychnia. The edema and pruritus were markedly relieved and fine silvery scales began to exfoliate in large quantities. February twenty-third there were one hundred and twenty ounces and the following two days one hundred ounces of urine.

Immediately following these large amounts of urine, there was desquamation of heavy scales, varying in size

from a dime to those as large as a quarter, all over the body and with this process all edema disappeared.

February twenty-sixth there were only sixteen ounces and the very next day beginning hyperemia and pruritus all over the body again, but at once I began the pill of calomel, squills and digitalis with the result that next day the process began to retrograde, and by the continued and gradually decreasing doses of the diuretic, the eczema all disappeared, leaving a soft velvety skin. With the increased flow of urine the sugar all cleared and at present writing, March thirtieth,the patient remains free from skin or kidney complications.

I have gone into this case in detail, as it was the first coming under my observation dependent on suppression of urine and glycosuria and unique, so far as I can find in the amount of diuretics it required, without pathological changes.

TREPHINING FOR TRAUMATISM: HEMORRHAGE FROM LONGITUDINAL SINUS.

ROBERT LAUDER, M.D.

BRIDGEPORT.

In 1890, while physician to the Fairfield County Jail, a case of more than ordinary surgical interest fell under my care, the patient being a prisoner by the name of John Carey. He was captured in the act of burglary in the neighboring town of Fairfield. There was a lacerated wound in the scalp about three inches long and caused by a rifle barrel with which he had been struck in his attempted escape and capture.

When he came under my professional care three months after the injury the wound had completely healed. The cicatrix was situated over the superior longitudinal sinus and at its posterior portion was very sensitive. The history since the accident was one of headache at first which had become more and more paroxysmal in character. The usual remedies for headache and brain irritation had been tried without benefit. After two weeks of such medication the patient had a well marked epileptic seizure. The necessity for an operation seemed to be imperative. A number of medical friends was called in counsel. All of them advised trephining, notwithstanding the danger of opening into the longitudinal sinus. The patient was more than willing although the danger was plainly put before him. The consent of the State's Attorney, Samuel Fessenden, was also obtained. The hospital-room at the jail was made as aseptic as possible and the patient prepared. Two prisoners were selected as nurses. Doctors Porter and Wordin kindly assisted in the operation.

After the patient was anesthetized a central incision was made over that part of the cicatrix which had been

most sensitive. Considerable force had to be used to remove the one inch button of bone after the trephine had cut through the inner table of the skull. Alarming hemorrhage immediately followed. Blood poured out like water from an open faucet. The superior longitudinal sinus had been torn open in endeavoring to pull the bone from the membrane. A quart of blood was quickly lost while without success I endeavored to stitch together the walls of the sinus. The ligature proved equally fruitless.

What is to be done? The patient is in an almost collapsed condition. The fingers of the operator are thrust into the wound and pressed hard on the brain. The hemorrhage ceases. But fingers cannot be kept there long. A tampon of aseptic cotton might take their place. This is prepared and pressed well down. Then the button of bone is pushed in on the tampon and hemorrhage could only take place within the cranium. The skin flaps are brought into apposition and held with a few stitches and a compress and bandage firmly applied over the cranial vault and under the chin.

What will be the result? The patient is carried to bed and anxiously watched. In a few hours the cardiac action improves. There is no headache, no nausea, but the temperature is subnormal. Next day the temperature rises to normal, the condition improves, and the patient takes small quantities of milk or beef-juice every hour.

Forty-eight hours after the operation the patient is much improved. The wound is reopened and while a small stream of warm, sterilized water flows on the cotton tampon, most of it is removed fibre by fibre with a pair of forceps, till signs of bleeding occur. The button is then replaced and the dressing done as before. At the close of the next twenty-four hours, once more the wound is reopened and all remaining cotton removed in the same careful manner, without bleeding. This time

the button is not returned, only the skin flaps are brought over the cranial opening and the usual dressing applied.

From this time on the patient made an uneventful recovery. The headaches did not return while the patient remained under my observation for about three months after the operation. He was sent to the State Prison for three years and each year a letter has been received from him, stating that he has had neither pain nor ache in his head from the time of his operation, and also expressing his heartfelt gratitude.

INJURY OF THE KNEE-JOINT.

J. W. WRIGHT, M.D.

BRIDGEPORT.

Henry H., aged 15, while attempting to climb into a wagon in motion last May had his right foot caught in the wheel which in its revolution brought such a leverage on the knee joint that it was torn open, rupturing the external ligaments, crucial ligaments and nearly half the capsule of the joint, but did not sever the patellar tendon nor the popliteal vessels. He was brought to the Bridgeport Hospital immediately. The joint was flushed with sterile water, the capsule stitched with catgut, with a rubber drainage-tube to the joint. The skin was then sutured and the whole limb enclosed in plaster bandages with limb very slightly flexed.

Reactionary fever was slight, never rising over 101½. Through an opening made in the plaster the wound could be dressed. A strip of flat iron having been imbedded in the plaster rendered the joint immobile although much of the plaster external to the joint had to be removed. The drainage-tube was removed the fifth day and the boy made an uneventful recovery. The wound had completely healed in four weeks time and the boy now has almost perfect control of his joint although it is not strong.

TWO CASES OF GUN-SHOT WOUND OF THE LUNG.

J. W. WRIGHT, M.D.

BRIDGEPORT.

Two gun-shot wounds of the lung were admitted to the Bridgeport Hospital, one in March a youth of about twenty, who in attempting suicide with a 22 calibre revolver implanted a bullet in his left lung about 1½ inches above the nipple. The result was that the pleural cavity was nearly filled with blood and pleuritic effusion which gradually absorbed and the boy recovered.

The second case in April was widely heralded in the papers as a tale of illicit love and attempted murder. The victim was a woman, and the situation of the wound posterior and inferior to the angle of the right scapula.

The result was in this case also an effusion of blood and serum into the chest cavity so large as to necessitate making an incision and a resection of about two inches of a rib. The amount of fluid in the chest cavity was enormous and there was pneumothorax. Also, the opening of the chest was attended with results like the spouting of a geyser with every inspiration and expiration and we were all baptised with blood.

The ultimate result in the case was complete recovery but only after some two months of suppuration and the necessity later of a second incision to keep the wound from closing externally while still a cavity existed. The lower lobe of the lung remains solid and the bullet is still somewhere in the lung but the wound is closed and recovery complete.

DISINFECTION.

COUNTY REPORT BY SAMUEL W. IRVING, M.D.

NEW BRITAIN.

The object of this report is to bring together the different opinions of the members of this Society upon the subject of disinfection.

I think that most of the members will agree with me in saying, that this matter has been left in the hands of health-officers and inspectors too long. Much better work can be accomplished and more good done, by agreeing upon some method of procedure and insisting on the same being followed out.

I do not wish to say that there is no work for the health-officers; rather, that there has been too much, and also that while the families and friends of the afflicted person will listen to the instructions of attending physicians, they will seldom, if ever listen to the advice of the health-officer, except in so far as will keep them within the bounds of the law.

Wishing to find the opinion of members of this Society, I sent to each one a circular, with a request that answers be given to five questions, bearing upon the subject of disinfection. While there was a great difference in the answers to some of the questions, the opinion of the members, (or of those returning answers,) may be said to be fairly unanimous as a whole, with the exception of question third:

Do you believe sulphur fumes, as generally used, a sufficient protection ?

About sixty per cent. answer decidedly, no, in many cases emphasized. About twenty-five per cent. are well satisfied with the results from the use of sulphur. While the difference in opinion may be due, in part, to the community in which the different members live, and to the method in which fumigation is carried out, there is no

doubt a feeling among physicians, that this is not a satisfactory method of disinfection, unless something further be done.

Some advocate the removal of paper from walls, the washing of paint and floors with a solution of bichloride, burning of bedding, and the soaking of all linen in an antiseptic solution.

This is all good, but in what per cent. of families will these directions be followed out, except in so far as it may protect themselves from further infection?

If we were positive that families and friends of the patients would whitewash walls, remove wall-paper, wash paint with bichloride solution, and burn bedding, where would be the necessity of using sulphur?

This question was asked: Are sulphur fumes as generally used, a sufficient protection?—because if sulphur is a good thing, it is seldom used as it should be for the following reasons:

First—The majority of the members of this Society are dissatisfied with results from using it.

Second—Cases recur in the same family, when other means are not used in connection with it.

If sulphur fumes will disinfect and prevent the recurrence of diphtheria and scarlet fever without the aid of other disinfectants, then one of two things is the cause of our dissatisfaction, and poor results:

First.—Our method is wrong and we must learn the right way, or

Second.—We have been leaving the work to health-officers or assistants, or possibly to the families themselves, without sufficient instruction as to the amount to be burned, as well as other important matters.

Some of the members believe that sulphur fumes are of no use whatever, except that they compel free ventilation afterward.

Other members of the Society, as well as men in other parts of the State, with whom I have had correspondence,

(some of whom have made sanitation a study for many years) say, that sulphur in their hands, has been perfectly satisfactory. They have no recurrences, and that they attend personally to the fumigation of the sick-room ,and this alone with proper cleanliness and isolation is all that could be asked for.

In the city of New Britain, the fumigation by sulphur has not always given this satisfaction, due probably in part to the slovenly way in which the work has been done, and to lack of knowledge by some individuals who do the work as to what is really necessary to prevent the further spread of disease. The sulphur candle, while a very convenient method of using sulphur, is insufficient unless several (six to eight) are used in an ordinary sized room.

I have known of cases of diphtheria recurring in families where it was claimed fumigation had been thoroughly carried out, but found on investigation that said fumigation was burning a single sulphur candle in a room containing not less than twelve hundred cubic feet of space.

If our dissatisfaction arises from such cases as these, we must not blame the disinfectant, but ourselves, for it is our duty to know the amount used as well as other important details.

In answering question first,—For what diseases do you generally use disinfectants ?

The answer has generally been, Diphtheria, Scarlet Fever and Typhoid. These are the ones that in our county we most frequently meet and of course the ones we generally refer to as contagious and infectious.

As to the best method of affording protection to the public the opinion is unanimous.

"Isolation and disinfection"—This seems simple and right but much difficulty is met with in carrying out these simple directions.

In our large manufacturing towns, less than one third of the population being native-born and educated, we find

great difficulty in keeping strict quarantine or in proving to them the advisability of isolation.

The power vested in our boards of health is almost unlimited for good, and when perfect harmony shall exist (as it should) between its members and physicians, there will be no difficulty in carrying out your advice of quarantine.

In the Report of the State Board of Health for 1896, we find the following—(p XIV) General Report:

"Diphtheria and membranous croup have increased in prevalence the past year. Yet notwithstanding the widespread prevalence of these very fatal maladies, the total mortality in the State was not much greater than the average of the previous years. Indeen, the death-rate was not increased, and the total mortality only in proportion to the increased population.

Another interesting fact in this connection is, that the diseases above mentioned are all of them diseases of the preventable class, although not owing their origin to insalubrious surroundings to any great degree. They are preventable in the sense that they are controllable in respect to their further prevalence, by means of isolation and disinfection.

It is very much in evidence that the health-officers of the smaller towns have been during the past year vigilant and active in the application of those measures which have proved effective preventives of the spread of contagion, and, as compared with the city officials, have been more successful.

This result may not be altogether due to more faithful attention to duty, but is, in part, because of the greater difficulty in applying effectively the means of restricting contagious maladies in the denser and more mixed population of large communities. Another reason for the more frequent occurrence of epidemics in cities, is the stingy appropriations for public sanitation."

The popular belief among people in general is that an

antiseptic must be a disinfectant and a deodorant. This is not always so.* "An antiseptic is an agent which retards, prevents, or arrests putrefaction, decay, or fermentation. It does not neccessarily destroy the vitality of the organisms upon which these processes depend. An antiseptic may also arrest the development of the organisms which cause infectious diseases, and may hence be used as a preventive of such diseases. Antiseptics do not destroy the life of disease-germs, and hence cannot be relied upon when such organisms are present.

"By disinfection, in the proper and restricted use of the term, is meant the destruction of the specific infectious material which causes infectious diseases. If the view is accepted that all infectious diseases are due to micro-organisms or germs, then a disinfectant is equivalent to a germicide. In sanitary practice and experimental investigations this view is, in fact, adopted.

"In testing the action of various disinfecting agents upon infectious material, the biological test is the one universally relied upon by experimenters, and no observations upon disinfection based upon chemical tests alone would be accepted by sanitarians as conclusive.

"Therefore, no agent can be accepted as a disinfectant if it is not also a germicide. From this it follows that disinfection, to be trustworthy, must be thorough.

"There can be no partial disinfection of infectious material; either its infectious power is destroyed or it is not. In the latter case there is a failure to disinfect.

"Obviously, also, there can be no disinfection in the absence of infectious material."

† Deodorants remove offensive odors and may not possess any disinfecting power.

Mercuric chloride, our most efficient disinfectant, is not a deodorizer at all, except by preventing putrefac-

* Text Book of Rohé, Hygiene p. 387.

† Report of Committee on Disinfectants of the American Public Health Association, p. 236.

tion. Dr. Meade Bolton, for the American Committee on Disinfectants, has shown that different disease-germs present varying resisting power to the same disinfectant:

Organism	Chloride Lime	Mercuric Chloride	Carbolic Acid
Typhoid bacillus.....	1:2000	1:10,000	1:100
Cholera spirillum.....	1:2000	1:10,000	1:100
Anthrax spores.....	1:100	1:1000	1:50

Then, if infectious diseases are caused by micro-organisms, and they differ from the germs of decay and decomposition, we can readily see that organic decomposition may act as a disinfectant and thus prevent a further spread of disease.

Fermentation in a saccharine liquid ceases and the ferment organisms die when the accumulation of the product of the fermentation (alcohol) has reached a certain proportion.

The specific cause of infection is destroyed when decomposition of the bodies of those dead of these diseases sets in. Hence the reason why infectious diseases are not spread from cemeteries.

The American Committee on Disinfection divides disinfectants into two classes:

Those efficient for the destruction of infectious material containing spores, and those which destroy infectious material only in the absence of spores..

The most useful agents for the destruction of spores containing infectious material:

1. Fire.
2. Steam under pressure (10 minutes).
3. Boiling in water for one-half hour.
4. Chlorinated lime.
5. Mercuric chloride.

For the destruction of infectious material which owes its infecting power to the presence of micro-organisms not containing spores, the Committee recommends:

1. Fire. Complete destruction.
2. Boiling in water for one half hour.
3. Dry heat 230° F. for two hours.
4. Chlorinated lime, two per cent. solution.
5. Chlorinated soda, ten per cent. solution.
6. Solution of mercuric chloride 1-2000.
7. Sulphur dioxide (exposure for twelve hours to an atmosphere containing at least four volume per cent. of this gas in the presence of moisture, three to four pounds per one thousand cubic feet of space, although the vaporization of liquid sulphur dioxide can be more accurately regulated.)
8. Five per cent. solution carbolic acid.
9. Sulphate of copper, five per cent. solution.
10. Chloride of zinc, ten per cent. solution.

Wash all surfaces of rooms occupied by the sick with infectious diseases, with any of the above mentioned solutions, fumigate with sulphur and ventilate freely.

Favorable reports have been received from the use of formaldehyde, from those who have had experience with it.

Careful experiments made by the United States Government in the laboratories of the Marine Hospital show it to be effective without destruction of property and with only a short consumption of time. But the gas must be generated rapidly and in abundance.

The opinion of the members of this Society as to the best disinfectant for the stools of typhoid fever patients is about equally divided between mercuric chloride and chloride of lime, a few prefering sulphate of iron.

PAPERS

ON

GENERAL MEDICINE

AND

OBSTETRICS.

PROGRESS IN MEDICINE DURING THE PAST YEAR.

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While the activity in search of new truth and new remedial agents during the past year has been as great as ever, it is evident to the impartial mind that the actual achievements of the year are neither many nor remarkable. Nevertheless there has been a steady movement forward which will carry us on to greater results.

The department of serum therapy must naturally from the outset have a great claim upon our interest. During the past year, the serum treatment has been employed in tuberculosis, rabies, pneumonia, typhoid and typhus fevers, cholera, syphilis, puerperal fever, cancer, tetanus, erysipelas, chorea,bubonic plague and most extensively of all in diphtheria.

In tetanus, among thirty cases treated with serum from immunized animals, there have been thirteen recoveries. In a few cases of puerperal fever and erysipelas Marmorek's antistrepto-coccic serum has been successfully employed. Antistrepto-coccic serum as modified by Coley has produced some brilliant cures of sarcoma, also some failures.

E. Maragliano reported some three hundred and seventy-five cases of tuberculosis treated with serum. About six per cent. were cured and over fifty per cent. improved with treatment. The value of this method remains to be demonstrated. Otherwise with the exception of diphtheria, serum therapy has not been a great success. The greatest triumph in serum therapy has been in diphtheria. According to the first report of the Committee of the American Pediatric Society who were appointed to investigate into the use of antitoxin in private practice,

more than six hundred out of six hundred and fifteen physicians have pronounced themselves strongly in favor of the serum treatment, the great majority being enthusiastic. They quote nearly six thousand cases of all kinds with a mortality of only twelve per cent. From abroad Hubner gives three thousand and sixty-six cases with a mortality of twenty and six-tenths per cent. The second Report of the American Pediatric Society's Committee dealing exclusively with laryngeal cases includes one thousand seven hundred and four cases with mortality of twenty-one and twelve one hundredths per cent. The most convincing testimony comes from the cases of intubation where the old mortality rates of sixty to seventy per cent. have been reduced one half.

The only fact which is inexplicable in view of all the foregoing statistics is the fact that little or no impression appears to have been made on the absolute mortality of diphtheria in the community. In New York and other large cities, the actual number of deaths from diphtheria has not appreciably lessened under the use of antitoxin. In Hartford for example where antitoxin was first manufactured for home use in the State and where trial of it has been probably as enthusiastic and extensive as anywhere, the total number of deaths from diphtheria in the year preceding its use was thirty-one, in the first year following thirty-three and in the year which has just ended forty.

Closely allied to serum therapy in novelty and interest is the so-called "glandular therapeutics."

This is based on the theory of Dr. Brown-Sequard that all glands in addition to their obvious secretions elaborate substances which pass into the blood, there to perform certain functions exceedingly obscure but no less important. We know this to be the case with the thyroid gland and the extraordinary success of thyroid extract in that hitherto fatal disease, myxedema, made a most successful starting point. One of the latest discoveries of the same kind is that removal of the ovaries cures osteo-ma-

lacia, a rare disease in America but more common in Europe. The ordinarily observed effects of castration on animals include among other things increased growth and increase of adipose tissue. As to men, it is asserted that giants usually have atrophied testicles and that the eunuch choristers of the Sistine Chapel all have massive skeletons. Prof. Caratula, in a series of experiments along this line, ascertained that the effects of castration on animals were due not to lessened activity but to a loss of some positive secretion which ordinarily facilitates the oxidation of fats, together with the elimination of phosphates in the urine and the retention in the system of carbonic anhydride. If subsequently extract of testicle was injected these processes were again renewed. It is in accordance with these principles that the glycerine extract of supra-renal capsule has been used beneficially in Addison's disease and medullary glyceride in severe cases of anemia.

On the other hand clinical tests made of cerebrin, cardein and other so-called organic extracts, made according to Dr. Hammond's formulas have been reported as physiologically inert and therapeutically worthless. There is doubtless now as ever a chance to impose upon the imaginations of medical and non-medical minds with even the smallest bit of fact as a basis. We laugh at the Chinese who give powdered tiger's bones as a tonic on the ground that the tiger is the strongest of all animals or we shudder at the witches' brew of Shakespere,

> "Eye of newt and toe of frog.
> Lizzard's tongue and blind worm's sting."

But some of our present day medication is just as repulsive and fanciful. Among the two hundred and fifty new remedies which have been added to the pharmacopœia during the past year are such curious remedies as prostaden, made from the prostate gland for prostatic hypertrophy, pulmonin from calves' lungs for pulmonary affections, jecorin

from the livers of horses and other animals for liver disease, renaden from the kidneys for chronic kidney disease. I was pleased to note that intestin was not from the intestines of animals but from bismuth, naphthaline and benzoic acid and, barring its name, is likely to be a good thing.

Presumably a good share of these two hundred andfifty new preparations arose solely from the hue and cry for new things.The physician is expected at every new summons to a patient to produce a new remedy with a new name. Otherwise the patient is informing him of the new remedies various friends are taking and he soon receives the impression that he is an "old fogy." Many of these articles bring millions to the manufactnrers with no benefit to anybody else. Recently, as a progressive physician I prescribed one of these wonderful new tissue builders to a patient. The husband however when called upon to pay $1.50 for the bottle felt robbed while I, when a little later I read of unfavorable reports of these remedies, felt that we were all dupes.

Turning now to a few of the more common and important individnal diseases, let us take first, phthisis. Much has been written and done as to the prophylaxis of phthisis this year. The proposal to put the disease under the same sanitary regulations and State control as belong to the acute infectious diseases has aroused much discussion among medical and press editors. Healthboards have gone as far as they dared in that direction. Baltimore, for instance, last July passed an ordinance requiring the Board of Health to register certain facts about all such cases with the help of the physician and in case of people residing in tenement and boarding-houses or hotels to assume sanitary surveillance of such cases unless requested not to do so by the attending physician. On January twentieth of this year, the New York Board of Health passed a similar regulation and its example was imitated at once by many towns. The Board of Education of New York City requires the physical examination

of every teacher graduating from the Normal School who intends to teach, special emphasis being laid on the possible presence of pulmonary tuberculosis. Different sanitary regulations have been advocated and in some cases carried out by local authorities, such as the banishment of the common drinking-cup in schools and churches, of the common sponge in cleaning the slate, of expectoration in cars and public houses and even on the public walk.

Emphasis has been especially laid on the duty of informing the patient of his disease and that his greatest danger lies in auto-infection. Rarely is the first lesion of the lung fatal. It is the second, third, fourth, perhaps fortieth attack that forms the permanent and incurable lesion. "Whence come the bacilli that produce these attacks," asks a leading editorial. From the patient's own clothes, his own bed, his own room, his own workshop. "Auto-infection is the Nemesis of the consumptive. As his own bacilli multiply around him, he takes in dose after dose and hastens the fatal end."

Disinfection becomes then the chief prophylactic agent: thorough disinfection of every house as soon as a case is discovered and then the most scrupulous care and destruction of the sputum. Under such care and environment it is not likely that any new case will arise. "No one need fear the presence of a scrupulously clean consumptive. It is the dirty sputum of dirty consumptives which contaminates. Isolation is wholly unnecessary for a scrupulously clean patient. Isolation should be absolutely certain for every patient that refuses to be such."

The value of fresh air has more and more gained recognition as a preventive and curative agent. Patients should stay out of doors all day long, winter as well as summer. Sanitariums have been erected in Germany the past year in which among other things, arrangements have been made for a continuous supply of cold fresh air to the chamber of the patient throughout the night.

As regards remedial agents there is room to say but little. Maragliano's serum has already been mentioned.

Karl Von Ruck continues to praise anti-phthism. Koch has just published an important paper on some new preparations of tuberculin which he claims are curative or exceptionally beneficial for patients in the first stages where there are no secondary infections and where the temperature curve does not run above 38°. The vast majority of the profession seem to be relying on creosote and guiacol carbonate. Edson's aseptolin made a little stir in this country for a time. Pepper reported a case widely quoted, cured by massive doses of strychnine and bichloride of gold.

TYPHOID FEVER.

Ferrand Widal of Paris, following an already developed line of research, introduced a new and early diagnostic test of typhoid fever which has aroused great interest in the profession. Widal's first method was to obtain the blood from a vein of the arm, add the serum from this to a bouillon culture of typhoid bacilli and keep the mixture at 37° for some hours. A characteristic clumping of bacilli and clearing of the fluid was produced by the serum of blood of typhoid fever and by that alone. The day of this reaction is the seventh or eighth of the disease, in some cases as early as the fifth. Various modifications have been made in this method but it has now been widely tried and established as a reliable test of typhoid fever of great value and interest. Carbonate of guiacol seems to have grown more steadily into the favor of the profession as an internal remedy together with cathartics and baths.

PNEUMONIA.

Dr. Thomas J. Mays of Philadelphia has collected some three hundred cases of pneumonia treated by ice applied continuously over the inflamed lung with a mortality rate of less than eight per cent. Balneo therapy after the manner of typhoid fever has also been favorably report-

ed on at various times in the year. The advocates of digitalis continue to make wonderful claims to cures. There seems to be much evidence that pneumonia loses at times much of the malignancy which it displays in other years and that the past twelve months or longer have been one of those periods.

BLOOD EXAMINATIONS.

Much has been claimed of late for the diagnostic value of blood-examinations in not a few new diseases. Thus, cancer of the internal organs and tuberculosis produce each different and constant changes in the variety and numbers of the leucocytes hitherto unknown. And it is further claimed that a blood-examination is of much diagnostic importance in tertiary syphilis, chronic nephritis, asthma, Graves's disease and even appendicitis. Pront says that the absence of leucocytosis in a suspected appendicitis should make one hesitate about operating. When we add to this list typhoid fever, malaria, diabetes, leukemia and the various forms of anemia, as well as the long list of affections like tetanus, relapsing fever, splenic fever, etc., in which as is well known the micro-organism is most easily detected in the blood, it is evident that the examination of the blood has reached a complicated development and become already one of the important and essential elements in a diagnosis.

NEUROLOGY.

A theory concerning the movements of the neurons or nerve-cells and their processes has been an interesting topic brought out in neurology this year. At least four or five writers; two in Germany, one in France and one in America happened to conceive independently at no great interval of time from each other, the idea that the nerve-cells were capable of movement to such an extent as to enable them to alter the degree of their relationship to one another. This theory is attracting general attention and receiving considerable support. The only physi-

ological observation quoted in behalf of the theory is that in 1890 Wiedershein, a German, saw in leptodora hyalina, an invertebrate, one of the entomostraca, the nerve-cells in the esophageal ganglion, move in a slow flowing fashion. The real basis of the theory however lies in the supposition that it explains normal and pathological mental and nervous processes.

Hysterical paralysis for instance may appear and disappear in a few hours or minutes. According to this theory the explanation is that the neurons of the arm center of the cortex retract their processes in such a way that their end-tufts no longer bear the normal relation to the spinal neurons. The hysterical paralysis appears only to disappear when in consequence of suggestion or spontaneously, the opposite process of explanation of the neurons takes place and normal relations are assumed. Normal sleep or pathological unconsciousness from concussion for example, are likewise dependent on a slow or sudden generalized retraction of processes. Extension of processes produces consciousness. An act of perception according to this theory consists of changes in the relations of the cortical neurons with one another effected by certain physical impacts upon the sensory organs. A conception is the formation of the same combination of neurons without the external stimuli; and memory too is not due to any constant condition of structure, but to this process of renewal of old combinations of neurons. In mania the neurons act with excessive rapidity; in melancholia, the movements are restricted and slow, and so on. The theory has been ingeniously worked out and like all such theories will doubtless lead to the discovery of new truths. I have said enough perhaps to recall before your minds some bits from the thinking and doing of our medical brethren in the year that is past. It is "here a little and there a little" but no one doubts longer that to the persistent and unwearied knocking of science the door is soon to be opened to new and wonderful revelations of truth.

THE ETIOLOGY OF DIARRHEA IN YOUNG CHILDREN.

OLIVER J. D. HUGHES, PH D., M.D.

MERIDEN.

We find that the principal causes are heat, with improper feeding; fermentation, with improper feeding; and of late years bacteria have hoisted their colors—in fact we might say have nailed their flag to the mast and claimed the whole ground as their very own, as shown principally by Booker, who claims specific germs do exist. We have also as causes, exposure to cold and damp; predisposition and heredity is claimed by some.

Dr. John A. Jeffries of Boston, in "A Contribution to the Study of the Summer Diarrheas of Infancy," says "that improper diet may bring about diarrhea is so evident as scarcely to need note." But pickled lobster or other irritant food, even in the hottest weather, does not bring on a set attack of summer diarrhea. The infant will vomit, purge, like as not have convulsions, when a physician will be called and the child be well in a day or two.

Barring convulsions, the thing tends to take care of itself. The food which irritates is ejected, the cause is removed and the trouble vanishes. Could a simple indiscretion of diet cause summer diarrhea, scarce a child would grow up, unless surrounded by a Cossack body guard, such is the perversity of the people in this world who give an infant everything it cries for. No sooner does it get it than into the mouth it goes—the seat of the one fairly developed sense.

We know the weather during very hot spells has a decided tendency to produce summer diarrhea—simple indiscretions are not connected or influenced by any weath-

er; but again, we do know certain articles of diet will produce conditions favorable to the development of the disease. Jeffries very aptly says: "The injection of various improper foods are too often followed by set attacks of diarrhea to be the result of pure coincidence."

We will now consider continuous improper feeding from the point of artificial substitutes for breast-milk. Every one of these substitutes is supposed to be better than the last, and they are all without exception poor, if not bad, in comparison with mother's milk, and as a result the majority of children fed on these foods sicken, run down, and show a decided tendency to diarrheal diseases, while others only run down and remain feeble and puny. Again, we have some who do well on most any class of artificial feeding.

It is claimed by the friends of the bacterian theory that even continuous bad feeding will not produce the disease, but that it will develop the specific germ that does produce the disease. We must not, however, run away with the idea that breast-fed children are exempt from these troubles, as Buller in the Jahrbuch fur Kinderheilkunde says that in forty thousand three hundred and fourteen cases observed in Bavaria in 1887 under one year of age, nearly seventeen per cent. were breast-fed; Morti in two hundred and eight cases found over ten per cent. breast-fed; and Johnston, in England, found one hundred and sixty-five breast-fed cases out of a total of two hundred and thirty-eight seen in one year.

A great many authors lay a great deal of stress on climatic changes, and get up elaborate tables to prove their point, but, as Jeffries so graphically says, "Nearly every one can be offset by another pointing in the opposite way." A great many text-books will tell you that the real cause of cholera infantum is heat; again, others will add humidity, air pressure, rain-fall, velocity of wind, ground temperature, ground water level, and many other things.

Baginsky of Berlin, in his very able article on the subject, has proved that ground water and ground temperature are not and never have been true causes. Seibert of New York, in the Medical Record, shows that "The mortality rose as soon as the daily minimum of 60° F. was reached," thus more closely formulating Baginsky's statement that the disease is produced under the influence of continuous warmth.

Prof. Meinhert, of that beautiful and perfect Children's Hospital and Clinic of Dresden, urges strongly that summer diarrhea is really nothing but heat-stroke. Of this, Jennings says, "His argument is hard to grasp, but seems to be based on the prevalence of the disease during hot spells, and the view that the diarrhea is not sufficient to cause the general symptoms." Meinhert uses the word "hitzschlag" but does not seem to distinguish between the two forms, insolation with coma and extreme hyper-pryexia, and simple heat collapse without any excessive fever; the first tending to result from exertion in a very hot sun, as shown by British troops in India, the second occurring in any hot place, as the stoke-holes of steamers, in previously debilitated patients. Meinhert would seem, however, to mean the latter form, heat collapse. Heat collapse may be rare in Germany but it is not so in the United States. Every one here has seen more or less of this class of cases, due to the effects of heat. The symptoms in these cases are variable, but diarrhea does not constitute a leading symptom, embarrassed circulation prevailing. Crowding will aggravate any disease, and most especially diarrheal troubles in children, but it cannot be justly classed as a cause. It should more properly be called "a condition facilitating infection."

Lastly we come to the subject of bacteria as a true cause, and to Prof. L. Emmett Holt of the New York Polyclinic we must in all fairness give the first place as a worker and teacher in this direction.

He says: "Clinically we are brought face to face with a group of symptoms which admit of no other satisfactory explanation, in the light of our present knowledge, than that they are of toxic origin from the absorption in the intestines of ptomaines produced by bacteria. These symptoms are high temperatures which autopsies show are not inflammatory; profound nervous symptoms, such as great prostration, delirium, coma, or convulsions, without, in most cases, any demonstrable changes in the brain, and often subsiding when the intestinal contents have been discharged; and, finally, the great evolution of offensive intestinal gases seen in nearly all acute cases. It has been established that at least two forms of bacteria are capable of producing lesions in the intestines, bearing some resemblance to those found in certain inflammatory diarrheas of infancy, viz., the bacillus of typhoid fever and the bacillus tuberculosis. Further, it is established that epidemic cholera, a disease most closely allied clinically with cholera infantum, is due to the comma bacillus. Brieger, Bouchard and Vaughan have pointed out the poisonous nature of many of the ptomaines in milk, ice-cream, etc., which even in adults have produced serious attacks of vomiting, purging, etc. Whilst we cannot yet put our finger on any of the bacteria that produce these diseases, still the evidence of their work is so marked that we must own that they play a very important part in the causation of many of the varieties of the diarrheal diseases in children. How they do it we are not positive, but investigation seems to point to milk, water or air as the offending mediums.

Healthy digestion and perfect absorption are the greatest defense against the work of bacteria. A mild attack of intestinal catarrh, or undigested food, in an otherwise healthy child will often be the starting point for the conditions most favorable for the development of bacteria, which even in very small numbers may do their dreaded work.

Country-bred children and those fed at the breast escape oftenest, owing principally to the fact that as a rule their digestive organs are in good condition and their food free from germs.

Whether ptomaines be formed within or without the body of the child seems to us to make very little difference, as they produce the same results if allowed to develop. Consequently, if you want the children under your care to be free from the ravages of bacteria in this class of diseases, see that their digestion is healthy and that the absorption is perfect.

THE DIETETIC TREATMENT OF INFANTILE DIARRHEA.

O. T. OSBORNE, M. D.

NEW HAVEN,

Before entering upon a discussion of the part of the subject alloted to me I may be pardoned if I speak for a moment of the physiological and anatomical conditions of the child's gastro-intestinal canal. If I infringe at all upon the paper on Etiology I may be excused when it is considered the narrow path through which I must tread between Etiology and medicinal treatment of diarrheal diseases in the infant.

Of course the first question that arises is, what is the proper food for an infant. Rotch has taught us that it is well to consider the stomach capacity of a child, which varies greatly with the age as well as with the weight of the child. The stomach grows very rapidly the first three months after birth; slowly in the fourth month, where it remains until about the sixth month, and then begins to grow again. Fleischmann has shown that the capacity of the stomachs of artificially fed infants is greater at a given age than are those of breast-fed infants. This is undoubtedly due to the over-feeding of a bottle-fed child; that is—an over-loading of its stomach until a condition of more or less dilatation occurs. A child with an abnormally small stomach for its age must of necessity be fed more frequently than a child with a stomach capacity proper to its age. In either case the child is not satisfied unless its stomach feels a slight sense of distention. Exact tables are given for the proper amount of liquid that should be given; that is—the stomach capacity for the various weeks and months of age of normal infants, but these tables can be so readily found I will not go into the wearisome recitation of fig-

*. (This paper has already appeared in the Yale Medical Journal.—Secretary.)

mes. Also without doubt the most accurate means of ascertaining the condition of an infant as to the appropriateness of the amount and character of the food is by weighing it regularly week by week and watching its growth. As a rule the average daily gain for the first two months should be about two thirds of an ounce; the weight of the child at birth should probably be doubled at five months, and trebled at fifteen months; the weight at one year should be doubled at seven years, and the weight again doubled at fourteen, according to Roteh.

In studying the digestive conditions in a child we cannot forget its nervous system which is more active and excitable than that of an adult. The brain is fifteen times as large proportionately in the infant as in the adult; consequently anything that tends to nervously excite or irritate the child will easily interfere with its digestion, whether this be external influences or some peripheral pain, as irritative conditions of the skin, teething, etc., to say nothing of actual pain.

It is stated that the absorption of oxygen is relatively more rapid than the production of carbonic acid in the infant, that there is a continued accumulation of capital in the formation of oxygen-holding compounds. The metabolic activity is more pronounced in the infant than in the adult, much of which goes toward the formation of the rapidly increasing tissue. Also it is necessary for an infant to have repeated molecular interchanges to keep up its temperature. The extent of skin—that is, of surface exposure—is relatively greater in the infant than in the adult, hence the tendency to great variations in temperature. This is especially true as the thermotaxic center in the infant is not well developed, and the dilation and contraction of its peripheral capillaries are not regulated by the temperature of the atmosphere. Thus the internal temperature can be easily modified by external conditions.

The salivary secretion is slow in its establishment, and

at first weak in its amylolytic power, and is not well established until the end of the first year. The same is true of the pancreatic amylolytic action.

In considering the value of a food and the adaptability of a food to each individual child we must take into consideration the condition of the bowels; that is—the character of the intestinal discharges. In the first few days of infant life meconium is mixed in with the intestinal movements, after which period, with human milk or with milk prepared according to the analysis of human milk, the discharges should be of golden yellow color, unformed, of medium consistency, and may on exposure to the air take on a mild greenish-yellow tinge. In early infancy there should be from two to four discharges daily with a gradual decrease to one stool in twenty-four hours. The color changes to brown when amylaceous or albuminoid food is added to the child's diet.

As we well know changes in the temperature affect the condition of the child's bowels, we cannot but take careful consideration of the proper clothing for an infant. Any exposure of the body or limbs of infants, or young children, is certainly unwise. While the infant should not be so hampered that it cannot properly develop its muscles by free movements, and also while tightly binding clothing should not be allowed, still the infant must at all times be warm. On the other hand too much bundling of a child, causing it to become too warm, is also detrimental to a child's health.

While young children should receive fresh air as soon and often as it seems proper, still the exposure of young children to inclement weather, damp weather, intensely cold or windy weather just for the sake of giving a child daily out-door air, is unjustifiable, and is absolutely against the physiological condition of a child, which requires that it shall not be exposed. Babies born in winter should not be taken out of doors too soon.

It is a too well-worn axiom, other things being equal,

to dilate upon the advisability of a mother nursing her own child, neither is it necessary for me to note the contra-indications to maternal feeding except to call attention to the fact that nervous disturbances of the mother may so affect her milk as to upset the digestion of the child. By nervous excitement she can change relative proportions of albumin, caseinogen and fat in her milk. The effect of various drugs on the milk secretion of the mother must not be forgotten; they may diminish the amount and interfere with its character, and may actually be excreted in her milk, thus affecting the child; this is especially true of cathartic drugs.

From a dietetic standpoint we may consider that the causes of diarrheal diseases are over-feeding, too frequent feeding, improper foods and impure foods. We may state as a general rule that children nursed by their mothers are often under-fed, while children bottle-fed are generally over-fed. Over-feeding is particularly to be avoided in summer time, at which period of course diarrheal diseases are most frequent. It has also been stated not to be a bad plan to diminish the strength of a food and to increase the intervals of feeding during the hottest weather. Too frequent nursing of the infant, or allowing the infant to sleep at its mother's breast at night, nursing when it pleases, is certainly a pernicious habit, both for mother and child. Also the allowing of a child to go to sleep with a bottle of milk at its mouth is one of the most frequent causes of diarrhea. The intervals of feeding should be regular in the day-time, and at regular prolonged periods at night, the frequency depending upon the age of the child and the estimated capacity of the child's stomach. As to the length of lactation, rarely is it advisable for a mother to nurse her child longer than the first year; the milk at that time becoming so modified as to be of less value for the nutrition of the child, cows' milk and starch in some form being much better adapted for this stage of development. The advisability

of a mixed feeding during any period of this first year can only be decided by the conditions in each individual case. The indication that a child is prepared to digest and assimilate other than liquid food is evidenced by the eruption of six or eight incisor teeth, which according to Rotch probably corresponds to the development of the pancreatic secretion.

The continued use of improper foods for children as a cause of diarrhea I will not enter into, as the paper on Etiology has treated of this cause. I may state my opinion that outside of the mother's milk, cow's milk modified is the best food we can give a child. Dilution of the cow's milk with plain water seems to break up the curd of the milk as completely as any other diluent. Peptonized milk, I believe, will meet certain conditions of the gastro-intestinal canal, but as a regular diet is probably not advisable. Theoretically an infant cannot properly digest starch, and therefore should never receive it; practically we occasionally find a child that does well on some starchy preparation of food. Barley water and oatmeal water are perhaps the best diluents for cow's milk towards the end of the first year. At the beginning of the second year the amylolytic function of the infant has become fully developed, and starchy foods should be added to its diet.

Towards the end of the second year, and from then on, that is—at the period of the eruption of the last teeth of the first set—greater and greater varieties of food must be given, some children doing better on large quantities of starch, and others on larger proportions of proteids. Weak broths, bread and milk, rice, baked white potato, and eggs become the articles of food at this period of the child's existence. Baked apples, or some other thoroughly cooked simple fruit may be added to the infant's diet, especially if it is constipated. It is needless to say that candy and cake, and sweet bits of all kinds should never be given the child even as a taste; though in small

amount they can but do harm, and at best only create an appetite and desire which cannot be satisfied.

In preparing the artificial food of young infants, let me emphasize the necessity for the addition of a slight amount of salt to each feeding.

There seems to be a predisposition to diarrhea in the first two years of life, which lessens as a child grows older. This predisposition of course is the greatest during the summer months; consequently, as can be gathered from the previous portion of this paper, prophylaxis is of the highest importance in the consideration of this condition, namely, diarrhea. Consequently, added to what has been already stated, sterilizing the milk where there is any doubt whatsoever of its purity, and careful care of bottles and nipples of bottle-fed infants cannot be too rigorously insisted upon.

Diarrhea is only a symptom and never a disease. A diarrhea beginning from a dietetic standpoint, the first thing to be noticed is the color and character of the stools. They may be clay colored, due to a diminution in the amount of bile and to undigested fat. A light green color may be due to a change after the feces have been passed; we may find blood, mucus, shreds of membrane, yellowish white lumps seen in undigested feces, and improperly digested proteid material. Of course the color of the discharges may be changed by drugs that have been given. They may become colorless and fluid as water. The odor of the discharges of milk-fed infants is comparatively slight, but is much stronger where starchy and proteid material have been added to its diet, the indication for treatment then being that where the odor is exceedingly bad to withdraw all sugars and proteids and fats. Disturbed bowels arising from intestinal indigestion can mostly be referred to the duodenum. Treatment of course for this condition is simple; that is, the giving of a laxative, and regulating the diet strictly according to age and condition of patient.

Any diarrhea in a young child should call for immediate attention. A simple diarrhea neglected may cause emaciation and a serious condition of the bowels, and a large number of our severe cases of diarrhea in infants come to us after a period of neglect.

Chronic inflammation of the duodenum can only be treated by proper regulation of the diet, proper arrangement of clothing, with considerable warmth to the bowels, and fresh air according to the season.

In any case of diarrhea in an infant the treatment should be a mild cathartic, absolute quiet and rest, withdrawal of all food from twelve to twenty-four hours, depending upon the strength of the patient, giving the child sterilized water, or if we decide that the fermentation or indigestion or irritation is due to proteid decomposition, barley water should be given. How soon we should begin stimulation or medicinal treatment I will leave to the next paper on that subject. Even the use of limewater and its objects, I will not go into.

At birth the meconium is sterile, but infection by the mouth or rectum quickly occurs, and in a short time almost any form of bacteria may be found in the discharges, but chiefly some putrefying forms, such as the proteus vulgaris, according to Jeffries. Soon with the beginning of the milk-diet only two kinds of bacilli are regularly found, the bacillus lactis aerogenes, and Brieger's bacillus, but when the infant begins to take a mixed diet many other bacteria are found in the intestines. (Rotch)*

A diarrhea is often caused by fermentation in the intestines without any particular inflammatory condition. This has been called fermental diarrhea, and includes those diarrheas which are caused by acid fermentation and albuminous decomposition which are produced by micro-organisms, and are probably the cause of a large amount of all diarrheal diseases of young children. Hence the necessity and the advantage, while we are

* See also page 353, N. Y. Med. Jour., March 13, 1897.

treating the condition in the intestines, of preventing by sterilization other bacteria from gaining access to the intestines. It is stated that most of these diarrheas due to bacteria are raised and grow in the decomposition of proteid media; toxins are formed by the development of these micro-organisms in the soil formed by decomposition products adhering to the mucous membrane of the intestines.

While theoretically the administration of so-called bowel-antiseptics is a correct treatment, as a matter of fact it is still a subject of great discussion as to how much antisepsis we cause in the bowels. Consequently, by cleaning out the decomposition material already in the bowels, and preventing the addition of more material to take on decomposition as soon as it meets this media in the bowels for its growth, theoretically should aid in curing the condition. Secondly, we know that the cause of this decomposition with all of its products is chiefly due to proteid decomposition. If we change the diet to a starch diet in these conditions, namely, not conditions of duodenal indigestion, but conditions of fermentation and decomposition in the intestines, we change the media in which these germs are growing to that in which they do not thrive. This is probably the reason that some children with diarrhea do better on such starchy foods as granum for instance, than on milk.

When a child has once had fermental diarrhea in summer it easily recurs, hence the diet should be very carefully regulated for some time.

The advantages derived from careful cleanliness of napkins, changing as soon as soiled, and from properly applied baths, i. e., proper temperature and proper manner of applying them, should never be forgotten.

When we must withhold food for a time on account of a fermental diarrhea, thirst must be allayed by rice water, or barley water, or toast water, or even plain boiled water, all given in small quantity at a time, and if in very small amount cold.

When we begin food it must be milk peptonized, very much diluted, often with lime water added. In beginning food it is best not to feed too often, or to try too many things, and well not to give up a food as improper until a thorough trial has been had.

Diarrheas of young children are most frequently diarrheas of indigestion or of fermentation, hence true cholera infantum is a rare disease, and probably occurs only in the first two years of infant life. In this disease food as such does not digest, and hence should for a time be withheld but fluid must be supplied to the tissues. Washing out of the stomach and intestines is indicated, also warm baths and warm packs, in addition to efficient and quickly acting medicinal treatment.

By ileocolitis is meant an inflammation of the intestines which may be simple, follicular, or membranous.

The treatment as far as food goes, should for the first twenty-four hours be the same as for fermentative diarrhea, viz., complete withdrawal, with boiled water kept sterile, and on the second or third day a sterilized milk in small amount. High injection of plain or medicated water is one of the best treatments, with as soon as possible change of air.

In order to confine myself strictly to my department in this discussion I am afraid that I have had more to do with prophylaxis than with actual treatment of diarrhea, but I may be pardoned when we consider that about three fourths of all deaths of infants under one year occur in the bottle-fed.

MEDICINAL TREATMENT OF DIARRHEA IN YOUNG CHILDREN.

N. R. HOTCHKISS, M. D.

NEW HAVEN.

The medicinal treatment of diarrhea in childhood necessarily brings out the etiological and pathological conditions and for convenience of classification the writer will divide the subject into two classes—first, simple diarrhea; second, inflammatory diarrhea. No disease of childhood exists which requires more prompt and active measures of correction and which left unattended produces, in its ultimate results, danger which so frequently, particularly during the hot months of summer, causes the death rate of the general practitioner to climb upward. While on the other hand if seen early and proper measures are enforced, we have the most satisfactory results that can be gotten in almost any branch of the practice of medicine. We have no disease of childhood where prophylaxis should be so rigidly enforced as in the diarrheal disorders. Mothers are so wont and eager to wean their infants from the breasts and put them on the regular table-fare that they think nothing of the dire results that so often follow their indiscretion and too early indulgence. In the treatment of the first form or simple diarrhea, we have the fundamental principle in the treatment of all diseases; that is, the removal of the cause. Under this head we have in the younger children contaminated milk and later the various improper and indigestible foods and over-feeding which act as the chief etiological factors and these may be influenced more or less by age, season, surroundings, dentition, etc., and the previous condition of the child or mother.

In considering this class of cases we must endeavor to remove as far as possible the predisposing causes. In

the onset of an acute attack described by writers as acute indigestion, vomiting sometimes preceding the diarrheal movements, the administration of all food should be prohibited for a period of twenty-four hours or more, depending upon the symptoms in each individual case.

We should endeavor to clear the entire alimentary tract of all indigested and irritating particles of food by some active cathartic, as castor oil, calomel, rhubarb or saline. Castor-oil is to be preferred. If vomiting be an important factor the application of a mild sinapism over the epigastrium or the frequent internal administration of minute doses of calomel, one or two minim doses of wine of ipecac, or sometimes (advantageously used by the writer) very minute doses of creosote, will usually suffice to permit the use of the cathartic.

When the alimentary tract has been positively emptied the excessive irritation catharsis and pain can be quieted by an opiate which is best administered alone and after each evacuation. But such a time must have elapsed that too much drowsiness will not be produced. The deodorized tincture of opium, or camphorated tincture are preferable. The stronger astringents as kino, catechu, etc., should not be used.

Subnitrate of bismuth in large doses and frequently repeated, best given suspended in sterilized water, is by far the best preparation we have in this line. It acts as a sedative, mild astringent and antiseptic.

When the irritation has subsided the dietetic treatment becomes the most important and should be carefully watched, continuing the use of bismuth and an opiate if necessary until a normal condition is reached.

Should, however, there be a tendency for the diarrhea to become chronic and after a proper consideration of the diet there is still evidence of indigestion by the presence of undigested particles of food in the stools and if the stools are offensive in character, an occasional dose of

castor-oil or two or three grains of calomel will be of decided benefit.

High rectal enemata or flushing out the colon with plain sterilized water of temperature about 100° or sometimes better still a saline solution of the strength of one teaspoonful to a pint of water is of high value. Three or four quarts should be used at each time, the excess passing out by the side of the rectal tube. After the large intestine has been cleansed in this manner a half pint or more of cool water with one or two drams of bismuth in suspension should be injected and left in the bowel. Thirty or forty grains of tannic acid can be used in this manner should bismuth fail. This treatment should be used three or four times a week.

Tonics, the best of which is pure fresh air, are indicated in this stage. The various digestives, assisted by nux vomica or gentian, are also indicated. Alcohol in the form of wine whey tends materially to restore the digestive system to a normal condition.

As we pass on to the second class, that of inflammatory diarrhea, we find the cases which we are usually called to treat, the majority of which have passed from the simple stage into the inflammatory stage. They are referred to by various writers as acute intestinal indigestion, gastro-entero-colitis, milk infection, etc. In this class we usually find our little patients with an elevation of temperature, their vitality shocked more or less according to the intensity of the attack. In this class of cases the milder ones will usually respond to the general treatment designated for those in the simple variety, but more often we find them presenting the graver appearance in these cases. As in the other form we must first totally prohibit the use of anything in the shape of food for a number of hours. Not even sterilized or predigested milk should be used in the commencement of the treatment.

Secondly, we must assist the process of nature in removing as far as possible all irritating substances in the alimentary tract.

During this stage when vomiting is severe and persists and cannot be easily controlled, time should not be lost but the stomach at once washed out, and the large intestine flushed.

Emetics should never be given to very young children in this condition, but if the child be two years old or older draughts of tepid water with subsequent vomiting will frequently suffice. In children under two years old the stomach may be washed with a warm saline solution, f3i to Oi or with sterilized water. If the contents of the stomach are sour it is frequently beneficial to leave in the stomach about ʒii water in which ten grains bicarbonate soda have been dissolved. The same measure of irrigating the bowel with about one gallon of saline solution, ʒi common salt to a gallon of water at a temperature of about 80°, is advised as in the simple variety. Long rectal tubes should be used.

After this, the cool injection of about half a pint of water with ʒi—ʒii bismuth or thirty grains of tannic acid should be used. These stomach and bowel irrigations should be used as often as the vomiting and purging return. That is, two or three times the first day, but afterwards only once daily. Calomel in small doses or as preferred by some in two to five grain doses is given at this stage advantageously for its anti-fermentative action.

If the stomach is not irritable, castor oil is to be preferred. The cathartic is used in order to reach the small intestine which has not been reached by the irrigations.

If there is great vital depression and vomiting has ceased, brandy or whiskey may be given by the mouth or can be given hypodermically. If given by the mouth it is best administered in ice cold water or in ice cold carbonated water. It should be given diluted in six to eight parts of water. Hypodermics of morphia, gr. 1-100 and atropine, gr. 1-800 to a child a year old may be given with decided benefit as a heart stimulant and to quiet action of

the intestines. These can be administered every hour or two until the indications are better, there being a stronger heart, improvement of the nervous system, lessening of vomiting and purging. But under no circumstances should checking of the bowels be attempted until they are clear of all irritating substances. Bismuth, salol, calomel and soda salicylate, are all used with advantage during this stage of the disease for their anti-fermentative and antiseptic properties, but bismuth subnitrate has the advantage that it rarely causes vomiting. Bismuth subgallate in doses of two to four grains every two hours to a child a year old has been used recently rather extensively. The writer's preference is for bismuth subnitrate, about ʒij daily to a child a year old. This can be kept up through out the attack. Calomel in small doses 1-20–1-10 grain every hour or gray powder when the stools are green, are of some utility when used early, but should never be used longer than twenty-four to thirty-six hours. Soda salicylate in two grain doses every two hours to a child a year old should be given dissolved in water after feeding. It should not be used if the stomach is irritable for it may excite vomiting. Its best effects are when the stomach is not irritable and when the diarrhea is quite fluid in character. Salol in one grain doses every two hours to a child of the same age, is an excellent antiseptic. It is said to be decomposed in the stomach into carbolic and salicylic acids. Salol can be used to great advantage, combined with bismuth.

Hydrochloric and lactic acids are used if there is no vomiting and are indicated in later stages and sub-acute cases by brown coating of the tongue and the stools being alkaline in reaction. Alkalies, as lime water, bicarbonate of sodium, magnesium, chalk mixture, are of value in acute cases when there is acid fermentation, gas eructations and where the reaction of the stools is acid. Astringents are of no value and should not be used. They do harm by disturbing the stomach and interfering with digestion.

Opium when improperly used in this stage does more harm than good. It is of use in the early stage, when the alimentary tract has been emptied, as indicated by frequent stools and pain and later during convalescence when paralysis is excited by the mere taking of food into the stomach. It should be used alone and not combined with other drugs. It is contra-indicated when the stools are offensive and should be used cautiously if the temperature is high or if cerebral symptoms exist with scanty discharges. Any of the preparations may be used, as the deodorized tincture or camphorated tincture. Dover's powder is of great utility in small doses frequently repeated.

In extremely prostrated cases mustard baths are of service.

Antipyretics in the treatment of diarrheal disorders are of dangerous utility. No one treatment has secured me such positive results in the treatment of this class of cases as that of cold baths. I have no hesitation in putting a child with a temperature of 104° or 105° in a bath of 85° or 90° and gradually bringing it down to 75° or even to 65°, allowing the patient to remain in the bath for usually about ten minutes, sometimes watching the rectal temperature while in the bath. I invariably find the patient benefited thereby, by seeing the child become quiet. It usually sleeps, vomiting is frequently checked and the bowels are not so irritable. If the rectal temperature is reduced to 101° or under and the extremities are cold, I apply warmth. Ice cloths, ice caps to the head and ice-water injections are valuable adjuncts in the reduction of temperature. When the fluids of the body have been so reduced we can try the injection into the cellular tissue of the abdomen, thighs, or back of a saline solution containing forty-five grains to one pint of sterilized water, using one half of the quantity every twelve hours or oftener if necessary, as advised by some writers. This treatment I have not tried but have no reason to doubt its utility.

The patient should not be put on a milk diet for several days but instead should use such things as whey, albumen water, animal broths, etc., in small quantities at each time. These can be usually commenced after the first twenty-four or thirty-six hours. After the third or fourth day milk diluted with six or seven parts of water to a child under six months of age, using about ℥ss of milk-sugar to each half pint of diluted milk may be found to agree with the stomach. Older children may be given milk diluted according to age, feeding at first in small quantities and at long intervals.

Tonics, as in simple variety, fresh air, bathings, alcohol, nux vomica, gentian, Fowler's solution, iron and sometimes cod-liver oil, all have their uses. Digestives are all indicated, particularly the malt preparations and extract of pancreas given soon after meals. Diarrhea of acute infectious diseases resulting in uremia should not be checked too rapidly. The condition should be carefully noted.

In the treatment of the so-called cholera infantum type of cases, we must not only follow the general principle as laid down in the treatment of the inflammatory variety, but we must recognize that we are not treating alone intestinal inflammation but that there is present a condition of toxemia which produces great cardiac and nervous depression with paralysis of the vaso-motor nerves of the intestines.

The main indications for treatment are—to epitomize:

First, empty the stomach and intestines.

Second, neutralize the depressing effect on the heart and nervous system.

Third, replace in the blood the fluids that have been drained out by discharges.

Fourth, reduce the temperature.

Fifth, treat the special symptoms as they arise.

COW'S MILK IN INFANT FEEDING.

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The first year of childhood, often for purposes of study arbitrarily named the first nutrient period, presents to the student of medicine many complex, interesting and important problems—the study of the young child, suddenly launched into a new life, forced to accommodate itself to a new and independent existence, developing by various transitory stages from a weak, puny, helpless infant, delicate in organism, to the adult man, that perfect creation of mind and body. To us, as physicians, is intrusted the important office of guiding the growth of the child, as it passes through its developmental stages, that in its growth it may retain, or acquire, the priceless boon given mankind, namely, good health.

As a factor in the growth and general well-being of the child, food occupies a most important position and it seems appropriate, at this time, to present for your consideration, the subject of cow's milk in infant feeding. The writer cannot hope to prepare an exhaustive treatise on such an extensive and varied topic, but rather to touch upon a few of the many difficulties with which we have to contend. All authors agree that cow's milk, which is now universally accepted as the best substitute for maternal milk, must be modified to more closely resemble nature's product. A comparison of the analysis of cow's milk and woman's milk will demonstrate the difficulties to be overcome in arranging a diet of cow's milk for a young child. Leed's analyses give 4.01 fat and 2.06 albumenoids in woman's milk and 3.75 fat and 3.42 albumenoids in cow's milk. Other observers give even a higher percentage of albumenoids in cow's milk. The difficulty, outside of the laboratory, is to dilute the proteids and still retain

the fats at a proper standard compared with woman's milk. The acid reaction of cow's milk also presents difficulties. Woman's milk is almost uniformly alkaline. If not, it should not be used (Rotch). Cow's milk, as usually received twenty-four hours after milking, is quite acid and I believe just as much is due to this fact as to the proportion of proteids present.

Milk, as drawn from the breast by the child, is sterile. The nicety of mechanism of the breast in performing its functions allows of no possibility of fermentation before the milk enters the infant's mouth and as the gland collapses as it is gradually emptied, a vacum is avoided. If however, milk is exposed to the air, bacteria multiply very rapidly by the hundreds and thousands and in time, shorter in summer than in winter, increase to such proportions that fermentation occurs, lactic and butyric acids are formed and the milk sours. Milk twenty-four hours old is an entirely different substance from that perfectly fresh. Originally not harmful, as attested in some countries where children are nursed directly from the cow, milk becomes by natural changes, if allowed to occur, a rank poison.

It has been found by experiment that if milk, immediately after being drawn from the cow, is cooled to 40° F. all bacteria growth is at once arrested and remains so if the milk be kept at a low temperature. With our present manner of handling milk in the dairy, unless absolute cleanliness is observed about the barn, cow and hands and clothing of the milker, it is impossible to get a thoroughly sterile milk. Some microbes develop very rapidly, doubling in twenty minutes, while others require a longer time. But that cooling rapidly is effective is fully proven by an experiment at the Yale Agricultural Experiment Station. Two cultures were made on gelatin plates; one of milk cooled to 40° and the other perfectly natural milk, with all its gases and animal heat retained. The first plate, after sufficient exposure, gave only twelve colonies while the second contained thousands.

In experiments to determine the size of the curd of cow's milk as compared with the curd of woman's milk, it is noticed that the precipitate, obtained by the addition of acid to cow's milk is tough and hard, while the curd of woman's milk is soft and flocculent and of smaller size than cow's milk. I believe this great difference is due principally to the fact that an acid fermentation is present in cow's milk, from the bacteria present, which is absent in woman's milk. The curd is by comparison larger in cow's milk than in woman's milk, but it does not seem possible that, in its normal state as received by the young animal, it would precipitate in the tough, hard mass seen when acid is added in a test-tube.

To determine this fact, I undertook a series of experiments and in every case it was noticed that the curd was smallest when the milk had not undergone an acid fermentation. Hydrochloric acid was added to the milk, first in a weak solution gradually, and then to a similar specimen of milk, pure acid was added quickly.

Experiment No. 1. Milk four drams, water eight, representing the quantity for a child two or three weeks old. Reaction, slightly acid. Heated to 100° F. and on adding acid, the curd was precipitated in fine flakes.

No. 2. Whole milk, acid. Treated in the same manner, precipitated in tough, hard masses as when milk has soured in summer.

No. 3. Same quantity of milk and water. Treated with a weak solution of hydrochloric acid, .02 per cent. as represented in normal gastric juice (Schmidt). Acid added slowly and curd fine as in No. 1.

No. 4. Whole milk with weak solution of acid added slowly, precipitated in small particles suspended in the milk. On separating the fluid from the curd and comparing the precipitates it was noticed that while No. 4 gave more in quantity, the curd was composed of soft, easily broken bodies about the size of No. 1.

No. 5. Pasteurized milk. Diluted one fourth and

heated to 100° F. Slightly acid. Diluted and tested with strong acid, curd finer than Nos. 1, 2, 3, and 4.

No. 6. Whole milk, with strong acid, required twice the quantity of acid used in No. 2 and the curd finer than Nos. 1 and 2.

No. 7. Milk diluted one fourth: With dilute acid added slowly, the curd finest of all specimens so far examined.

No. 8. Whole milk tested with dilute acid. Curd finer than Nos. 1 and 2.

Pasteurized milk, tested with strong acid, does not give the tough curd noticed in whole raw milk. The curd resembles more that obtained in diluting ordinary milk.

Aerated milk. Tested eight hours after being received from delivery wagon. Very slightly acid.

No. 9. Milk diluted one fourth. Temperature, 100° F. Tested only with full strength acid. Required more acid to cause precipitate than any diluted specimen examined. Curd very fine, resembling human milk-curd.

No. 10. Whole milk, with strong acid precipitated a curd as fine as any diluted specimen except No. 9. Required four times the quantity of acid to precipitate as did ordinary morning's milk received at the home about the same time.

Lehman has noticed, when woman's milk is tested after standing some time, the curd is heavier and more solid than when precipitated immediately after being drawn from the breast. Cow's milk twenty-four hours old will react to less acid and more quickly than new milk. Milk curdles more quickly and the curd is heavier when acid is added quickly than in adding the same quantity of acid gradually.

Applying these facts to the action of the gastric juice in a child's stomach, I think we are justified in believing a similar precipitate would occur. A milk which has undergone a partial acid fermentation, and is of a decidedly acid reaction, coming in contact with the acid of

the stomach, we should expect a tough precipitate as noticed in the test-tube: whereas, a perfectly fresh milk not containing an excess of acid or a diluted milk when the acid is also diluted, would precipitate a finer and softer curd than would Experiment 2.

While we cannot apply, absolutely, a chemical action in a test-tube, to the action of the normal secretions in the stomach I believe it is evident that an excess of acid, that is, the acid of the milk plus the acid secretions, would produce a different chemical action than if the gradually (Dalton) secreted gastric juice alone caused the precipitate.

From these experiments then, it would seem that when measures have been employed to lessen the fermentation of milk, the curd is entirely different from ordinary milk as obtained from the cart and further, it will be noticed, when the milk has been aerated, immediately after milking, the curd is finer than pasteurized milk where the effort is made to check fermentation after it has already begun.

Babies, as a rule, are able to digest a stronger milk in winter, when there are fewer germs, than in summer and a case seen during the past season would illustrate that fact. A baby six months old, was taking cow's milk diluted one half. It was the custom of the mother to pasteurize a fresh supply in the evening for the baby's use during the night. The baby did not nurse more than twice. The milk was heated in separate bottles submerged in hot water and then cooled and the bottles wrapped in a light woolen blanket and kept at the foot of the bed—a most convenient, if not entirely scientific, method of preserving milk. This did very well during the cold months, but as the weather became warmer, the habit had to be discontinued and the milk kept on ice and heated as required. Almost the first warm night, the baby after taking his milk as usual, was taken sick and vomited thick, hard masses of sour curd. Exactly the same milk was

used and on investigation I could find no reason, either in the cow or its food, so was satisfied to ascribe the trouble to a fermentation which had occurred on account of the heat in the room. The dilution of milk with lime-water or attenuants, which has for years been generally practiced with good results, undoubtedly acts by neutralizing the acid of fermentation, so that an excess of acids is prevented.

I have alluded to the contamination of the milk in the barn and have demonstrated that milk may be practically sterile. There yet remains the transporting of the milk to the consumer and a phase of the subject, not often alluded to, the preservation of the milk in its purity in the home where it is to be used.

Many dairymen now employ glass bottles, with a metallic or ligneous cap, and if the bottles are properly washed before the milk is put into them, the plan is an excellent one and should be made compulsory. Milk properly strained, cooled and bottled, kept at a low temperature in the house and exposed no more than absolutely necessary, will keep sweet twenty-four hours. Instead of this, consider for a moment our present methods. The milk put into large cans, carted about the city here, there and everywhere, in the dust and dirt of the business quarter, and the hot, close, unhealthy atmosphere of the tenement districts; uncovered and exposed at each stopping place; the milk poured into a pitcher, possibly not overclean and then perhaps left on the door-step until the cook has time to get it, or kept in the pantry or on the window sill in the sun. Given a milk, declared by competent authority to be germ free or even free of tuberculosis as it leaves the barn, how long, think you, will it remain so ?

If we could have at hand a pure milk, cooled, bottled and kept cool, I believe our results in infant feeding would be better than they now are. The fact that there is a chemical and physical difference between human and cow's milk, is not the only difficulty. A child may to a

certain extent adapt itself to a slight chemical difference, and we have repeatedly seen a child do well on its mother's milk, when that milk analyzed would fall far below the average of human milk. Adriance (Archives of Pediatrics) gives analyses of several specimens of milk, which compared with the normal standard, would be considered abnormal and yet the babies were gaining in weight and appeared healthy.

The personal idiosyncrasy of the child is an important factor and when a child thrives on a milk of unusual percentages of fats and proteids, it does so because the milk is good for that particular infant. I would not discourage the chemical examination of milk in arranging a diet for a child, but I would emphasize the importance of having a good milk. Of what use is the fact that we have the proper percentage of the several constituents of breast-milk, if that milk is also loaded with the germs of fermentation? We cannot always be sure of our exact chemical relations; we can be and should be absolutely certain that the milk is good and pure.

The particular aerated milk, employed in the experiment, was delivered in bottles, early in the morning and its production was a matter of thought and care in every detail. Even with milk, produced and preserved under the most favorable conditions, dilution could not be entirely abolished; the natural size of the particles would prevent that, but the milk could be given stronger and so, much trouble from too little fat would be overcome.

Budin, by means of sterilization with Soxlet's apparatus,is enabled to give whole milk to even very young children,by giving only such quantity, as the stomach will easily tolerate.This,although sterilized milk is now no longer used as a continued diet, emphasizes the fact that many of the difficulties in infant feeding are due to conditions favoring an acid fermentation of the milk employed. That milk should ferment, on exposure, is entirely consistent with our present knowledge of the germ-theory of sup-

puration and fermentation in wounds. Exactly the same principles apply to milk as to any tissue of the body. To-day a surgeon, who undertakes an operation of almost any grade and neglects the principles of asepsis or antisepsis would be considered behind the age if not criminally liable. That the influence of bacteria on healthy tissue is understood and appreciated, it is only necessary to witness the technique of a modern scientific operation to realize that no detail is too trivial which will the more effectually prevent infection of the wound. Surely we cannot plead ignorance in neglecting this important question of the proper care and management of milk especially designed for infants and invalids.

As one carefully considers this subject of cow's milk in infant feeding and realizes the close intimacy of the mortuary statistics with the milk question, the desire for good milk becomes intensified, particularly when we contemplate the misery and sickness directly traceable to poisoned milk and are confronted with the fact that artificial feeding is on the increase.

That a large part of the mortality in cities is traceable to cow's milk is proven by statistics. Dr. Coit, in a paper on the "Causation of Disease by Milk," says:

"It is claimed that twenty per cent. of all who are born to man in large centers of population, die during the so-called nursing period. That nearly thirty per cent. of all deaths in many large cities from all causes and in all periods of life are infants of the first year, due to a lack of physical resistance in city children resulting from a want of suitable food. That it has been claimed that sixty per cent. of children, hand-fed during infancy, perish before they are five years of age. That the mortality from nutritional disorders, directly or indirectly, during the first year comprises nearly ninety per cent. of the whole. That so-called cholera infantum and the summer diarrheas among children are now regarded by authorities to be largely due to milk infection."

It is an encouraging sign of progress however, that the efforts of such men as Coit, Rotch, Snow, Vanghan, Leeds, and others are bearing fruit, as evidenced by the number of certified milk farms now in active and successful operation in various cities of this country, under the direct supervision of a commission of physician, chemist, bacteriologist and veteriny surgeon. And that their efforts are entirely successful is proven by a case reported in a recent article received from Dr. Coit in answer to a question asked by the writer:

"A Newark physician desired to have a baby supplied with fresh milk during an ocean voyage. Accordingly on May eleventh, he ordered twelve bottles delivered on board a steamer. With these he sent twelve other bottles, asking the steward to keep them on ice till the steamer should return to New York. This was done, and on May thirty-first they were handed over to a member of the commission. One bottle was opened and the milk found to be sweet. Other bottles were sent to the chemist and bacteriologist and found to be in a remarkable state of preservation. Three days later, when the milk was twenty-four days old, it was tasted by a number of physicians and found to be perfectly sweet." Such results cannot be passed over lightly. They emphasize the importance of the cleanliness in detail, exercised at a certified milk farm, in the production of a milk for infant feeding. I would that such farms were more general.

DR. EDWARD JENNER AND HIS GREAT WORK.

R. S. GOODWIN, M.D.

THOMASTON.

There can be no more fitting time for us to honor the name of Edward Jenner—to study his life and character, and to find inspiration in his genius than on this, the centennial year of his great discovery of the protective value of vaccination.

I have been requested therefore by our esteemed President, to present to you at * this time a brief sketch of the life of Jenner, and to emphasize some of the prominent traits of his character.

In looking up the literature of the subject, including several recent addresses made before medical societies, I find that Dr. Baron's "Life of Jenner" has been almost the sole source of information; and to this excellent authority, I in turn, desire to acknowledge my indebtedness.

Edward Jenner, the discoverer of vaccination, was born at Berkely, England, May 17th, 1749. His father who was a clergyman, died when Edward was very young, and he was tenderly brought up by an older brother, Rev. Stephen Jenner, who had him educated in the local schools. Jenner was not a college-bred man, a circumstance which prevented him in later life, after he had won fame, from being elected a member of the College of Physicians. That learned body decided that he could not be admitted without undergoing an examination in the classics. This he could not do, and so he was kept out, though subsequently he found himself elected to membership in nearly all the scientific societies in Europe.

Jenner began the study of medicine under Mr. Ludlow, a surgeon of Sodbury, a small country town near Bristol.

* Read before the Litchfield County Medical Association in recognition of the centennial of Dr. Jenner's discovery.

It was during this apprenticeship, that he conceived the idea that an antagonism existed between cow pox and small pox, of such a nature that the one could be made a preventive of the other. After thirty years of patient investigation and careful experimentation, he proved the truth of this idea, which he got from the commou people. Other surgeons, of greater prominence than he, laughed at it as a vagary.

Thus, it is seen that at an early age, Jenner had that courage of his convictions, untiring industry and persistency in research, which are invaluable in the accomplishment of great thiugs.

After seven years of apprenticeship, when he was twenty-one, he became a pupil of the celebrated John Hunter, of London, with whom he lived for two years and prosecuted his medical studies. He could not have had a better preceptor than Hunter, who was easily the foremost man of medical science in all England at that time, and numbered among his house pupils such names as Guy, Physick of Philadelphia, Kingston and Hume, and among his hospital pupils, Abernethy, Cline, Earle and Sir Astley Cooper. All of these caught the spirit of Hunter's wonderful enthusiasm and exemplified in their lives and high reputations, the value of his personal influence and teaching.

At Hunter's suggestion, Sir Joseph Banks employed Jenner to arrange and prepare some valuable zoölogical specimens which he had brought back with him from Captain Cook's first voyage.

Jenner was a great lover of natural history and entered upon this work with such an interest and completed it in such a satisfactory manner that he was offered the post of naturalist in the second expedition. This he did not accept, but preferred to commence the practice of medicine in the little country town where he was born.

While here, he kept up a correspondence with his old preceptor, Hunter, under whose direction he did consid-

erable biological work. He investigated the habits of animals, particularly those of the hedge-hog and the cuckoo; and wrote papers on the subject which were laid before the Royal Society and published in the Philosophical Transactions. He was a proficient student in geology and meteorology. He collected fossils from the neighboring strata and constructed the first balloon ever seen in Berkely.

In 1792, he received the degree of Doctor of Medicine from St. Andrew's College, and thereafter settled down more assiduously to the practice of medicine in his chosen field.

But during these years, the idea of his great discovery was assuming form, magnitude and maturity in his mind. It possessed him by day and by night and compassed him round and about in every place and at all times. The destiny of discovery impelled him as if with unseen force against all obstacles, to persevere in the accomplishment of his mission.

In his youth, he became convinced from observation that there was a rational foundation for the belief in the protective value of cow pox. He believed that the milkmaids who had contracted genuine cow pox sores from the cow's udder were thereby protected against small pox. This idea dominated his whole soul and life and he was determined to dèmonstrate its truth to the world. He frequently mentioned his views to Hunter, but was not discouraged by Hunter's disbelief. Many of his professional brethren either scoffed at his doctrine or passed it by with indifference. Even this did not deter him from his purpose.

He appeared to his cotemporaries as a visionary, and as an "essence of moonbeams." But his was a colossal soul, whose genius was to penetrate the science of his times with a nobler science—that of preventive medicine; a plant of vigorous growth and great promise now, but utterly incomprehensible to the men of Jenner's time. He

requires the perspective of a century to be seen to advantage. Dr. Pepper, in a masterly address delivered before the Kings' County Medical Society on the fourteenth of May, said: "Too much attention cannot be paid by us to the work of Jenner. Very few of us have the desirable amount of knowledge concerning Jenner's life as a man and an original investigator and his immortal discovery. To him is due that extreme and rare credit of having devised the incalculably valuable scheme of close and patient observation, without which great discoveries in the realm of science are a hopeless dream."

Dr. Welch on the same occasion characterized the discoverer of vaccine as "a thoroughly trained scientfic man. He knew pathology and knew it well. His investigations were entirely of a scientific character, and no man in medicine has been less selfish in his work." Jenner's method was by experimental inquiry. "All of our great discoveries in medicine rest upon the same methods. Dr. Pasteur whose great discoveries in our own time have electrified the world, gives full credit to Jenner as the source of his inspiration. There has never been a time in which great discoveries in medical science have been possible except through the agency of experimentation."

In the analysis of Jenner's character as represented to us by his chosen and intelligent biographer, Dr. Baron, we find three remarkable traits which seem to have developed into unusual prominence.

That which I would place first as being most important to success was his great capacity for work—the patient, untiring work of investigation. As Cecil said of Sir Walter Raleigh, "He could toil terribly."

As a boy, he could not amuse himself with sports, but went grubbing into mines and mountains, prying into geology, chemistry and physiology to find food for the activities of his versatile brain.

In 1775 he first began to investigate the subject which was to make his name immortal. Five years elapsed before he could clear away the many perplexing difficulties.

He first demonstrated that different forms of disease had been called cow pox, only one of which was protective against small pox. He separated and described each, and thus accounted for the many failures that had shaken the faith of the skeptics in the profession.

In 1788 he carried a drawing of a genuine cow pox sore as it appeared on the hand of a milk-maid, to London and showed it to Sir E. Hume and to others. But it was regarded merely as a curiosity of no practical importance.

At last, after years of patient, scientific experimentation, the opportunity came to Jenner, for which he had for so long a time waited. On the fourteenth of May, 1796, he was able to take the lymph from a genuine cow pox pustule on the hand of Sarah Nelmes, and introduce it into the arm of James Phipps, a boy of eight. The vaccine disease was successfully produced, the sore resembling those of small pox. On the first of the following July, the boy was inoculated with variolous matter, but as Jenner had foretold, no small pox followed. This completed the discovery. Soon afterwards he prepared a pamphlet announcing his discovery to the world, but hesitated about publishing it until he had had a fuller opportunity to repeat his experiments. Not finding such opportunity in the country he went to London, where he remained two or three months without finding any person who would submit to vaccination. But he left with Mr. Cline of St. Thomas Hospital a supply of vaccine lymph before returning to his country home.

That celebrated London surgeon being impressed with the possible value of the discovery, soon found an opportunity to test it. He inserted some of it under the skin near the hip joint of a boy who had hip disease. It was done ostensibly to produce counter irritation, but really to test Jenner's discovery.

After the effects of the vaccination had subsided, the boy was inoculated with lymph from small pox sores without producing the disease.

Mr. Cline became immediately a champion of Jenner and an active advocate of the value of vaccination. After this incident, Jenner no longer found any difficulty in getting physicians to test the value of his discovery on their patients.

In less than twelve months, seventy-three of the most eminent doctors in London signed a paper endorsing Jenner and his discovery. At the same time it was introduced into this country by Dr. Waterhouse of Cambridge, Mass., who vaccinated members of his own family, and soon the practice spread over the United States.

Dr. Carro of Vienna introduced it into Europe, where it was welcomed by both physicians and laity. But, as is usual in such cases, vaccination did not make headway without opposition. Two noisy and troublesome parties arose in England, the one opposed to it wholly as a health practice, the other entering into it as a speculation and setting themselves up as experts without experience or knowledge of the matter. The latter damaged the cause more than the former by their self-seeking advocacy. Among them was one Dr. Pearson who lectured on the subject and supplied the virus without ever having seen a case of cow pox. He distributed some lymph infected with variolous matter and caused thereby mild cases of small pox. Jenner went to London and explained the matter satisfactorily, and was able through influential friends to thwart Dr. Pearson's designs of monopolizing the business, which he intended to build up on a false basis and with erroneous views.

Jenner was soon flooded with correspondence from all quarters, to such an extent that he was forced to become, as he tersely expressed it, the "Vaccine Clerk of the World." But he cheerfully assumed this task and performed its labors with that untiring and cheerful spirit of industry which characterizes his entire career.

Another trait of character which endears Jenner to us as a man, is his large-heartedness and the noble spirit of be-

nevolence and philanthropy which marks all of his deeds. He inherited moral and religious instincts from his parents. He was brought up with a reverence for the humane virtues and in a delightful atmosphere of social and domestic happiness. It is quite evident that his unselfish desire to prevent human suffering and to relieve pain, was a greater inspiration to him in his work than a mere passion for scientific research, or desire for fame as a medical discoverer. He says in a letter to a friend, "While the vaccine discovery was progressive, the joy I felt at the prospect before me of being the instrument destined to take away from the world one of its greatest calamities, blended with the fond hope of enjoying independence and domestic peace and happiness, was often so excessive that in pursuing my favorite subject among the meadows I have sometimes found myself in a kind of reverie. It is pleasant to me to recollect that these reflections always ended in devout acknowledgments to that Being from whom this and all other mercies flow." If it be true that no fame is lasting unless founded on labors which promote the happiness of mankind, then the name of Jenner must live in the grateful memory of men so long as the reproduction of the human race on earth shall continue.

But Jenner did not seek fame. If that had been his ambition, he would have quitted his native town, when temptingly besought to do so, for a permanent residence in London where wealth, position, fame and honor awaited him. He said, "As for fame, what is it? A gilded butt, forever pierced by the arrows of malignancy."

He preferred rather the quietude and loveliness of his native groves and meadows, and the serene enjoyment to be found in the retirement of his charming Gloucester County home. His intense love of nature in all her harmony and beneficence, was his master passion which deepened as the shadows of declining days fell upon him.

No medical discoverer in all the line of the world's pro-

gress, has ever acquitted himself more creditably than Jenner. He needs no monument to perpetuate his fame.

As I wandered the other day through the stately aisles and storied naves of Westminster Abbey, my eye rested with pleasure on the deftly sculptured monuments, and imperishable bronze tablets, erected to commemorate the achievements and lofty human endeavors of great men.

And I thought, as I stood in that silent place, occupied with memories of the past, that if England should ever see fit to honor genius in medical science, as she has honored genius in war, statesmanship, philanthropy, literature, poetry, art, patriotism and music, then Edward Jenner ought to be the very first to have a monument erected as a visible token of a nation's generous appreciation of his great work.

SERUM-THERAPY AS APPLIED TO DIPHTHERIA.

FRANK W. WRIGHT, M.D.

NEW HAVEN.

It is now generally recognized that certain diseases are due to specific micro-organisms or germs. It is also very generally conceded that by destroying these germs or the poison produced by them, it is possible to prevent or even to cure these diseases. The experiments within the past few years of attempting to find immunizing agents against these maladies, have demonstrated that it is highly probable that the future treatment both prophylactic and curative of most of the diseases, if not all, which are due to specific organisms, will be by a serum possessing either bactericidal or antitoxic properties sufficient to overcome the virulence of the attack for which it is given.

The first to show the immunizing power of attenuated cultures of specific organisms was the great investigator, Pasteur, who in 1880 demonstrated that the attenuated culture of the microbe of chicken cholera, if injected into animals, produced mild attacks of septicemia which rendered them immune from a second attack. Since that time some of the ablest scientists and laboratory workers of the world have contributed much labor and thought in their endeavors to produce by attenuated but gradually increasing injections of toxins, animal serums which will either kill the bacteria or neutralize their poisons, or both. The diseases that have received the most attention are tuberculosis, cholera, typhoid fever, pneumonia, rabies, syphilis, small pox, the venom of snakes, tetanus, diphtheria, and those probably due to or at least complicated by streptococci, such as puerperal fever, erysipelas and scarlet fever. Only two antitoxins, those of tetanus and diphtheria, have been so far perfected as to warrant their general use as curative or prophylactic remedies.

Dr. Charles T. McClintock of Michigan, in an article read before his State Medical Society and published in the journal of the American Medical Association, July 4, 1896, offers the theory that the reason for the unsatisfactory results in all but two diseases is, that the bacteria causing these complaints, though much fewer in number, throw off a vastly more virulent poison; so much so that every tissue of the body feels the harmful effect, death being caused by toxemia; while in the other diseases enumerated, especially tuberculosis, the micro-organisms themselves kill by invading and destroying the tissues. He states that at the lowest estimate the toxin of tetanus is ten thousand times as strong as that obtained from the tubercle germ. By this theory it will be seen that for the cure of diphtheria and tetanus, an antitoxin is needed, but for tuberculosis and other germ-diseases a germicide is required.

The writer's experience in serum-therapy has been confined exclusively to the use of the anti-diphtheritic serum. He has had the opportunity to observe the action of this form of treatment in over one hundred and sixty instances. His observation leads him to believe that the use of antitoxin serum for diphtheria as a curative agent possesses much merit and is probably more of a specific for this dreadful disease than any other remedy that has ever been presented to the medical profession. Yet he is convinced that much is yet to be learned in regard to its use and action. That there are undoubtedly many cases of this disease that would recover with practically no treatment is certain; but the experience of all of us has taught us that diphtheria is a most treacherous disease. If this is the case, are we justified in leaving untried in even the mildest case any remedy that has given such universal satisfaction as has the anti-diphtheritic serum? It is also certain that this form of treatment should be administered as judiciously and with as great care as any of our most dangerous drugs. The assump-

tion that it can be given to any and all, with disregard for age, severity and duration of infection, etc., with impunity, is in my opinion erroneous. In giving any medicinal treatment one would take into consideration the demands of all the symptoms; why then in the use of this most powerful remedy is it not logical that the same or more discretion should be exercised? The best results are as a rule attained if it is administered in the early course of the disease, but often it is of great benefit if it is given as late as the fourth or fifth day or even later. It must be borne in mind that different persons possess greater or less power to resist the virulence of the poison of diphtheria. There is in the blood of certain persons a natural antitoxin and the amount naturally varies in different persons. To my mind this explains why some contract the malady with but slight exposure while others with constant exposure do not take it. The Klebs-Loeffler bacilli have even been found in great numbers in the throats of persons who exhibited no symptoms of the disease while those coming in contact with them have contracted it.

To demonstrate both the power to resist the toxic effect of the poison and the efficacy of antitoxin serum even in old cases, allow me to cite the case of Clara ——, age three years, seen with Dr. N. R. Hotchkiss of New Haven. At the time I first saw her she had had for three weeks a large, persistent exudation upon the left tonsil. The clinical proof that this was diphtheria was that there was great infiltration of the cervical glands, paralysis of the muscles of articulation, feeble pulse and low fever. Two injections of antitoxin were given about forty-eight hours apart. Within two days the membrane began to gradually melt away and the general condition improve, with the result that the child ultimately recovered, but convalescence was slow. Even in laryngeal cases where the stenosis is so great that life is despaired of, it sometimes happens that the benefit is manifest before the obstruc-

tion is complete or the patient too much exhausted to recover. In such cases intubation may give a new lease of life until the remedy accomplishes the desired result. As stated previously, in the opinion of the writer it is as a rule safer to give a moderate amount of the antitoxin even in mild cases of diphtheria than to wait until the indications for its use are imperative. The benefit of the remedy is slow and if there is much delay frequently the want of prompt action is dangerous to the patient. I am accustomed to consider one thousand antitoxin units an average for children from three to five years of age, this amount to be increased or diminished according to the age and urgency of the symptoms.

Unfortunately it is very difficult to determine the amount of poison that has been absorbed and we may find frequently after administering the remedy and before its beneficial action can be demonstrated that the amount has been too small. This would be indicated by the membrane extending, the nasal discharge increasing, infiltration of the cervical tissues, or indications of heart-failure. In such a case it is proper to repeat the injection. This can be done at any time after the reaction from the first administration is passed which is usually from six to twelve hours. It is seldom necessary to give more than 1,500 units at the first injection. The most that I have ever used at first was two thousand antitoxin units, yet some do not hesitate to give more. My experience leads me to believe that two thousand units in divided injections from twelve to twenty-four hours apart, if used within forty-eight hours of the inception of the disease, is all that is necessary. It is not infrequent that the complaint is of much longer duration before the advice of the physician is sought. If such be the case it is absolutely necessary that the amount be larger than when given early and that the prognosis is less favorable with every hour of delay.

When the antitoxin begins to get control of the disease, the rapidity with which the patient is raised from a most alarming condition to one of comparative safety is very gratifying; the membrane melts rapidly, the nasal discharge decreases, infiltration of tissues is lessened, the heart's action is strengthened and the whole condition is improved. In those cases that do not recover, if the patient lives for twenty-four or more hours after the administration of the remedy, its influence can be seen upon most of the unfavorable symptoms. These cases at first generally show an improvement of all the symptoms except the action of the heart, and death is usually caused by extreme virulence of the disease. In unfavorable cases life is usually prolonged.

The sequelæ and complications, whether due to the disease or remedy, according to the frequency of occurrence, are urticaria or erythema, partial paralysis, broncho pneumonia and nephritis. I believe the urticaria is produced by the introduction into the blood of the horse serum, as I have observed less of it since I have been using an antitoxin serum containing a much greater number of antitoxin units per cubic centimeter, whereas when I used a preparation that required a much larger quantity of serum, the lesion was almost constant. Paralysis of the muscles of articulation I have seen much oftener than before I used the serum. Whether or not this is due to the antitoxin or to the fact that I have seen and closely observed more cases of diphtheria than formerly, I know not. I have seen nothing to lead me to believe that broncho pneumonia or nephritis is more common after this treatment than under other treatments, both being not an infrequent occurrence either as a complication or sequela without antitoxin.

I have frequently noticed after severe cases when a large quantity of the antitoxin has been used, that although the change from a very alarming condition to one

of comparative safety is very rapid, the convalescence is very slow; it sometimes taking weeks to regain the customary strength and vigor. That convalescence is delayed by antitoxin is hardly probable. I believe these cases are such as with other treatment died, while milder ones got well and were restored to their usual strength in a shorter time. Now in certain of these patients who would have died under the old form of treatment the antitoxin neutralizes the poison in the system but does not repair the injury to the constitution, which in most severe cases is very great; hence, it is necessary by a long and tedious course of tonics to regain the strength lost.

The writers upon antitoxin serum and its use have had but little to say about the different makes and strengths of this remedy. Many physicians are accustomed to consider a certain quantity of antitoxin as a dose, not taking into consideration the many strengths made by many producers. Those made by Behring and Roux have probably been as extensively used as any and for a long time their preparations were the best that could be procured. Now there can be obtained an article of American production as good, or even better than the imported, and much fresher. I have used mostly that manufactured by Gibier of the Pasteur Institute of New York and the New York Board of Health. According to the bulletin of the Massachusetts State Board of Health of last March, examinations of the antitoxins made by several producers were tested and the results published, that made by Mulford & Company, Parke, Davis & Company and Behring containing the number of antitoxin units stated upon the bottle. That made by Roux did not contain quite the number of units stated. The label upon the bottle claimed that the vial contained six hundred units while the test showed only five hundred. That made by Gibier did not contain by a considerable, the number of units stated

upon the bottle. Others that have tested this make, find that it does sometimes come up to its claims.

I must say that I have used a large quantity of Gibier's antitoxin and have had excellent results from its use. I only discontinued its use on account of the large quantity required which I believed to be responsible for the reactionary symptoms and the subsequent skin lesions.

SOURCES OF INFECTION OF THE TUBERCLE BACILLI—HEREDITY.

F. M. TUKEY,

BRIDGEPORT.

Tubercle bacilli, like the poor, are always with us, no part of the known world where large numbers of people are collected together being exempt from them. Perhaps the best idea of the enormous sanitary importance of the subject is obtained from statistics, and the post-mortem table, which show that one seventh of all deaths are due to tuberculosis. If one tenth as many lives were lost from any other cause, the nations would be up in arms. Why is it that this disease is so fatal to the human race and some animals, if, as we all admit, it can be prevented ?

Is it because people have been grossly and criminally careless in their hygiene and the care of those who suffer from this widespread malady, or are the sources of infection more numerous and prolific than we are accustomed to suppose, that we are forced to accept as facts, such startling figures as those given above ?

Has proper consideration been given to preventing the spread of the bacillus ?

"A consumptive," says Heller, "may expectorate 7,200 millions of bacilli in a day; if these can be destroyed, tuberculosis will cease to exist." Yet the last report of the New York Health Board shows that from failure to properly dispose of the sputum of consumptives from thirty to fifty per cent of the inhabitants of that city daily become infected by tuberculosis, and of these about one half later die from the disease.

This surely doesn't look as if the tubercle bacilli were being destroyed, or that the doctors were doing their duty, following the advice of Heller, in instructing patients as

to the care of their sputa. Are not these instructions a prominent and important part of treatment? I lay no claim either to originality or to the discovery of startling facts, in this paper, having quoted freely from such authors as I found available. Whether the tubercle bacilli can cause distinct inflammatory changes without the formation of tuberculous tissue is uncertain; however, there is often seen suppuration where careful examination of the pus reveals tubercle bacilli as the only organism.

The kind of tuberculous lesion which will be produced by the bacilli depends then on a number of different circumstances:

First, the way in which these bacilli enter the tissues.

Second, the anatomical structure of the tissues, some tissues being more favorable than others for the development of bacilli.

The different tissues of an individual, the tissues of different individuals, the unlike degrees of resistance to the organism itself, may and do vary in different people.

It has been found by inoculating the eye of an animal, that the bacillus advances into the surrounding lymphatics, thence to the nearest lymph glands, and produces lesions.

Probably none of the bacilli pass directly through the gland with the lymphatic streams. This avails the animal little, because the first gland forms a focus from which infection extends to the neighboring glands.

Thus a chain of tuberculous lymphatic glands is formed which finally extends to the thoracic duct.

The bacilli are then carried by the blood-circulation to the various organs. Nevertheless these lymphatic glands by retarding the advance, and by aiding somewhat in the destruction of the bacilli, exert a protective influence. At the same time, all pathologists agree that tuberculosis can be present without the existence of the tubercle; and

this fact has been carefully demonstrated by Birch-Hirschfeld, when he infected the guinea-pig with the viscera, not itself tuberculous, of a baby born of a phthisical parent.

In natural infection, as we see it in man, the tubercle bacilli enter the economy in a number of ways; they can pass into the tissues with the production of few or no lesions at the point of entry—a concealed or glandular tuberculosis, as it occurs in children or youths at the age of puberty. This variety of the disease is no doubt curable, and when recovered from affords immunity against pulmonary tuberculosis later in life.

It is probable also that the virus in children frequently enters by the mouth, and is carried to the neighboring lymphatic glands.

The respiratory apparatus may be a point of entry, the lungs in a great majority of cases showing the tuberculous lesions most markedly. Lymph glands, so commonly the earliest point of inoculation, may remain tuberculous for years without an extension and suddenly general tuberculosis developing.

Many prominent pathologists are inclined to consider certain cases in which the mode of entry is uncertain, as congenital; for example, those in which primary tuberculous lesions are present in the bones and joints and cannot be found elsewhere; in many it seems to be connected with trauma, but the organisms could reach these points only by the circulating blood.

Tuberculosis is conveniently divided into two principal varieties, the acquired or primary which results in a general way from the tubercle bacilli entering the body by means of the digestive and respiratory tracts, through the skin, and perhaps by the uro-genital canal; and secondary, tuberculosis which we trace from the transference of the bacilli from the point of entry, along blood-vessels and lymphatics or over mucous membrane to some remote part, all the characteristic changes being present.

First, Acquired Tuberculosis.

Although infected milk, cheese, butter, meat and some few of the domesticated animals are an important and constant cause of infection, nevertheless a tuberculous man is the chief source of human tuberculosis.

Tuberculous Infection of the Digestive Tract.

Until recent years the dangers of infection from the dairy products and meat have not been given their proper consideration as a causative agent of the disease; but now many of the States are making large appropriations to eradicate tuberculosis among cattle, using the tuberculin test, as you all know. Dr. Ernst of Harvard has demonstrated that milk may contain enough of the virus to be infectious, and the udder remain entirely free from the tubercle bacilli. This is certainly an important and an alarming fact, and there can be no doubt that infected milk in part explains the great frequency of intestinal and mesenteric tuberculosis in children.

A case in a non-phthisical family is reported on the best of authority, of a bottle-fed baby whose source of infection was the food, and the gums the first point attacked by the virus. The cervical glands became involved at nine months; the intestines were also diseased as shown by the autopsy. Boiling the milk will do away with this source of infection. Jacobi goes so far as to say that "only savages should drink raw milk."

That butter made from the tuberculous milk is infectious and as such a source of danger is of course obvious; the same is true of the cheese. Meat is not so important a cause of infection as the others, for if properly cooked before it is eaten the bacilli have probably been destroyed. Monotony of food is almost as prominent a factor of the disease as impure food itself. A nursing mother or wet-nurse, if tuberculous, is a well-recognized source of infection to an infant; and it should be each one's duty to

have the breast-milk of any doubtful patient examined by a bacteriologist before nursing is allowed, not only for the good of the child, but also of the mother herself, as a long period of lactation may bring about a condition from which phthisis will rapidly prove fatal. A phthisical wet-nurse of course should be sent away at once; she is a greater danger than one afflicted with syphilis.

Tuberculous infection of the skin through inoculatiou is not very common in man, and when it is found, it has a tendency to remain strictly localized; although cases are on record where extension to the lung or some other organ has been distinctly traced to local infection. Jacobi reports such a case from a tuberculosis of the skin, empyema and universal tuberculosis resulting.

Lupus is simply a variety of skin tuberculosis, as is also warty tuberculosis, the anatomical tubercle, scrofula derma, etc.; the disease in these forms is most often seen in butchers and demonstrators of anatomy. They clearly depend on local infection and by not showing any tendency to extend into one another, and by running a perfectly definite course, they furnish much which is hard to explain satisfactorily.

The best explanation, however, seems to be that the skin is unfavorable soil for the development of the virus. This is further demonstrated by the fact that during the tremendous disturbance of acute miliary tuberculosis there are no skin lesions. Simple tuberculous ulcer of the skin then is the only variety of dermatological tuberculosis which possess a fairly close resemblance to the other forms of the disease.

The ear is often the seat of a localized tuberculous process from wearing the ear-rings of some person who had had phthisis.

Any kind of a wound, abrasion, or inflammation offers a nidus of impaired resistance for the bacilli; for example, in the circumcision of Jewish children, the bacilli from the mouth of a phthisical Rabbi infecting the wound.

Or one may scratch or cut himself with a broken receptacle containing tuberculous sputa. Infection has been known to take place from washing the clothes of phthisical patients. Cases are reported of local tuberculosis resulting from skin-grafting operations, and from bites of patients suffering from consumption.

Living bacilli in dead bodies may be a source of danger, students frequently becoming thus infected in the dissecting-room. Water, according to Cornil, is a vehicle for the bacilli. Some anti-vaccinationists have urged the possibility of infection by the germs during vaccination, but such a case has never been reported, due probably to the action of the vaccine virus on the bacilli, which it is said to destroy.

TUBERCULOUS INFECTION BY THE WAY OF THE RESPIRATORY TRACT.

When the bacilli are transferred from one person to another, by far the largest and most constant source of infection is from those having pulmonary tuberculosis and by the way of the air-passages, as proved by post-mortem statistics. Arhinitis or a pharyngitis or any abrasion of the air-passages, by causing an inflammatory condition of the mucous membrane, increases one's susceptibility to inoculation. The lungs then being the most frequent route through which the bacilli enter the body, the inhalation of dried tuberculous sputa is the chief source of infection. The virus is contained in enormous amounts in this sputa, which, when dry, soon becomes widely disseminated in the form of dust. If properly taken care of however, before it is allowed to dry, no harm can come from it. Spitting in public places is not only a filthy habit, but a most dangerous source of infection to others.

Recently dust collected from the elevated and street railway cars in New York City has been found to contain enough bacilli, in many cases, to be infectious, and in consequence dangerous to the health of every person

using the cars, the infection almost certainly being due to promiscuous expectoration. A patient on the road to recovery, by carelessness of himself or his attendants, may become reinfected by his own sputa.

It should be distinctly understood that the consumptive is not in the least dangerous by contact or proximity, and that his breath, and the moist sputum received in proper receptacles, are not elements of danger; but that it is the dried and pulverized sputa that infect. Kissing on the lips when one of the parties is phthisical should be discountenanced. The spoon or glass of a consumptive, spatula or other dentists' instruments, if not properly disinfected, may be a source of danger and infection. Tailors, seamstresses, laundresses and the like may be centers for the spreading of the bacilli. A phthisical herdsman has been known to communicate the disease to a whole herd of cattle.

The stools of patients with tuberculous intestinal ulcerations, and other purulent discharges, while not an extensive cause of the disease, are to be regarded as a possible source of infection. Railroad and especially sleeping-cars, offer more or less of a risk from the disease. The exposed cavity left in the gum after a tooth has been extracted, presents an absorbing surface capable of affording lodgment for tubercle bacilli that may be present in insufficiently cooked tuberculous meat, infected glands in the neck first showing that inoculation has taken place. Of course these last represent only occasional instances. Still they are to be considered with the rest. There is no evidence to show that tuberculosis is contracted by persons while out of doors, in the open air. The facts are all the other way, since the mortality from tuberculosis of in-door occupations, is everywhere much greater than that of out-door occupations.

The bacteriological evidence also, is clearly in the same direction. Experiments are abundant showing that disease-germs, exposed to the enormous dilution of out-door

air, are subjected to a severe struggle for existence, and soon perish under the effect of sunlight and wind and rain. Cornet asserts that where tuberculous sputum can be exposed to sufficient light and air to deprive it of virulence before it can be dried up and powdered into dust, no danger of infection need be dreaded, and that it is the dust of enclosed apartments only which is dangerous. Cases of phthisis then should never be treated in the common wards of a general hospital, for the disease shows much greater prevalence in all sorts of institutions where inmates are confined with only a small amount of fresh air, exercise, and out-door life. Dust taken from one hundred and twenty-five prisons, asylums and hospital wards showed tubercle bacilli in dangerous numbers in forty-eight, as proved by inoculating susceptible animals. The bacilli in these dust samples have been found to retain their full virulence for more than six months. Great caution should be observed in giving consent to marriage to those known to have pulmonary tuberculosis; and the associations of those suffering from the disease should be limited as much as practicable.

Beddoes says: "When consumption is hanging about a girl, the distance between the marriage bed and the grave is usually short with her. The husband, if he do not become a widower soon after the birth of the first child, may reckon upon a perpetually ailing wife."

INFECTION FROM THE URO GENITAL CANAL.

If infection, in the male, takes place from coitus at all, it must be infrequent. It is not easy to understand how bacilli can be contained in the secretion of the female in such numbers as to enter the urethra. They would not find here, as do gonococci, favorable conditions and would be washed away by the urine. Still, judging from the anatomical course of the disease as we are accustomed to see it, infection seems to take place from below upward, but in reality, it is much more probable, that

in almost all cases, infection takes place by the way of the blood-vessels. The fact that we may not find tubercles elsewhere in the body, does not necessarily preclude this possibility. The bacilli might enter the respiratory tract or the alimentary canal without producing any lesion at the point of entry, as we have seen above, and being deposited somewhere in the genito-urinary tract find conditions favorable to growth.

In tuberculosis of the testicle the bacilli may be contained in the seminal fluid.

In the female genitals it is easier to understand the source of tuberculous infection. The tubes connect directly with the peritoneum and their infection might easily follow a tuberculosis of the peritoneum; possibly it might result from a tuberculous uterus. It is much more probable too, that infection can follow coitus in the female than in the male. It is best to advise the avoidance of sexual intercourse to phthisical patients, not only to eliminate the possible chance of inoculation to the second party, but as well to preserve their own energy and to prevent the begetting of highly predisposed children.

SECONDARY TUBERCULOSIS

Results as we have seen from the transference of the bacilli from the point of entrance along blood-vessels, lymphatics, over mucous membrane to some remote part, all the characteristic anatomical changes being present. Extension from the primary lesion may occur in different ways: First, by natural channels, as where bacilli have produced lesions in the lungs, the sputum forms the vehicle of communication; from the lungs the lymphatics form an easy pathway. A portion of the sputum may be swallowed and infection of the alimentary canal result by the passage of the bacilli into the submucous tissue, from which the lymphatics take them to the follicles not being acted on by the gastric juice. This is the principal source of infection of the alimentary canal.

Infection by the blood is comparatively rare. In general miliary tuberculosis where bacilli are carried into all tissues by the circulating blood, the intestinal mucous membrane is almost immune. The lymphatic glands may be affected primarily or in combination with another organ, as the lung or intestine. These glands are most frequently diseased in children, especially in those who have a tendency to catarrhal inflammation of the nasal passages. An adherent tuberculous lymph gland, in the anterior mediastinum, by extension of the process sometimes causes infection of the pericardium. Everybody is exposed more or less, as the case may be, to the invasion of the bacilli; but many never become infected although brought into close contact with tuberculous patients; for example, nurses in the Consumptive Homes; while some persons, especially children of phthisical parents, are in special danger of infection.

This we call an inherited predisposition, due rather to a diminished power of resistance, an increased susceptibility of the tissues, than to actual transmission of the infection from the parents. Anything which tends to reduce the power of resistance of a given individual, such as stenosis of the pulmonary artery with its concomitant effect on the circulation in the lung, improper food or hygiene, wasting or infectious diseases, traumatism and the like are all secondary causes toward tuberculosis. Whether or not transmission of the disease from mother to child through the placenta during fetal life is possible, is a question that is championed on both sides by some of the best pathologists. Fitz is of the opinion that "congenital tuberculosis sometimes exists, perhaps more often than is generally supposed, and is to be explained by transmission of bacilli from mother to fetus through the vascular walls of the placenta, which organ has been found to contain evidences of tuberculosis." There can be no doubt but that a few well authenticated cases of placental tuberculosis have been reported, but at any rate

congenital tuberculosis in man or in animal for that matter is a very uncommon affection. Baumgarten, however, is one of those who stoutly contends that the above statement is not true. He says that the disease in the bones and joints of sucklings is fairly common, there being small possibility that they could be accidental infections. But to prove this statement it would be necessary to prepare a series of these cases in which there were found to be present unmistakable signs of tuberculosis in the bones and joints of children, whose lymphatic glands of both bronchi and mesentery could be demonstrated free from tubercle bacilli or its depredations.

On the other hand some go so far as to say that if such transmission exists at all it is so unusual that it ought not to be given place among the causes of tuberculosis in the human being. This represents an opposite extreme to Baumgarten, the truth probably being between the two.

The reports of an eminent German pathologist, taken from a large number of observations on extensive tubercular processes in infants only a few months old, gives among other conclusions, that it is noteworthy as opposing intra-uterine infection that there were found no older tuberculous foci in the liver, into whose circulation all germs pass first through the umbilical vein. On the contrary these foci were always found in the lungs or in the neighboring glands (bronchial or mesenteric), pointing almost unmistakably to an infection from without by contact. On the whole then, we are justified in concluding that tuberculosis in the new-born is exceedingly rare, and when we exclude the possibility of breast-milk infection, it becomes still rarer.

HEREDITY.

Previously heredity in tuberculosis, in some form or at some time, has been acknowledged by nearly everybody; some, even many who have seen its wildest ravages where

whole families have been desolated, have denied its heredity, if for no other reason than that it does not accord with "the popular conception of a beneficent Creator,that innocent offspring should inherit disease from parents."

Some of the writers of the early nineties, notably Osler, think "tuberculosis may be inherited, but in what way or how often are unsettled questions." Not a very strong argument certainly for his statement. Colnheim says: " The so-called phthisical habit is not in many cases an indication of a tendency to, but actually the existence of tuberculosis."

Of course maternal is much more common than paternal inheritance. Lately stenosis of the pulmonary artery as a manifestation of tuberculous heredity, being analogous to congenital aortic narrowing of chlorosis, has received a good deal of attention. Deficient respiratory capacity, a condition which may be acquired by habit or occupation, as a primary feature of the predisposition, is being investigated at the present time by a prominent Ottawa physician. Besides, we see the well-known thoracic malformations, emphysema, lobulated liver, Hippocratic fingers, hypertrophy of the heart, etc., as common examples of heteromorphic heredity in tuberculosis. All these congenital morbid conditions may be present in persons already in the first stages of phthisis, and in those in whom sooner or later it develops. We also see them in individuals who never become phthisical.

Jaesk's experiments with the progeny of tuberculous animals gave but little support to the heredity theory of the disease; for from forty-seven inoculations on rabbits and guinea-pigs, but one positive result was obtained, and then only with the membranes of the fetus, and not with the substance of the fetus itself.

Dr. Russel, Senior Officer of Health of Glasgow, in a report on "The Prevention of Tuberculosis" treats the question of inheritance in an unusually clear manner. He says: " A condition of perfect health is one of insus-

ceptibility. In this condition the juices of the tissues are poisonous to microbe life, and their cells active agents of destruction. Depression of vital resistance by disease, debauchery, fatigue, want, even by mental causes, induce susceptibility. Susceptibility may be constitutional and may be so great and so marked as to amount to a predisposition. This it is which passes by inheritance, and until the discovery of the bacillus, was regarded as hereditary tuberculosis.

It is not the disease which is inherited, it is the predisposition, the feeble constitution, the low vitality, the tout-ensemble of conditions, some of which are recondite and imperfectly understood, some obvious and capable of specification and comprehension."

Dr. Wm. H. Porter of New York, in a late paper before a medical society, declares that "tuberculosis is no longer regarded as an inherited disease," but that "it is now known that it must always be acquired after birth."

This terse statement may be denied by some, but the weight of evidence points so strongly in this direction that we are fully justified in making this assertion. The child may be born with a decidedly low chemical nutritive activity, and its power to resist germ-infection will in consequence be slight. This however does not constitute tuberculosis. It simply indicates that such a subject is in an abnormally low state, so that a suitable soil for the growth of germs is easily produced. Slight causes will produce a break in the continuity of the integument, thus enabling the germs to gain access to the system at a time when it hasn't the nutritive activity to resist their damaging effects.

When this is accomplished the individual can truly be said to have tuberculosis, and not before. Dr. J. Collins Warren fitly sums up the whole question of heredity when he says: "It is probable that a predisposition to tuberculosis is inherited by children from their parents, but the disease must nevertheless be looked upon as one which is acquired during life by infection."

THE BACTERIOLOGY OF TUBERCULOSIS.

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The subject of the bacteriology of tuberculosis if considered in all its relations is so large a one, that volumes could be written concerning it. Obviously, in the short time allotted me, I can but briefly touch upon many of the points in the bacteriology of this disease, but I shall try to give in some detail the methods for the demonstration of the tubercle bacillus in sputum, urine, etc. as being of the greatest practical importance to the general practitioner.

Villemin was the first to conceive of tuberculosis as an infectious disease and probably due to an organism. He presented papers before the Paris Academy of Medicine December four, 1865, and October nine, 1866, in which he clearly proved the inoculability of the disease experimentally, his conclusions being as follows: 1. Tuberculosis is a specific disease. It may be successfully inoculated in rabbits from man. 2. It is an inoculable disease. It belongs, therefore, among the virulent infections. Although Villemin so clearly proved the infectious nature of the disease, he did not discover the agent causing the infection, and it was not until 1882, that the discovery of the tubercle bacillus was announced. Dr. Robert Koch of Berlin, published April ten, 1882, his brilliant work upon the "Etiology of Tuberculosis," and opened to the scientific world a new mine of almost inexhaustible treasure. It may truly be said that the discovery of the cause of tuberculosis formed the foundation-stone of the study of bacteria in relation to disease.

In this memorable work, which stands as a model of true scientific research, Koch proved that tuberculosis is always caused by the entrance and growth within the

body of a bacillus, to which he gave the name of bacillus tuberculosis. He found this organism present in all cases of the disease examined by him, cultivated it artificially, and by means of artificial cultures injected into animals, again produced the disease. It is an incontrovertible fact, proven again and again by scientific observation, that tuberculosis is caused, and caused only, by the growth within the body of Koch's tubercle bacilli.

The tubercle bacillus is a rod-shaped organism from two to four and a half micromillimeters in length and three micromillimeters thick, or roughly speaking, it is about as long as nearly the diameter of a red blood-corpuscle. It is very slender as compared to the length, which is one of its distinguishing features. The rods are usually straight or very slightly curved, but may be much curved; they lie either singly or in clusters of from two to six, or more. They are peculiar in appearance, and when once seen, are remembered easily, on account of their fine, thread-like form. Two of the bacilli are often joined at right angles and oftentimes, especially in sputum, an appearance suggesting spore-formation is presented, there being small unstained spaces in the bacillus, which gives it the appearance of a chain of small dots or cocci. Almost every stained specimen will show some bacilli presenting this appearance, but these unstained spots have not, as yet, been proven to be spores. Some observers, notably Nocard, Roux and Klein, have described branching forms of the tubercle bacillus. The bacilli are immobile, very resistant, so that dried sputum will contain virulent germs for months; they will withstand a temperature nearly to the boiling point, the acid gastric juice and decomposition. They are present wherever the tubercular process is going on, the more acute the process, the greater the number of bacilli. In stained specimens of sputum prepared from the human subject, the bacilli are generally seen scattered more or less sparingly over the field examined, although in the sputum

of acute cases, especially that first expectoration in the early morning, I have seen them in immense numbers, presenting the appearance of a pure culture preparation.

Methods of demonstration: I cannot in this paper impress too strongly upon your minds the great importance of a familiarity with the appearance of the tubercle bacillus, and a knowledge of the methods of demonstrating it, if present, especially in the sputum. As you all know there are many cases of phthisis which in their commencement, the time which is of greatest therapeutic importance, can not be recognized by the physical signs present. It is in these cases that a bacteriological examination is of first importance, for in the majority of them tubercle bacilli appear in the sputum before the disease can be diagnosed clinically. The presence of tubercle bacilli in the sputum of a patient is proof positive of the existence of tuberculosis, but there may occur, though rarely, cases of well-advanced tuberculosis, in which tubercle bacilli can not be demonstrated in repeated examinations.

There are many methods of staining the tubercle bacillus, all of them depending upon the fact that the bacilli will retain the stain under the action of strong acids. This is true of only one other bacillus, that of leprosy, but in our locality this is of no practical importance.

Probably the best known method is that of Ehrlich, and is as follows: The staining fluid, gentain violet in aniline water is thus prepared: Take of powdered gentian violet and fill a small glass flask to the depth of two finger breadths, and upon this pour aniline water made as follows: Stir, in 100 parts of distilled water, 4 parts of aniline. Filter, and we have a saturated solution. This is poured upon the gentian violet, which should then be thoroughly shaken several times during 24 hours, when we have a saturated staining solution, which should be filtered into a watch glass before it is used. If sputum is to be examined, prick from it one of the small yellow

particles, placing it upon a cover-glass, press another one firmly over it, and separate them with a sliding motion; then place the cover-glasses face downward (or smeared side downward) upon the staining fluid in the watch glass where they will float. Let them so remain for 24 hours, then wash in distilled water, and pour carefully over the deeply stained sputum a solution containing three parts of strong nitric acid in one hundred of water. Do this until the stain is just visible, and then wash in strong alcohol and mount in balsam or examine directly. If a contrast stain is desired use Bismark brown. The bacilli will appear as very dark blue rods.

Another very valuable, and easily applied method is that known as Gabbett's. It is especially valuable where a double stain is wanted. The cover-slips are prepared as just described and stained for five minutes in a cold carbolic fuchsin solution, and then subjected to Gabbett's methylene blue, sulphuric acid solution, which consists of

Sulphuric acid, 25 per cent., 100 c. c.

Methylene blue, in substance, 1 to 2 grams.

Stain with this solution for about two to four minutes, and then rinse the covers in water, mount in Canada balsam and examine. The tubercle bacilli will be stained red, all other bacteria, cell-nuclei, etc., will be blue.

Although both the methods just given are good, I have found the following one preferable for clinical work, on account of its simplicity and rapidity. The staining solution consists of

Fuchsin, one part; alcohol ten parts.

Dissolve the fuchsin in one hundred parts of a five per cent. solution of carbolic acid in distilled water, and add the alcohol. Prepare the cover-glass as before and place face downward in a watch glass containing the staining fluid, and then heat over the alcohol flame until steam is given off freely. Then place on table and allow the preparations to stain about five minutes. Drain on blotting

pad, place for two or three seconds in 95 per cent. alcohol, and then in alcoholic solution containing 20 per cent. nitric acid for a second or two or until the stain is barely visible. Wash in alcohol and mount in balsam or examine directly with oil immersion. Of course the sputum should be dried upon the cover-glasses before they are stained and it is best to pass them through the alcoholic flame a couple of times.

Many authorities recommend a thirty per cent. nitric acid solution in decolorising, but I have found that a solution so strong will oftentimes decolorise the tubercle bacillus, if allowed to act for too long. I believe that a twenty per cent. solution is strong enough.

In cases where the ordinary methods do not give results, where the sputum may contain only a very few bacilli, the sedimentation method of Stroschein is very useful: Take a tablespoonful of sputum and shake it thoroughly in a test-glass with three tablespoonfuls of the following mixture:

℞ Concentrated boric acid sol., part j. Aq., parts iij. Use as much as necessary.

Shake until the sputum is liquefied, then pour into a conical glass and let stand for twenty-four hours, when the liquid which is clear is carefully poured off, and cover-glass preparations then made from the collected sediment stain as before.

In a case of suspected tubercular disease of the urinary organs, as the kidney, ureters, bladder, etc., the examination of the urine for tubercle bacilli is often of great diagnostic importance. A peculiarity of the tubercle bacillus when it occurs in urine is the fact that the bacilli are usually seen collected together in clumps, instead of being scattered singly over the field examined.

The urine is allowed to stand twenty-four hours in a conical glass, and cover-glass specimens are then made from the sediment and stained as has been described. Particular care must be taken that a bacillus having its

habitat in the secretion of the preputial glands, and known as the smegma bacillus, be not mistaken for the bacillus tuberculosis. In morphological characteristics, the two bacilli are almost identical, and serious mistakes have been made in confusing them.

SMEGMA BACILLI AND TUBERCLE BACILLI.

Grethe (Fortscher. der Med., May, 1896) in an article upon this subject calls attention to the need of a differential staining method for these organisms. He instances the removal of a kidney as tuberculous, supposed tubercle bacilli having been found in the urine, but, after operation, there was found a calculous pyelitis, smegma bacilli having been mistaken for tubercle bacilli. Inoculation is not always available as a diagnostic measure and Grethe advocates the method of staining with concentrated alcoholic methylene blue. This stains the bacillus smegmatis well, and if the preparation be first stained with carbol fuchsin, the tubercle bacilli are easily recognized by their red color contrasting with the blue of the rest of the preparation including the smegma bacillus.

Von Leyden (Ibid.) calles attention to the frequency and danger of confusing these organisms, and gives their differentiation as follows: 1. Smegma bacilli stained by anilin dyes lose their stain on two minute treatment with acidulated alcohol while tubercle bacilli do not thus destain.

2. Smegma bacilli lose their color under Gram's method, while tubercle bacilli retain anilin-fuchsin staining.

3. A cover-glass preparation of tubercle bacilli carried through the flame ten times and stained with Ziehl's solution, presents the bacillus in a somewhat granular form or as composed of a succession of spherules: the smegma bacillus remains a solid red under such treatment.

Konig records a case of enlarged kidney with so-called tubercle bacilli in the urine, but the tubercle bacilli were smegma bacilli and the tumor was a sarcoma.

Senator has witnessed the recovery of many cases of so-called tuberculous cystitis, tubercle bacilli having been said to have been found in the urine. He believes these cases to have been ordinary cystitis, in which the urine had become contaminated with smegma bacilli.

Fraenkel avoids mistakes by carefully cleansing the genitals and using the catheter. He uses Ehrlich's method (gentian violet) for staining tubercle bacilli, which, on decolorizing with nitric acid, leaves the smegma bacilli unstained.

Sawyer * calls attention to the importance of the examination of rectal mucus, when intestinal or rectal tuberculosis is suspected. He says: "The finding of an occasional bacillus tuberculosis in the stool is held to be due probably to ingestion with food or drink or saliva; but the finding of clusters of these bacilli, particularly on the surface of formed stools, is of diagnostic significance and can be relied upon to indicate tuberculous processes in the intestine probably in the neighborhood of the ileocaecal valve." He found the bacillus present in the rectal mucus of cases where the sputum did not contain any. This method as given by him, is as follows: "The mucus is obtained, after placing the patient in position to examine for piles and directing him to bear down as though at stool, by gently removing a little mucus from the everted membrane with a sterile loop and spreading it upon a clean cover-glass, to be treated exactly as sputum in the ordinary examination."

Of the method of staining the tubercle bacilli in tissue I shall say little. The tissue may be frozen and secretions cut, or hardened by any of the various hardening methods, sections then being made. Staining is done in the same manner as for sputum, though sections of tissue should never be heated. The results are very often disappointing, but sometimes very beautiful preparations may be obtained, especially in the case of tuberculous glands.

*Medical News, May 23, '96, p. 582.

In all examinations for the demonstration of bacilli in sputum, the centrifugal machine is of great value.

There is one other organism with which the tubercle bacillus may be confused, i.e., the syphilis bacillus of Lustgarten, which occurs especially in primary sores, and which much resembles in morphology and staining peculiarities the tubercle bacillus. Heuppe * recommends the following procedure to differentiate the organisms:

1. Treat the preparation, stained with carbol fuchsin, with sulphuric acid; the syphilis bacillus becomes decolorised almost instantly.

2. If it is not at once decolorised, treat with alcohol; if it is the smegma bacillus this will rob it of its color.

3. If it is still not decolorised it is either the lepra or tubercle bacillus.

Cultivation.—The tubercle bacillus can be cultivated with some difficulty upon a variety of media, but it grows most readily upon blood-serum, prepared according to Koch's formula. The tubes should be inoculated and carefully sealed with cotton and a rubber cap, as the organism is a very slow grower. It will not be until about twelve days after inoculation, with the tubes kept at body temperature, 37.5° C that any signs of growth will be observed. The growth is very characteristic, consisting of dry scaly patches, dirty white in color and much resembling coarse meal in some instances. The individual bacilli adhere to each other very strongly, it being almost impossible to separate them.

In thrust cultures made by thrusting a platinum needle injected with tuberculous material into glycerin agar in a tube, the following appearances are noted: In a period varying from ten to fifteen days, small white spots can be detected which grow yellow with age and form a thin wrinkled membrane over the surface of the media. In the course of two or three weeks or longer, a yellowish white, scaly mass is formed, dry and lustreless in appear-

*Abbot's Principles of Bacteriology, p. 283.

ance. Under the microscope the colonies are seen to be formed of fine hair-like threads, lying in wavy intertwined bundles where the colonies are thickest. These hair-like bundles are formed by the bacilli lying parallel with each other in long rows.

The bacillus can also be cultivated upon neutral milk containing one per cent. of agar upon potato, where the color of the culture is very like that of the media, and also in beef boullon, to which has been added seven per cent. of glycerine. On this media they form a thin pellicle upon the surface. Upon gelatin the organism does not develop, as the gelatin liquefies at a temperature too low for growth to occur. The appearance of a culture of the tubercle bacillus is very characteristic, and when once carefully studied is remembered and not apt to be confounded with that of any other organism.

Experiments in Inoculation, etc.—Inoculation of cultures of the tubercle bacillus, if performed properly, in animals susceptible to the disease are always followed by tuberculosis. The guinea-pig seems to be the most susceptible of all animals to the disease and is usually used in experimental inoculation. Post-mortem, a guinea-pig so inoculated may show a limited tuberculous infection of the locality inoculated and the neighboring lymphatic glands, or a more general infection, small gray tubercles being found in the lungs, liver, spleen, the intestines, breasts and even the brain. The nodules vary in size from a pin-point to a small seed, and when associated together in large numbers present cheesy-looking patches. Cavity formation is very rare in animals but Prudden has produced pulmonary cavities in rabbits, similar in all respects to those occurring in the human being. Tubercle bacilli can always be found in the experimentally produced tubercles. Abbott* says: "Experimentally tuberculosis may be produced in susceptible animals by sub-cutaneous inoculation, by direct in-

*Principles of Bacteriology, p. 273.

jection into the circulation, by injection into the peritoneal cavity, by feeding of tuberculous material, by the introduction of the bacilli into the air-passages, and by inoculation into the anterior chamber of the eye. In the human subject the most common portals of injection are, doubtless, the air-passages, the alimentary tract, and cutaneous wounds."

A large number of attempts have been made by numerous investigators to separate the disease-producing substance or toxin in tuberculosis, with the following results:

Prudden and Hodenpyl have ascertained that the poisonous substance (or substances) is not present in the nutrient media in which the bacilli are grown, but fixed in the bodies of the bacilli themselves, in a very resistant form. The poison is not altered, when within the body, for a considerable length of time, so that a person will not recover from tuberculosis as soon as the bacilli are dead, but only after the dead bacilli are gotten rid of, or the poison rendered harmless.

Maffucci claims that the toxic substance evolved by the tubercle bacilli acts only after a long period of time has elapsed.

Riechet and Hericourt have separated a toxic substance from these bacilli, which is poisonous to tubercular rabbits, but has no effect upon healthy ones.

Thomas Weyl has succeeded in separating an extremely poisonous substance from cultures of the tubercle bacillus, and to which he has given the name toxo-mucin.

In this paper I have only touched upon some of the most interesting facts concerning the bacteriology of tuberculosis, but have tried to present clearly the chief points of clinical importance to the practising physician.

THEORIES OF IMMUNITY; SERUM THERAPY IN TUBERCULOSIS.

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STAMFORD.

Long before the bacterial origin of disease was dreamed of, it was a matter of common knowledge that one attack of certain diseases almost invariably protected from a second, that some species of animals were exempt from some diseases, and that some individuals of a susceptible species never contracted the diseaseThis exemption from a disease is called immunity—most of the animals save man have an inherent immunity from typhoid fever,relapsing fever and cholera. Man, with most of herbivora, are subject to tuberculosis, while carnivorous animals enjoy a general immunity from it. People who have had one attack of scarlet fever rarely suffer a second, and those successfully vaccinated with cow pox are for a time, at least, immune to small pox. Immunity thus divides itself into the natural and acquired forms. Natural immunity may be that of a species—such as the animals enjoy against typhoid fever; that of a race—such as the negro race enjoy against yellow fever; or that of individuals in a race who refuse an infection when their kind all about them are suffering. Acquired immunity may be naturally acquired by having suffered once from the disease; or artificially acquired by such methods as inoculations and vaccinations.

During all the period of uncertain pathology from earliest times until our own century no satisfactory reason for these peculiar phenomena has appeared. Neither the humoralistic theory of centuries ago, nor the theory of the solids which followed it with its discovery of cell-activity and function found sufficient explanation of immunity. With the discovery of the bacterial origin of

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most of the diseases in question, and the recent work in minute, physiological chemistry there seems opened a way which will ultimately lead to a solution of the problem. The practical bearing of the subject of immunity is almost beyond comprehension. Consider for a moment that twenty per cent. of all deaths are due to some form of infection by tubercle bacilli, and think what it will mean when immunity to this infection may be artificially acquired. Many other diseases with high mortality rates are known to be infectious. The discovery of the precise cause of immunity will undoubtedly make possible ultimately the production of an artificial immunity in infectious diseases. Some reason for the phenomenon of immunity exists, and in all probability, a reason common to all the individual infections, so that when discovered for one, a key will be obtained to all. It is because this fact has been so fully realized that the subject has received so much attention and so many theories have arisen to explain it.

It seems quite possible that all so-called natural immunity is in the ultimate analysis acquired immunity, acquired by the process of natural selection and survival of the fittest; so that for practical purposes the discussion and explanation of natural immunity need not be separated from that of the acquired form.

Six principal theories have arisen since the discovery of the bacterial origin of disease to explain the cause of immunity.

The exhaustion theory.
The retention theory.
The theory of phagocytosis.
The humoral theory.
The theory of the defensive proteids (antitoxin)
The tolerance theory.

THE EXHAUSTION THEORY.

This theory was advocated by Pasteur in 1880. He suggested that the micro-organism in the process of its

development in the body used up some substance in the body essential for its growth, and that this once consumed left the body an unsuitable soil for the existence of the bacterium. This theory suggests a possible, rather than a probable explanation and is unsupported by experimental chemical studies.

THE RETENTION THEORY.

This was suggested by Chauveau also in 1880. He held that the bacteria in the process of their development themselves generated a substance which became prejudicial to their growth and thus in time they destroyed themselves. This theory is closely allied to the humoral theory. It is true that a substance prejudicial to their growth is evolved in the body, but later researches show that this substance is not at all a product of the microorganism, but of the living body-cells of the infected animal. This will be considered further under the serum theory.

PHAGOCYTOSIS.

Carl Roser in 1881 and Sternberg and Koch in 1883 suggested that the real factor in overcoming an infection was the large leucocyte which they designated, phagocyte-devourer. The theory was suggested by the phenomenon common to all infections, i.e., the finding of a very large number of these polynuclear leucocytes at the seat of infection, and the finding of the micro organisms enclosed in these cells. Indeed they were observed in the process of enclosing the bacteria.

This theory found its most ardent promulgator in Metchienikoff, whose name the theory often bears. He published in 1884, the results of a series of experiments, by which he seemed to prove that the resistance to the disease was due to this devouring capacity of these cells. This theory of immunity became very popular and was widely accepted.

In making some experiments Nuttall, Weigert, Baumgarten and others found that the blood of animals, immune to a given disease destroyed the micro-organism of the disease even outside the body, and that this destroying capacity remained after the removal of all the cellular elements. They also showed that many micro-organisms—notably gonococci— flourish and multiply inside this very phagocytic cell. Many independent series of experiments since seem to show conclusively

One, that when a living micro-organism comes in contact with a phagocyte, it is the phagocyte and not the micro-organism which is destroyed.

Two, that phagocytes are very useful in carrying away dead micro-organisms and debris. So that phagocytosis, while still a fact, plays an entirely subordinate part in the successful resistance of a bacterial invasion.

THE HUMORAL THEORY.

This is the theory that something exists in the fluids of the body,especially the blood,which destroys the micro-organisms. It was discovered and advocated by Buchner whose experiments in this line were the first successful attempt to overthrow the evidence in favor of phagocytosis. Close upon this theory came that of

THE DEFENSIVE PROTEIDS.

This theory is really only a further analysis of the humoral theory just mentioned, and is the result of chemical studies of the fluids taken from the bodies of animals immune to certain diseases. The beginning of this theory was made in 1890 at the Hygienic Institute of Tokio, when Ogata and Jasuhara discovered that the blood of animals immune to anthrax, contained a substance which neutralized the toxic products of the anthrax bacillus. This fact was verified by Behring and Kitasato in 1890 and Tizzoni and Cattain in 1891. From the chemical

analysis of the blood thus experimented upon and from further experiments, it has been found that this antitoxic power is dependent upon proteid substances found in solution in the blood-serum. It is further found that when these substances are extracted from the serum, it loses its antitoxic power and that the proteid extract is still as powerful as before, thus proving that the antitoxic power is certainly contained in these proteid extracts. They are called antitoxins. Quite a difference exists between the proteid obtained from animals with so-called natural immunity and those with acquired immunity. Buchner has shown this difference. The proteid from an animal naturally immune to a disease, he calls an alexin. It is germicidal and globulicidal; that is, kills the bacterium in question and also destroys the blood-corpuscles when injected into animals of a different and susceptible species. It is also coagulable and unstable, being broken up by heat of 50° to 55° C. The proteid of acquired immunity he calls an antitoxin. The antitoxins do not destroy the micro-organism, nor leave a deteriorating effect upon the blood-corpuscles. They only neutralize the toxic product of the micro-organism. They resist the action of sunlight, and remain stable until 70° to 80° C is reached. The alexins thus have little practical value clinically for their effect is so destructive to the entire blood.

The antitoxins are the practical discovery in regard to the treatment of these diseases. The best known of these are the diphtheria, tetanus and perhaps the streptococcic antitoxins. They act upon the system simply to reinforce the effort of the animal's own cells in overcoming a bacterial invasion. When a disease caused by a micro-organism attacks an individual, the cells make an effort to produce the antitoxin which shall neutralize the toxin produced by the micro-organism. If they are vigorous and the dose of bacteria is not too large, or their nature too virulent the individual revives. In the case of a weak

individual, or a very virulent toxin, where there is reason to believe that the cells cannot produce enough of these proteids to neutralize the poison, it seems only a reasonable proceeding to supply this needed antitoxin from that manufactured by a stronger animal. This is the rationale of serum-therapy. Not only is it rational but clinically successful as the results of diphtheria show.

This theory of the antitoxins is as stated only the result of a further and closer study of the humoral theory mentioned above, and both are closely indentified with phagocytosis. For the leucocytes, which were the phagocytes of Metchienikoff, perform quite as active a function as he claimed for them, not, in that they kill micro-organisms as he held, but in that they originate the antitoxic proteid which neutralizes and renders inert the toxic product of the micro-organism. It also makes the body an unfit culture medium for the existence of the bacterium.

There are also antitoxins produced in the body to other toxic products than those of micro-organisms. Prof. Ehrlich in 1891 experimented with ricin from the castor-oil bean, and abrin from jequirity bean, and recovered proteid substances from the blood of animals made artificially immune to the poison by increasing doses. The substance he named anti-ricin and anti-abrin, and found that when mixed with the poisons outside the body in proper proportion the poison was rendered inert. No antitoxin however has ever been discovered in the blood of individuals habituated to alcohol, morphia, tobacco, cocaine, though great degrees of immunity to those things may exist. This fact with some further observations led Sternberg to suggest

THE TOLERANCE THEORY.

He wrote in 1881 in a paper published in the American Journal of Medical Sciences, the following: "There can be but little doubt that protoplasm is the essential living

portion of the cellular elements of animal and vegetable tissues, but as our microscopic analysis of the tissues has not gone beyond the cells of which they are composed, and is not likely to reveal to us the complicated molecular structure of the protoplasm upon which, possibly, the properties under consideration depend, it will be best for the present purpose to limit ourselves to a consideration of the cells of the body. These cells are the direct descendants of preëxisting cells, and may all be traced back to the sperm-cell and germ-cell of the parents. Now the view which I am endeavoring to elucidate is, that during a non-fatal attack of one of the specific diseases, the cellular elements implicated which do not succumb to the destructive influence of the poison, acquire a tolerance which is transmissible to their progeny, and which is the reason of the exemption which the individual enjoys from future attacks of the same disease." Further on he adds, "It is in specific diseases, diseases in which a single attack proves protective that I find the best proof that the cellular elements of the body may acquire a tolerance during the attack which, being transmitted to their cellular progeny, furnishes the protection which the individual enjoys."

IMMUNITY AND SERUM-THERAPY APPLIED TO TUBERCULOSIS.

Villemain in 1865 demonstrated that tuberculosis might be induced in healthy animals by inoculations of tuberculous material. In 1877 Colnheim confirmed the fact and five years later Koch announced his magnificent discovery of the tubercle bacillus. This bacillus he found constantly at the seat of tubercular processes, was able to separate it from others, culture it, produce the disease in healthy animals, and recover the bacillus again to his culture-tubes. Thus he proved conclusively, that the tubercle bacillus is the cause of tuberculosis. All advanced pathologists accepted the proof then, and since then even the most conservative have been obliged to yield

in the light of ever increasing independent evidence from all parts of the world.

The treatment of tuberculosis by Koch's tuberculin has not been successful. The discovery of tuberculin was announced by Koch in 1891. It was prepared as follows: Cultures of the bacilli were made in infusion of calf's flesh, and after some time filtered through porcelain filters. This was the crude tuberculin. When injected into a tuberculous animal it causes a marked inflammatory reaction around all tubercular foci. When these foci are small in size and few in number the inflammation serves to remove or incase them. Later when they are larger and more numerous the inflammation only serves to spread the disease. This fact is attested clinically by the fact that injections very early in the disease have been curative and later in the course have simply aided metastasis and hastened death. It should always be borne in mind that there is no parallel between the use of tuberculin and the use of the antitoxins, or serum-therapy. Tuberculin is not an antitoxin, but a toxin derived directly from the pure tubercle bacilli. Antitoxins are not a derivative from the micro-organism but a product from the living cell of an animal in the process of his resistance to a toxic invasion.

Tuberculin finds its field of usefulness chiefly in diagnosing tuberculosis in cattle. In the healthy animal it produces no rise of temperature, while in the tubercular animal the inflammation set up about tubercular foci in the body causes a very appreciable rise in the temperature. The latest reports of an attempt to obtain a tubercular antitoxin came from Paquin. He immunized horses in the laboratory, obtained the serum from them and used it in a long series of experimental treatment of tubercular animals. His results, in his own words are as follows:

1. Sero-therapy in tuberculosis has proved, so far, efficacious.

2. Blood-serum of horses seems naturally antagonistic to the germs of tuberculosis, but cannot in its natural state serve in treatment with much good, as it is too slow and it takes enormous quantities of it, too, to produce useful results.

3. Horse blood-serum may be rendered more strongly antagonistic to the tubercle-germ by the treatment of the animals by a proper technique.

4. A horse treated properly three months may yield serum with immunizing power that will probably prove sufficient to arrest consumption in the first stages in three or four months, and sometimes less; and in the second stage in four to six months, or a year.

5. Discrimination should be made in the selection of cases, and judgment exercised to exclude from the favorable class all those seriously complicated bacteriologically, certain cases complicated otherwise pathologically and other patients which practice alone will suggest.

6. Inasmuch as hospitals for consumptives are needed any way, the success has been sufficient to warrant the hope that in the near future such institutions shall be built on modern principles of hygiene, for the exclusive treatment of tuberculosis. Sero-therapy, with the adjunct treatments, promises better success than ever obtained before. I do not designate this serum as a cure or specific, but a valuable new remedy."

EARLY DIAGNOSIS OF TUBERCULOSIS.

CHARLES N. HASKELL, M.D.

BRIDGEPORT.

Last on the programme, but not least in importance is the early recognition of tuberculosis pulmonalis, "incipient phthisis" or "first stage of consumption." The earlier the diagnosis is made, the more applicable may be the therapeutics, the more satisfactory may be the prognosis, and the greater is the chance of recovery.

The early recognition of consumption is of the utmost importance, not only to the patient but to the physician and the community as well. If consumption be recognized in its first stage, I think it is wise to inform the patient of his condition. Recognizing the truth, he will in the light of advanced treatment and favorable prognosis, cooperate with the physician in bringing about an effectual cure and also preventing the spread of the disease.

Notwithstanding the fact that the early recognition of consumption is of such vast importance, its detection is unquestionably the exception and not the rule. This fact is due rather to careless methods of examination than to ignorance on the part of the practitioner.

It is too often the case, that a patient consults the family physician for indigestion, headache, loss of appetite and "that tired feeling," and receives in short order a prescription for some favorite remedy which will aid digestion and remove the headache and a dollar from the patient. On the other hand, many patients do not consult a physician until the disease under consideration has progressed to an almost alarming extent. It has been said that not one physician in fifty recognizes consumption in its earliest stage.

Most writers lay considerable stress on the family history, and, while family history is perhaps important in a way, it has undoubtedly been over-estimated. In the

absence of definite family history of tuberculosis, a physician is too apt to be misled and once on the wrong track he is likely to stay there. Even the most remote family history of phthisis, scrofula, joint disease, or chronic diarrhea should attract attention. Personal history is of much more importance than family history and should be considered very carefully, as the patient may be in good or fair general health and still have tuberculosis.

Tuberculosis is no respecter of age; it is quite common in the old as well as the young.

Considerations of importance in personal history are: the weight, past and present; the appetite, condition of bowels and kidneys, the digestion, headache, pulse, temperature, respiration, presence or absence of cough, hemorrhage and expectoration.

I have come to regard headache and indigestion, as two of the most important remote symptoms of consumption, and I make it a routine practice to examine carefully the chests of any and all patients suffering from these symptoms. In this connection I may say that the importance of careful and thorough physical examinations of all patients that come under our care cannot be too strongly emphasized. Carelessness on the part of the physicians, for various reasons or excuses have had a tendency to destroy the confidence of the people in general and when, as sometimes happens, the patient goes from one doctor to another until he has made the rounds so to speak, getting a different opinion from each physician and as many different prescriptions, we cannot expect anything short of censure from the public.

The sub-normal morning temperature accompanied by chilly sensations and the afternoon rise of temperature, varying from a fraction of a degree to one or two degrees, are important considerations and are nearly always present even in the earliest stage of consumption. This afternoon rise of temperature should be distinguished from the fever of malarial origin. Fever of malarial infec-

tion usually reaches its highest point in the morning, whereas tuberculous fever reaches its highest point in the afternoon; the temperature of malaria often reaches 101 and 102, while 99½ to 110 degrees is usually the height in early tuberculosis. Furthermore, an examination of the blood will demonstrate the absence or presence of malarial infection, although the two conditions may co-exist.

These subjective symptoms are perhaps more important and much more easily demonstrated than some of the physical signs to be considered later. Cough may or may not be present in the first stages. The fact that it is absent in very many cases until the disease has advanced to an alarming extent, is perhaps unfortunate both for the physician and the patient as, in many cases, it is the first symptom that attracts the attention of either one. The character of the cough at its beginning is generally characteristic; the patient complains of a slight hacking cough with hawking and clearing of the throat in the morning; later on, this increases and is noticeable during the day. In some cases there is a slight bronchitis with more or less expectoration of a frothy nature, but it is rarely muco-purulent.

Many cases of phthisis follow a so-called severe cold, or attack of the grippe and the patient complains that he is unable to get rid of his cough. This cough does not disappear on the administration of ordinary cough remedies and after some weeks or possibly months the physician is consulted for this symptom alone. In cases as far advanced as this class just named are likely to be, there is generally muco-purulent expectoration and it is easy to demonstrate the presence of tubercle bacilli by the aid of the microscope. In cases of cough where there is no expectoration, other causes of cough should be carefully excluded, such as so-called stomach-cough, liver-cough, the cough due to hyperemia resulting from heart disease, presence of abdominal tumors, pregnancy, and various non-tubercular inflammatory diseases of the

lungs and throat. The character of the expectoration varies in different patients. It is usually of a frothy nature and microscopic examination of this viscid, frothy mucus demonstrates nothing of importance. Microscopic examination of the sputum is usually very unsatisfactory in the early stages of tuberculosis. It is said that tubercule bacilli are found in the mouths of perfectly healthy individuals, so that in making a scientific and reliable examination of the sputum, the mouth and fauces should be carefully cleansed with some antiseptic solution. Bacilli are usually very scant and difficult to demonstrate in sputum which is not purulent and tuberculosis cannot be excluded even after repeated negative examinations.

Hemorrhage is one of the most frequent symptoms of early tuberculous infection of the lung, but it should be borne in mind that slight hemorrhages may come from excessive hyperemia of heart-disease, bronchitis, hemorrhages from the throat and nose, vicarious menstruation, and many other conditions, while on the other hand, many cases of tuberculosis go on to the end without any hemorrhage whatever. Stitch pains, usually very sharp and localized, frequently appear quite early in the disease, and there is sometimes a sense of soreness appreciable over a diseased lung area. These symptoms are by no means constant, and these pains should be differentiated from inter-costal neuralgia, which is common in tubercular subjects, generally due to co-existing anemia.

Variations in weight are of more or less importance. There is usually in the early stage of consumption a loss of appetite and indigestion, and consequent loss of flesh; on the other hand, many cases retain their weight until the process is well advanced and, if the digestion be corrected, may even gain several pounds in weight.

Some other symptoms of minor importance might be enumerated such as repeated chilly sensations, flushes of

heat, susceptibility to drafts of air, coated tongue. etc., but owing to the fact that these symptoms are common to many inflammatory conditions which have no connection with tuberculosis they cannot be regarded as important.

Anemia is a frequent accompaniment of early phthisis and it is to be remembered also that anemia increases a predisposition to tuberculous infection.

To explain in detail the causes of many of the remote symptoms of early tuberculosis would necessitate a consideration of the pathology of the disease and that subject has already been treated in a paper read earlier in the day.

The physical examination should be conducted in a most careful manner and everything possible to facilitate the accuracy of the examination should be done; all the clothing should be removed to the waist. It is an easy matter to detect some of the signs of advanced tuberculosis without removing the clothing but the changes that have taken place in the early stage are so slight that it is impossible for even the most skilled diagnostician to arrive at anything like satisfactory conclusions by an examination through even the lightest underclothing.

Inspection, palpation, percussion and auscultation should be conducted with greatest care and attention to the minutest details. While in the first stage of consumption the structural changes are not sufficient to produce any marked symptoms that may be detected on inspection, it is important to note the general appearance of the chest. Very often there is a sunken condition just above and below one or the other clavicle. This may be due to the contraction of a diseased apex. The chest should be measured carefully on a line with the nipples to determine the amount of expansion. Another important point which is generally overlooked is the relative height of the apices above the clavicles. The difference is so well marked when one apex is diseased that a careful compar-

ison was suggested some years ago by Von Ziemmsen and has been referred to more recently by Dr. Karl Von Ruck of Asheville. In health the apices extend about an equal distance above the clavicles. It is well to define a line where the lung-sounds merge into the flat note elicited from the muscles of the neck and to mark this line in the entire circumference of the neck. If comparisou shows this line to be lower in some portions,or all around, on one side than on the other, it is reasonably sure proof that one apex has undergoue structural change. Measuring from this line to the acromion process there is frequently a difference of half an inch or more, but even if a quarter of an inch difference is demonstrated it is enough to raise suspicion and to lead to further careful investigation.

Our attention is directed first to the apices for the reason that tuberculosis generally attacks this portion of the lung structure.

So far as physical signs are concerned we might be deceived by such growths as cancer, hydatids, and syphilis but the locality will generally assist in excluding these conditions.

Hydatids generally occur at the base of the lung; cancer begins usually at the mediastinum. Syphilitic growths take the lower and middle lobes but almost never the apex.

Apex pneumonia which generally occurs in children may be excluded by the more acute onset and severity of the symptoms. Localized chronic bronchitis of other than tubercular origin is rare.

In palpation there is usually noticeable increase of vocal fremitus. There is often increased resistance when pressing upon the apex above or below the clavicles and over a diseased apex there is likely to be more or less tenderness on pressure.

The percussion note is duller and higher and by comparison with the other side, provided one apex be normal,

a marked difference is demonstrated. Perhaps more accurate information may be gained by auscultation than any other means at our command.

I do not think it possible for even the most skilled practitioner to make a careful examination of the apices of the lungs without the aid of the stethoscope or phonendoscope and it is important that these instruments should be accurately fitted to the ears.

The phonendoscope I consider of much greater value than the stethoscope, as smaller areas may be auscultated and some rales, possibly deep-seated, are more plainly heard through this instrument.

The respiratory sounds differ, of course, in different cases but the particular points to be observed are the prolonged expiratory sound, the jerky, cog-wheel inspiration, the general harsh quality and high pitch of the respiratory murmur. If there be bronchitis the rales are coarse or fine according to the size of the tubes involved.

With lobular pneumonia crepitant rales are demonstrated; in localized pleuritis the sound has a grating character.

It is to be borne in mind that, while these various symptoms and signs, both objective and subjective, are common enough in the more advanced stages of tuberculosis and other conditions, where larger areas of lung-tissue are involved it requires more than ordinary skill to demonstrate these signs when only the apex is involved. And it is the intelligent and judicious estimation of these symptoms and signs combined, which lead to a positive diagnosis of tuberculosis pulmonalis in its earliest stage.

To sum up then, let us not depend too much upon the microscope for the demonstration of tubercle bacilli, nor the characteristic consumption-cough, before making our diagnosis and administering the most approved methods for the relief of those suffering from a most serious disease.

THE CLIMATOLOGICAL TREATMENT OF TUBERCULOSIS.

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BRIDGEPORT.

The question that presents itself as often, perhaps, as any other to the physician is, where shall I send my patients when a change of climate is desired? To discuss this subject in all its details would be impossible in the limited space which I have for this paper.

The literature of the effects of different climates upon the human body is very extensive, following the general rule, that the less positive or precise knowledge there is upon a given subject, the more will be written about it.

No climate is a specific in any form of pulmonary trouble, but proper climatic conditions joined to other rational treatment not only adds largely to the percentage of recoveries, but prolongs the lives and comfort of those who cannot be completely restored to health.

Dr. Parks defines the effect of climate upon the human body to be the sum of the influences which are connected with the solar agencies, viz., the soil, the air, or the water of the place; in other words, he makes it nearly equivalent to the locality or the environment. By climate we understand, commonly, the sum of meteorological influences, the most important of which, as regards health are temperature, humidity and wind. It is only within recent years that the subject of climate as a factor in the treatment of phthisis has received anything like the attention its importance warrants.

How many of us, for example, know anything definite about the topography, the drainage, the water-supply, the accommodations, etc., of distant health-resorts, or how a patient should live in climatic conditions widely differing from those to which he has already been accustomed.

. It is indeed a very easy thing for the doctor, who probably knows that all hope is ended, and a fatal termination not very far distant, to say to his patient, go to Europe, Australia or Southern California, etc. The poor unfortunate patient is at once inspired with hope, his weakened frame is sustained by will-power, and yet he scarcely reaches his destination before nature gives way.

It is practically settled that the four most prominent features of an ideal climate and locality for consumptives are:

I. Dryness of the air.

II. Coolness of the air.

III. Altitude and rarefaction of the air.

IV Sunshine.

Dryness of the air is quite essential; rains, fogs and a damp or cloudy atmosphere have a depressing effect, besides compelling the patient to remain indoors. A dry atmosphere is usually a cloudless one and one also free from changes and the patient is enabled to dress more in compliance with the laws of hygiene and with more comfort to himself, thus warding off many of the evils and dangers that constantly threaten him in a climate where the atmosphere is humid and subject to clouds and abrupt changes.

The advantage of a cool, clear, stimulating air for the consumptive is at once apparent, when we consider the narrow range of temperature to which the natural life-conditions of the bacilli are limited. This microbe does not thrive in the air at the usual temperature, but requires, according to Koch, a temperature approaching that of the human body. Its growth entirely ceases below 82° and above 107° F, and it thrives best about 98° to 100° F.

Rarefaction of the air plays a most important role in the process of arrest. At six thousand feet altitude the air is rarified one fifth. On arrival at a high altitude a man at once experiences an increase both in frequency

and depth of respiration. After a variable period of acclimatization, the respirations become a little less frequent, but somewhat deeper. Rarefaction means less oxygen. Light, cool, dry air and deficient oxygen cause habitually accelerated breathing, which in turn expands the lung, promotes pulmonary circulation, favors elimination of waste products, enriches the blood and facilitates nourishment of the tissues.

The greatest of all purifiers is the sun. If the patient when the weather is not too warm, can have a sunbath every day, the advantage is soon manifest. It strengthens the vital powers and inspires confidence.

When the disease is limited to the apex, a man of good personal and family history, with a well-regulated life and treatment, has pretty good chances in almost every climate, but with bilateral disease with cavities, there is but little hope of a permanent cure under any mode of treatment yet devised; yet life may be prolonged in a mild climate.

In moderately advanced cases of tuberculosis it is often a positive injury and hastens a fatal termination to deprive them of the comforts of home, to take may be a long trip with poor accommodations after arriving at their destination, and where there are cavities with hectic fever, night-sweats and rapid emaciation, it is out of the question in the majority of cases to send them away.

I shall make no attempt to describe Transatlantic resorts, for our own country affords a sufficient variety and range of climatic conditions to meet the wants of any case when change of climate is desired. It seems wholly unnecessary for Americans to seek relief at the various resorts abroad, when in our own land they may enjoy an equally good or even a superior climate at the health-resorts of the Adirondack Mountains, Southern California, Colorado, Asheville, N. C.; the Cumberland range of mountains in Tennessee and Kentucky.

While it is true that the Alps and Pyrenees afford

many attractions, the resorts of Colorado and the Rocky Mountains compare very favorably with them in every respect. If our American people would more generally seek health in our own sanitaria, the value of these places would soon be appreciated, and their fame become widespread. For the American, the health-stations of his own land are preferable, in that while he is seeking benefit from a change of climate, he is among his own countrymen with familiar customs, language and diet, a truly important factor in the treatment of many diseases.

In speaking of resorts I will mention the Adirondacks first. Here we have a region with a pure, clear, dry, cool, rarefied atmosphere, with good electrical conditions, and plenty of sunshine, which combines all that is desirable in a health-resort. Another important advantage is its accessibility.

For those who require a greater altitude, there is probably no better place than the range of Rocky Mountains, which passes through Colorado, for there is where they attain their greatest altitude, many peaks reaching a height of thirteen or fourteen thousand feet above the sea-level.

The mountain region of North Carolina, and the adjoining parts of South Carolina, Tennessee and Georgia have many desirable resorts. The country has a delightfully salubrious climate, in many respects similar to that of the White Mountains. It has an average elevation of two thousand feet above the sea-level, and some of the peaks attain a height of six thousand feet.

Asheville, N. C., is in the center of this region, and here the hotels are desirable and the scenery beautiful. It has a cool, dry climate, and is a favorite all-the-year-round resort.

I wish now to call your attention to the Cumberland range of mountains in Tennessee. I can assure you it is well worthy of your consideration.

The late Dr. E. M. Wright has left a valuable contribu-

tion on this subject in an article startlingly entitled, "A People Without Consumption," in which he refers to the inhabitants of the table-land of Tennessee, on the Cumberland plateau. He says:

"During the ten years I had practised medicine in the neighborhood of the Cumberland table-lands, I often heard it said that the people of the mountains never had consumption. Such information came to me in such a variety of ways that I determined I would investigate the matter. The observations extended over a period of four years, and were made with great care and with as much accuracy as possible, and to my own astonishment and delight I have become convinced that pulmonary consumption does not exist among the people, natives and residents, of the table-land of the Cumberland Mountains."

The facts seem all the more startling when one considers the diet of the native residents of the mountains. They live almost wholly on corn-bread, bacon and coffee; all food is eaten hot, and coffee usually accompanies all three meals, and is drank without sugar or cream. A large majority of the adult population use tobacco in some form, the men in chewing and smoking, the women in smoking and dipping snuff. They very seldom have dyspepsia, and they never grow fleshy after childhood, though nearly all the children are ruddy in appearance.

Southern California has perhaps enjoyed as much popularity as any other region, though that is not the case to-day.

New Mexico has many good places.

In Dakota and Minnesota some may do well, while others are more benefited in Texas. Before the third stage the Salt Lake Valley is a good place. The air is very rare and it is not too high, and as the country is new it offers a means of livelihood to the patient, and occupation is a desirable thing. In the northern parts

of Georgia and Alabama there are places with the proper conditions—sandy soil, evergreen growth, etc., adjoining rocky elevation.

In the early stages the uniform climate of Tampa Bay, characterized by a mild, genial climate, with a tonic, bracing atmosphere and most interesting and attractive semi-tropical surroundings will be of much benefit to the sufferer. Here the open-air life and exercise invigorate the digestion and assimilation, thus enriching the blood and eliminating the materials on which the disease depends.

When the disease is more advanced and there is consolidation with destruction of lung tissue, it may be arrested in some cases, while in others life will be prolonged, even when we cannot save it.

Sea islands and locations on the seashore are suitable for the residence of consumptive patients. The salt ocean air, by its bracing quality, is, as is well known, of undoubted advantage in this disease. Many incipient cases are cured by a prolonged sea-voyage, or by residence with an active life at the sea-shore.

In making the trip to the west coast of Florida, if the patient is a good sailor, the ocean trip to Savannah is to be recommended. The steamers are magnificent and the service unexcelled. As consumption is the result of a failure of nutrition, the journey is beneficial by acting as a stimulus to the digestive functions, enlivening the mind and nervous system by change of scenes and surroundings. There is also great benefit, both mental and physical, to be derived from the general change in the mode of living from an impure city atmosphere with conventional surroundings, to a wholesome, unrestrained country life. The change of temperature alone is not sufficient to account for it. The cold, wet days of our Northern winter climate are most depressing to the pulmonary patient and often prove very irritating to sensitive lungs. Even in the warm and genial climate of this Southern

country, the invalid should remember that there are at times a few cool days when comfortable fall or winter clothing is desirable. He should not dress too lightly, but should follow in this matter the habits of the permanent residents.

Flannels should always be worn next the skin as a safe and necessary precaution against any lowering of the temperature.

The Tampa Bay region is easily and quickly reached by land or water. The hotels and boarding-houses afford every comfort, Mr. Plant's Tampa Bay Hotel being one of the finest in the world. The best time to leave for a trip to Florida is about the beginning or middle of January and the invalid should not return until late in the spring, as the change from a warm Southern atmosphere to our cold March wind may be dangerous. The latter part of April or the first of May is early enough to return. Patients should be made to understand that a prolonged residence is essential to the arrest of this disease.

Thus we see, the paramount considerations for the promotion of health are an abundance of pure air, sunshine and outdoor exercise. Without these, no climate will restore the sufferer to health, but with them, wonderful results may be obtained.

THE VALUE OF CORRECT SITTING AS AN EXERCISE FOR INVALIDS.

FRANK K. HALLOCK, M.D.

CROMWELL.

A study of the habits and customs of the different races of men shows that the act of sitting down as a more or less permanent body-posture is limited in the main to Europeans and their descendants. With few exceptions the inhabitants of Asia and Africa and the Indian tribes of America do not in the proper sense of the word sit. They recline, lounge, sit on the ground or on low mats, squat or crouch in a variety of attitudes when not occupied in standing or moving about upon their feet. Very few forms of resting intermediate between the erect and horizontal positions seem to have been chosen. In savage tribes this is easily explained by the mode of living. Hunting and providing the necessaries of life represent the active part of their existence. The remainder of the time, when not asleep, is spent in lounging or squatting about their domiciles.

As the scale of civilization ascends we find more and more active effort expended in stationary occupations. Handwork and the manufacture of articles occupy the attention and sitting down to this labor is a natural consequence. It is surprising, however, to note how slowly the use of stools, chairs and tables has been adopted for work of this kind outside of Europe. Nations as advanced as the Japanese and Chinese in the mechanical and manufacturing arts, what might be called sitting occupations, still cling as a people to the floor and low-sitting attitudes. Thus it will be seen that sitting down, meaning by that term the use of a chair or other device to support the buttocks and allow the legs to hang, cannot as might be supposed be called a natural habit. It is acquired, and considered as the ability to do work on a

higher level, the habit must be regarded as a mark of the evolution of man and a sign of advanced civilization. It has been roughly estimatetd that less than ten per cent. of the total population of the earth sit, in the modern sense of the word.

Turning the attention to the present and noting the prevalence of weak and rounded backs consequent on faulty sitting-postures one is easily convinced that the evolution of correct sitting is far from complete. Much needs to be done in teaching and training children and youth to assume correct sitting and standing attitudes before good form in the human body is a common characteristic of civilized people. This well-known fact which it is pleasant to observe is becoming more fully recognized and appreciated, has not been the only incentive to emphasize in this article the value of correct sitting as an exercise. The results attained by training the muscles of the back to hold the body comfortably erect have convinced the writer that the education of the individual to sit properly is an important method of procedure in at least two respects: First, in treating the fatigue following effort, the common symptom of so many cases of weak back and general invalidism; and second, that by continual practice of this exercise the trunk can be held straight and in good form for long periods without becoming tired, much the same as the head is poised and held erect without resting throughout the day. The balance of the lumbar vertebrae upon the sacrum and pelvic structure can be easily maintained by proper training of the lower trunk muscles involved in this act. Soldiers, coachmen and persons of a calling in which correct body attitudes are a necessity stand and sit with perfect ease during their waking hours. The ability to do this may be considered a refinement of training not essential to the ordinary man, nevertheless there is no denying that it is a desirable body-habit and one easily acquired by the youth who will give his attention to it.

The advantage of assuming a correct position of the body in sitting, standing and all active movements until it has become a fixed habit is three-fold: First, all muscular acts are more perfectly executed; second, holding the chest high and forward favors full and free breathing, thereby increasing both the capacity for work and the power of endurance; third, the heart and other internal organs occupy a position in the body best calculated to insure their free and healthful action.

The following directions are usually observed in taking the correct attitude for standing and exercising: Feet slightly separated, toes out; weight of the body on balls of feet; buttocks and abdomen drawn back; chest thrown up and forward; shoulders up and back, but not held in this position except as it is assumed naturally, in consequence of the chest elevation; head well up, with chin slightly drawn back.

In sitting the same general position of the trunk is preserved. The chest remains elevated and the bending of the body occurs at the hips. The head is balanced lightly on the shoulders, the arms and hands hang freely, or are supported on the lap or chair, and the legs and feet rest comfortably on the floor. A faulty sitting posture generally results from a failure to keep the waist line straight, or more properly, viewed from the back, slightly curved forward. The bending or sagging of this line backwards drops the elevated position of the chest and tends to crowd together the internal organs.

It is natural to relax on sitting, especially after walking or standing a long time. It is a form of resting. Care should be taken, however, to postpone as long as possible the relaxation of the back muscles which hold the waist and chest in their proper positions.

It will be found on experiment that any position of the body which interferes with the respiratory movement will not be thoroughly restful. At least such a position cannot be long endured without change unless the individ-

ual habitually assumes an incorrect posture and has in consequence become more or less permanently deformed. A large, well-developed chest will assert itself, not only by reason of its size and formation, but because it demands full and free action. Hence it will be observed that as a rule, the athlete will assume more graceful and more correct attitudes of resting, even in extreme lounging, than the narrow-chested individual. The former is not comfortable unless his lungs have fair play.

A result from incorrect sitting not often fully appreciated is the development of a protruding abdomen. The curving backward of the spine tends to contract the internal organs, the upper viscera pressing down upon the lower. Furthermore, the anatomical arrangement and attachment of the muscles of the abdomen is such that the sagging backward of the spinal column relaxes these muscles, thus allowing the abdominal organs already crowded from above to bulge forward, forming a noticeable protrusion of the anterior surface of the body contour. The abdominal muscles therefore, are over-relaxed by this pressure from within and gradually becoming attenuated are less able to preserve a normally tense abdominal wall. If, on the other hand, the individual has been trained to the correct attitude and the abdominal muscles are well developed, they cannot be overstretched and consequently both the lower and upper viscera are held in their proper place. Thus the preservation of a more healthful body-position is favored and it follows that the development of strong muscles over the abdomen is a positive help in educating the body to sit and stand correctly.

The wearing of corsets and close-fitting dress waists has a similar weakening effect upon the abdominal muscles as well as those of the back. They serve a good purpose in tending to preserve a straight back and waist line but this is at the expense of seriously constricting the upper abdominal region. This compression results in the

partial displacement of the viscera, both upwards and downwards. The upper abdominal and waist muscles are more or less immobilized directly by the pressure and the lower abdominal muscles are overstretched by the downward crowding. The false or artificial nature of the support given by corsets is readily appreciated by women in attempting to hold the body erect in the sitting posture without them. They soon complain of a feeling of weakness and seek an easy position with full support at the back. In the exercise as here intended the trunk should be free from any constriction, thus allowing the muscles full opportunity for development.

While the training of the abdominal and other muscles of the trunk is a very important and necessary feature of learning to sit properly, nevertheless, it is well to understand that the muscles of the back do most of the work in holding the body erect and that therefore they especially will be fatigued after long use. The same resulting fatigue is noticed in exercising any other group of muscles, as for example the muscles of the arm. Raising and lowering a dumbbell many times will make the biceps tired and lame. The difference in the two exercises is that the fatigue of the arm muscles is localized, while that of the back muscles is more general and the patient may feel tired throughout the body. If the number of muscles of the trunk and back and the comprehensive character of the work they do is taken into account, it is easy to see how a feeling of general fatigue may result, or be added to a more localized backache.

It is not to be expected that the individual with a weak or deformed back or rounded shoulders or the invalid in general, will be able at first to sit properly for any length of time. The act of sitting erect, like all attempts to improve the form and strength of the body, is to be treated as an exercise to be practiced for short periods, gradually increasing the frequency and duration of each effort

It being impossible in such cases therefore to main-

tain the proper sitting posture very long at a time the individual is compelled to assume more relaxed positions.

These, for convenience,may be divided into two classes: First, those postures in which the body is held fairly erect but receives support at the back, as in the ordinary chair; second, those postures in which the body reclines backward at a distinct angle from the perpendicular and receives support at the shoulders or throughout its extent, such as is afforded by most easy chairs.

Whether the sitting posture is partially or fully relaxed, the aim should be to bend, incline or support the body in such a manner as will still preserve a correct waist-line and free action of the chest. Leaning forward with a bent back and drooping shoulders is not a truly relaxed or restful position because the lungs and internal organs are cramped. Likewise, reclining backward or sliding down in the seat until the tip of the spine and the shoulders are the two points of support, is as ungraceful as it is incorrect. The spinal column sags or bends backward with the same contracting effect on the breathing and abdominal organs. Without attempting to describe the various other attitudes assumed by individuals seeking so-called comfortable positions of sitting, it may be said very positively, that without exception, no form of sitting posture is thoroughly satisfactory which limits the free action of the viscera of the body.

The attention is now directed to the act of sitting erect without any support at the back. In order to practice and acquire the habit of holding the body easily in the upright free-sitting attitude it is desirable to have a fairly clear conception of the muscular task in view. With invalids and nervous people much of the fatigue which follows the effort to sit properly is the result of spending more nervous force than is necessary. Muscles that should be quiet and easy are kept tense and strained and hence it is important to consider just what work is to be done, and relax in every other particular. At first, or

until the trunk muscles are sufficiently strong and the correct body-habit has been acquired, it will be found necessary to make a practice of deliberately putting to rest all muscles which are not employed in the specific effort of maintaining the chest and waist in their proper position.

The best method to obtain an intelligent conception of the body, the condition it is in and how it should be modified, is to examine in routine order its different parts, noting the state of the various muscle-groups, whether they are relaxed or under tension. Beginning from below and passing up, first see that the feet rest rather than press on the floor. Note that the leg and thigh muscles are lax and the knee-joint is bent at an easy angle. The entire lower extremities can be thought of as free and loose and not entering into the ordinary effort of sitting erect. The buttocks serve as a cushion or basis of support and need be subject only to pressure from the super-imposed weight of the trunk, arms and head. Secondly, see that the muscles of the lower part of the back are tense and firm, doing the work of holding the waist straight and in position. Here is the point on which the attention and all conscious effort is to be focused. The muscles of the upper part of the back are of next importance in maintaining the upright position. Other muscles of the trunk also assist more or less in holding the body erect but the chief work comes at the posterior part of the waist or in the so-called "small of the back." It is well to remember this and to consider, as previously stated, that here will be the principal strain and the seat of the most fatigue.

The advantage of localizing this fatigue rather than considering it general is that it draws attention to a definite set of muscles which need steady and persistent training. Much of the general weakness and indisposition of men and women of the leisure class can be directly traced to imperfectly developed muscles of the back

and waist. Lack of body activity and the easy-chair habit are the two most evident contributing causes for this condition. Ordinarily persons with weak backs are sufficiently conscious of the pain or ache in this region following exercise, but many invalids experience a universal fatigue which is only partially referred to this locality. It is particularly to this class of patients that it is an advantage to know precisely where the chief source of their fatigue lies. They can proceed at once to strengthen the weak spot and when this is done they have removed the main cause of their tired feeling. One should bear in mind that the waist is central, it is the hinge or pivotal point of the body, and all movements above or below, in the upright position, are associated directly or indirectly with a state of tension of the muscles of this part. Hence, while most of the resulting fatigue is localized at this point much is also radiated, so to speak, and being combined with the fatigue in other groups of muscles a general tired feeling results. Certain it is, that a special effort limited to the exercise and development of the muscles of the small of the back will in most cases do more to relieve general bodily fatigue than more comprehensive exercises or those involving the improvement of muscles more remotely situated from this centre.

The third group of mental notes to make as to the state of tension in the body relates to the muscles of the arms, shoulders and head. The former may be thought of as being attached lightly to the shoulders or as free appendages of the chest and trunk which have no part in maintaining the erect position. They hang lightly at the side or are free to move in any direction independent of any association with the tension of the back muscles. The shoulders are supported on the chest and are subject to no strain in sitting unless the individual has an undeveloped chest and an habitual round-shouldered attitude. In the latter instance considerable effort has to be ex-

pended in holding the shoulders back and up in the correct position. The head and neck, similar to the arms and shoulders, should be considered as detached portions of the body in the sense of having no share in holding the trunk erect. Although the vertebral column is directly continuous through the neck to the base of the skull there need be no corresponding continuity of the muscular strain compelling the head to be held stiff and erect.

As one assumes the sitting posture and runs the eye over the body, noting what groups of muscles are to be put to rest and what to be held in a state of tension, more or less difficulty is usually experienced in accomplishing the result desired. The common tendency, as mentioned before, is to extend the tension to muscles which should be at rest. To overcome this difficulty and thus save the unnecessary expenditure of both nervous and muscular force the following relaxation-procedure is recommended: First, lie flat on the floor and conceive the body to be lifeless or absolutely dead weight, not only as a whole, but also in all its parts; with this idea in the mind allow another person to lift and move the head, also to bend, raise and toss the legs and arms about until complete relaxation exists in all the parts thus handled. The individual neither assists or resists in any of the movements and is resignedly passive to all that is done. Second, following this horizontal relaxation, the sitting position is assumed and the same manoeuvres are gone through, with such modification as the position requires. Third, the patient undertakes self-relaxation in both the lying and sitting positions. This latter operation consists of slow, incomplete movements in the different muscular groups with a rather sudden letting-go of the contracting force and the limbs or head falling back to the original position by gravity. Thus, the head is dropped forward or to one side, raised to the erect position and allowed to fall again by its own weight. Likewise the

arms and legs each in turn are lifted or moved in various directions, sinking back relaxed to their former position as the movement-effort ceases.

The value of this relaxation-procedure will scarcely be appreciated by the individual in the normal state of health, because there is comparatively little extra expenditure of nervous and muscular force beyond that actually needed. In the weakened state of the body however, when all exertion is more or less difficult, the act of contracting a special group of muscles is not usually so limited to the group in question. It is more widespread, involving adjacent muscles and creating a state of tension often very general. Examination of a neurasthenic individual during the performance of some comparatively simple muscular act will almost invariably show a misappropriation of nervous force.

With an intelligent conception of the value and importance of the exercise of sitting erect, it is of especial advantage to understand the significance of a weak back. The localized pain or ache tends to induce the belief that the weakness of this part of the body is distinctly referable to the vertebral column; that the spinal cord itself or the special nervous organization of this region is chiefly at fault. In reality the bands or pillars of muscles on each side of the vertebral column are more truly the seat of this weakness; it is they which experience the fatigue or other symptoms following exercise rather than the nervous tissue pure and simple. More exactly, it is a natural weakness both in the muscular and nervous protoplasm and in a true physiological sense it is practically impossible to differentiate as to the preponderance of one kind of weakness over the other. They go hand in hand. The main point however is to consider that the muscle and nerve weakness is associated together in these muscular structures and not in the spinal column. In extreme nervous exhaustion it is proper to consider the weakness as primar-

ily nervous and in such cases rest and not exercise is to be first prescribed. In convalescent patients and following a period of rest the nervous tissue may be considered as in part recuperated and then exercise has the twofold effect of developing and improving both the muscle and its nerve supply. Thus it is, that at the proper time muscle-building in the invalid reacts favorably on the nervous system and builds that up as well. The practical advantage of this conception is, that the patient has a tangible object to deal with, and something in a certain sense outside the nervous system. The term "weak-back" loses its indefinite and rather discouraging significance and becomes a muscular reality. Viewed in this light the patient takes up the task of strengthening it in the same way and spirit that is followed in developing weak arms and legs, viz., by systematic, graded exercise, punctuated with proper intervals of resting.

It is true that the local back-training goes hand in hand with more general exercising. One helps and supplements the other, but the great value of correct sitting as an exercise is, that it can be undertaken early and practiced daily before other active body-movements are advisable. In many forms of nervous weakness and convalescence from sickness in bed it is especially valuable, as the heart's action is least accelerated and the entire body remains passive with the exception of the back muscles which are under quiet but steady tension.

The practical result of viewing the act of sitting erect as a special exercise and devoting considerable attention to it is, that the subsequent active efforts of the invalid are attended with less fatigue and the progressive gain in strength is more rapid. The patient who remains in bed longer and limits the body-energy to training first the back muscles, will gain time over the patient who expends the same energy in more general and indiscriminate exercise. It may be remarked that the practice of

sitting up and exercising during convalescence generally regulates itself, but here is just the point, that the process of convalescence is not left uncertain and subject to the experiment of the patient. A definite method is prescribed which not only facilitates the process of recuperation but also tends to form a valuable body-habit.

SUMMARY OF SUGGESTIONS.

I. In partial or fully relaxed sitting attitudes endeavor to adjust the body to its support in such a manner as will insure as straight a waist-line as possible and free play for the lungs and internal organs. In ordinary chairs press the buttocks firmly into the angle formed by the back and seat and keep the chest and shoulders well up. A firm rather than yielding back-support is desirable. To sit bolstered up in bed or on a sofa is admissible at the beginning of convalescence but is not to be recommended for any extended practice on account of the tendency of acquiring a rounded spine. An inverted chair with short straight back or a wide board cushioned with a single pillow is a preferable support as the trunk of the body can then be held in fairly good line from the hips up.

II. In sitting erect the following points are to be observed:

1. Select a chair of proper height so that the legs will hang free and the feet be supported on the floor.

2. Upon first sitting down form the habit of always assuming the correct body-position and sitting free and erect; later on, as fatigue appears, push the entire trunk against the back of the chair and take advantage of the rest and support it gives. After becoming tired in this position take an easier chair or recline thoroughly relaxed, taking care however to preserve good form as fully as possible.

3. It is advisable to have definite times for practicing erect sitting, e.g., during meal times and such other stated periods as the strength will allow.

4. After the proper position has been assumed it is well to keep the attention occupied by reading or by other diversion. Time passes more quickly and fatigue will be postponed if not watched for too closely.

5. Change of position, leaning forward, standing up, and a variety of movements and attitudes can be indulged in, always however, keeping the body properly poised, and after the shift, coming back to the original sitting posture for its further continuance.

6. Study to sit gracefully, whether upright or in a relaxed position. Stiffness and rigidity denote a failure to relax muscle-groups which should be at rest. The cultivation of a graceful posture is essential to ease and comfort and the ability to sit correctly a long time.

7. The proper mental attitude to be assumed in this, as in all exercises is of supreme importance. Especially is this true in the case of invalids. The individual must thoroughly appreciate the value of strong back-muscles and be willing to work slowly but persistently to acquire them. Furthermore, the fatigue, pain or exhaustion which may follow the effort is to be endured cheerfully and even with satisfaction in the knowledge that it is a natural and proper consequence and that it forms a necessary part of gaining strength.

THE PRACTICAL TREATMENT OF ECZEMA.

T. M. BULL, M.D.

NAUGATUCK.

In looking over the subject of eczema in a recent book on Diseases of the Skin I was struck by the large number of prescriptions for the cure of this disease and took the trouble to count them with the following result: There were thirty-one different prescriptions for internal use—tonics, bitters, alteratives, aperients, sedatives, mercurials, etc., etc.; fifteen different methods of preparing the skin for treatment—baths, poultices, packs, fomentations, stupes, oils, soaps, etc.; then one hundred and fifty-five different prescriptions and combinations of medicines for external use. And this in a small, almost elementary, work on dermatology.

Doubtless somewhere among these two hundred and one different methods of procedure there would be one at least suitable for every kind of case that might ever arise, but I can well imagine the dismay which would strike a young practitioner's heart if with very little or no experience he should start to look up something for the cure of an eczema. It would be almost impossible even for one well used to the action of drugs to tell what the effect of the different combinations would be, and if he should begin to experiment with them seriatim may Heaven help the patient and the practitioner as well!

It is somewhat of a relief in such a time as this to know what are the means actually employed in the hospitals and by the dermatologists themselves. Because in the long run the methods which are used in the dermatological clinics and hospitals are the ones best adapted to the cure of the disease in a safe, rapid and pleasant manner.

Any method which accomplishes this may be called a practical method, if in addition sometimes, it has the mer-

it of not being beyond the patient's means. If you order an ointment for a poor patient to be applied thickly twice daily over a large surface and the patient finds that it costs fifty cents an ounce it will often not be used freely enough or long enough to complete a cure. This point, while it seems almost unworthy of a physician, may frequently be of a very practical importance in the cure of the disease; may and indeed often does make the difference between success and failure, which is a point of no mean importance.

In treating a case of eczema first be sure of your diagnosis—"Catch your hare before you cook it"—for if you treat a case of psoriasis or rosacea or lichen ruber or ichthyosis, scabies, pediculosis or most of all syphilis, each one of which is often taken for eczema and every one of which I have seen treated as eczema by the ordinary rules for this disease, the results will probably not be very brilliant. If in any degree successful, it will probably be due more to good luck than good management.

It seems almost like foolishness in a company of physicians to refer to such a thing as the propriety of curing any given case of eczema. But there exists so widespread a notion among the laity that certain cases of eczema, ulcers or skin disease ought not to be cured, for which idea they often quote some medical man's advice, that I feel it ought to be referred to.

In the dermatological clinics of New York I have frequently heard the remark made that "the doctor said it was better for the disease to be outside than in, for if cured it would certainly appear in some internal organ." I have sometimes had patients decline treatment when a cure could have been guaranteed, for the reason, that it would "strike in" if cured. Such an idea is pure nonsense without one atom of foundation in fact, and in my opinion generally arises from a doctor's throwing an anchor to windward if he thinks he is unable to cure the

disease. On tracing up such advice, it is generally found to emanate from some eclectic, homeopathic, or doctor of a generation ago and the idea will fall in well with the marvelous discovery of Hahnemann that scabies was the outward manifestation of the inward psora.

Having seen over a thousand cases of eczema treated with more or less success I am sure if dire results followed in any number of cases I should have noticed it. Patients who have been cured of eczema may be sick and die and all are sure to in time, but don't lay it to the cure of the disease! On the contrary a man will certainly be in better health when the constant itching and general uneasiness which any considerable amount of eczema is pretty sure to develop, is removed. In some cases of eczema of the anus and scrotum which I have seen, the loss of sleep, of appetite, of health and strength, due to the constant itching and irritation, has worn the man almost to a skeleton and the most rapid increase of weight I ever saw, was in one where the distress had been quickly removed.

So, cure every case possible and remember that every case of eczema is first and last and always curable! But when the case has gone for so long a time or been so intense that the natural elements of the skin have been destroyed and cicatricial tissue formed, it will of course be impossible to restore the parts to their natural state. However, the extension of the process may be stopped and the subjective symptoms removed.

One more practical point is in the form of a prohibition: "Don't poultice an eczema!" Whatever ideas of the benefits of a poultice you may have in erysipelas, adenitis, cellulitis, pneumonia or pleurisy, if you wish for the best results don't try a poultice on eczema! The only place in the treatment of eczema where one is ever admissible, is to remove the crusts and scales, which indication is much better met by macerating in some bland oil for several hours. I am positive that I have seen

many cases of eczema either caused or made worse by poulticing, even with a perfectly bland poultice.

And don't wash eczema with ordinary water, hot or cold, or with most soaps! There is no more common mistake than this made as I am sure that nine tenths of the eczemas I have seen have been thoroughly washed and many times by the doctor's advice. I have often cured eczema where the only difference in the treatment was to shut off the water and have the parts cleansed with sweet oil or vaseline. As you see a case covered with crusts, scabs and exudation the most natural thing to do is to order a bath of soap and water and to continue the treatment. But I have the best authority in the world as well as my own experience for the statement that washing is almost never indicated in eczema. I wish to insist on this point as the most important one I shall make and to say also that even negligence in not advising a patient to abstain from the use of water is reprehensible. So, neither advise nor allow the use of water in any case of eczema you may be called upon to treat!

Of prime importance in the treatment of eczema is proper living and in many cases the radical cure of the disease necessitates an improvement in the general hygiene of the patient. Carefully try to remove any cause of nerve-tension and anxiety. Give only the most digestible foods and in small quantities at regular intervals. Cut off any excess of sugars, starches, meats or fats, in the diet. Some cases I have thought were greatly aggravated by the habit many young ladies have, of continually munching candy. This needs correction. Have the patient take moderate exercise in the open air or in a gymnasium. Severe exercise in my opinion is generally to be discouraged.

Have the patients drink plenty of water; oftentimes you will find that they have been drinking only three cups of tea or coffee daily, not enough liquid by half to properly carry on the internal economy of the individual.

A practical way of causing them to drink more if you think your admonition alone is insufficient, is to have the patient take a teaspoonful of indifferent medicine in a tumbler of water several times a day. You will often succeed in this way in flushing the excretory organs when the plain advice to drink more water would have comparatively little effect.

The opposite extreme of imbibing more liquid than is best, whether of tea, coffee, beer, wine, or other alcoholics should also be guarded against. Some of the worst cases of eczema I have ever seen were in patients accustomed to drink great quantities of beer. The use of alcoholics in any form should be interdicted in eczema. They tend to congest the skin and so add fuel to the flame. Their continued use certainly increases the tendency to gout, rheumatism and Bright's Disease, which are all inimical to the cure of eczema.

The lives of a very large proportion of patients are rendered more or less unhygienic from the habit of drinking alcoholics and its correction may be necessary, before success in treatment is possible.

The excessive use of tobacco is injurious and has a particularly bad reputation in eczema of the anus and scrotum.

One might think from the amount of time spent in the prohibitive, hygienic and non-medical side of the treatment that the medical part would be very long, especially after the resumè, with which I commenced. But as a matter of fact, if these points are well attended to the strictly medical treatment may as a rule be made comparatively short and simple. And you will find that the ease and permanence of the cure will depend as much on the non-medical treatment as on the kind and quantities of the internal and external drugs used.

The strictly medical treatment may be divided into internal and external. Writers differ greatly in regard to their estimate of the comparative value of these two

methods of treatment, some giving the pre-eminence to one, some to the other. But all agree that a combination of the two is best in the majority of cases. The internal treatment while often of importance may be dismissed with a few words. It really resolves itself into doing all you can as a physician to normalize as much as possible the condition of the patient. Correct as far as possible any fault that may be found with the stomach, liver and especially the bowels. In an acute case a saline purge or a few small and repeated doses of hydrag. mite. will sometimes work wonders. Tonics of iron, quinine, strychnine, cod-liver oil and the vegetable bitters in suitable cases are often of great benefit. Diuretics and anti-rheumatics are often of service in cases where outside of the skin-lesion they would naturally be used. Quinine in moderate doses I have often seen of great benefit, especially in malarial subjects. Some writers consider that malaria is one great cause of the disease and inasmuch as its presence in certain localities complicates almost everything one is called upon to treat, it is not unlikely that it may be a factor of some weight in causing and keeping up the disease.

Strong doses of sodium or potassium bromide are often of service to allay the itching. Sometimes this is the most important symptom to treat, for if it would cease and the patient could keep from scratching, the disease would soon recover spontaneously. Never use opium though to stop the itching as it is very apt to increase the trouble. I have seen some patients driven nearly frantic by the pruritus caused by a grain or two of opium given them with the best of intentions by a physician whose only thought was to cure the sleeplessness due to the constant itching.

It is necessary that a few words should be said in regard to the use of arsenic in eczema inasmuch as it has had such a reputation in the past and is still used very largely by a great many practitioners. At the pres-

ent time its indiscriminate use is very generally discouraged by dermatologists, and its field of application limited almost entirely to the chronic squamous forms of the disease. A generation ago it was said that you might divide all skin-diseases into two classes, viz., the eczematous and non-eczematous, and the diagnosis was not of importance, for the treatment of each was the same, namely, arsenic. At the present time this loose method of diagnosis and treatment would be considered hardly correct. I have watched its action many times and have been able to see very little good from its use in eczema, although I have seen it carried far beyond the physiological limit several times. If used at all it should be begun with a small dose and gradually increased until some puffiness under the eyes, sore-throat or gastric disturbance denotes the limit of toleration. It may be held at this for a time or gradually reduced. Inasmuch as it is a dangerous remedy and capable of doing much mischief it ought not to be used unless you can keep the patient under observation. To give a patient a prescription for Fowler's solution with instructions to gradually increase the dose and not see him often, is to invite trouble in the near future.

There are many other drugs of service in eczema but inasmuch as it is impossible to mention them all and we have outlined the use of the more important ones we will proceed to the discussion of the external remedies.

And they are legion. Puffs, powders, pastes, plasters, paints, protectives, lotions, liniments, oils and ointments, gelatines and jellies, collodions and caustics, washes, soaps, and solutions, mulls and mixtures, etc., ad infinitum, and when you realize that many of these different varieties are used with an infinite number of combinations you can easily see how the one hundred and fifty-five prescriptions of the book were produced.

All of these preparations are useful in some cases and their employment is not to be decried but I will say that

in an experience of over two years in the dermatological hospitals and clinics of New York the measure which was finally successful in nine tenths of the cases was a properly made and applied ointment. I say properly made, because I have often had patients throw away the ointments which came even from good drug-stores in response to a prescription. The average drug-clerk will not take the time absolutely necessary to thoroughly mix the ingredients of many ointments. Then again when only small quantities of an ointment are kept during the summer they will often become rancid and I know from experience that many druggists make no conscience of putting such an ointment into a prescription,to the great detriment of the patients, as sour ointments are nearly always irritating. This is especially true in the case of infants with an acute attack, as a slight degree of rancidity in such a case will suffice to turn an otherwise bland ointment into a very irritating one.

The proper application is also just as important as the proper ointment. To simply smear on or rub in is generally of little or no benefit: to be of use it must be applied spread on lint, double or quadruple folds of cheesecloth, or the fuzzy side of canton flannel. The rule in the skin hospital is to spread the ointment as thick as the back of a case-knife or as butter on bread. That is, it must be spread in an even, smooth layer on the cloth. Then it should be bound on with a bandage and kept tightly applied to the part. If the disease is on the fingers the ointment should be bound on each separately, or it may be spread on them and a pair of cotton gloves drawn on. On the face a mask of canton flannel with holes for eyes, nose and mouth and with a gore at each corner to make it lie smoothly over the forehead and chin should be used. In the ears, tampons may be used, covered with ointment and inserted. On the head, in children especially, a sort of skull-cap or hood may be used. For the scrotum or perineum a pair of swimming-tights or

old drawers will answer nicely to keep the ointment applied, and in women with eczema of the vulvae the T bandage will suffice. On the feet and legs the salve should be spread and applied, then bound on and a stocking placed over all.

The worst cases are where the eczema is universal; if a doctor undertakes to dress a case of this kind, as he contemplates the whole body to be covered and bandaged in, he is liable to be filled with a feeling akin to despair, especially if he has anything else to do that day. But as a rule the amount of eczema rapidly diminishes if treatment of this kind is carried out and so it is generally not necessary to dress such a case many times.

For the purpose of treating eczema, ointments may be divided into two great classes, viz., the bland and the stimulating. To the former class belong the unguentum simplex, the unguentum diachylon, unguentum aquae rosae, unguentum zinci oxidi, lanolin and vaseline. Of these the hard-ridden and omnipresent oxide of zinc ointment is probably the most used and for general purposes is as good as any. It is often used as the vehicle with which various amounts of other ointments are incorporated. It is more apt to be of good quality than the unguentum diachylon which deteriorates rapidly with age and is often not properly prepared. The unguentum aquae rosae is more elegant and having a more pleasant odor is of especial use about the face and where the smell is somewhat offensive. Lanolin, the fat from sheep's wool, is said by some to penetrate more deeply into the skin. Vaseline or petrolatum are good vehicles but do not seem to work well alone, especially in acute eczema. and in the Skin and Cancer Hospital were never used for this purpose.

The stimulating ointments are generally formed by taking some bland ointment and adding to it a certain amount of some stimulating substance, such as tasoleum rusicoleum cadini, ammoniated mercury, resorcin, sul-

phur, salicylic acid, salol, carbolic acid, iodoform, thynol or some of the new coal-tar products.

The art of treating an eczema with ointments consists in applying an ointment of the proper strength at the proper time. The bland ointments are to be used in the early stage of the disease and whenever the process is acute. As the process becomes less acute the same or a stronger mixture is made until the disease is cured. It is almost impossible to give the patient one ointment which will answer for all stages of the disease, as it will be either too stimulating at first or too bland after a time. Watch carefully that you do not get the ointment too strong and if at any time it seems to irritate or cause inflammation a good rule is to remove it and substitute a bland ointment or one much less stimulating. Some patients will stand a great deal of pain and distress, thinking it is for their benefit, while as a matter of fact an injury is often done by persisting in the use of an ointment which is too irritating.

Beginning then in an acute case of eczema with a bland ointment, generally the oxide of zinc, as the process becomes less active some stimulant, most often tar, is added and a good way to combine them is by making different strengths of the oxide of zinc with unguentum picis; using at first very small amounts of unguentum picis, not over ten per cent., it may be increased even to seventy-five per cent., in hard, thickened patches and in the most chronic cases it may be used for a limited time pure. Although tar is dirty and disagreeable, like iodoform, it does not seem to be displaced by any of the later and more elegant compounds. With these two ointments, oxide of zinc and tar properly combined, you can cure the vast majority of cases of eczema.

Prof. Fox used to sometimes tell a story of an old practitioner who said he could cure every case of eczema with sweet-oil and soft-soap, and while not endorsing these limited therapeutics he said that if one could alter-

nate and grade these two types of treatment properly many cures might be effected.

Of the other stimulating substances, the oleum rusci, oleum cadini, resorcin, salicylic acid, salol, iodoform, etc., are used, roughly speaking, in proportions of from ten to sixty grains to the ounce. They are combined with the different bland ointments and with each other in an endless number of combinations which it is impossible to repeat here.

Sulphur and resorcin have a special value in the treatment of eczema seborrhoicum and here sometimes work wonders. The sulphur is used in the strength of from thirty to sixty grains to the ounce and resorcin in about one half that strength.

There is a point of some importance in regard to the use of the more powerful stimulating ointments. That is, that a strong ointment which on a clear, cold day will be all right and do good work, should the weather suddenly change and become warm and moist, and at the same time the man engage in some occupation which requires muscular work and induces perspiration with its accompanying relaxation of the skin and greater opportunity for absorption, will become entirely too strong and cause a great deal of discomfort or even a violent dermatitis. I have witnessed this several times and draw attention to it because I have never seen it noticed in the text-books.

Of the other methods of treating eczema the one by lotions is probably secondary only to that by ointments. They are made with an infinite number of formulas and are especially useful where it is inconvenient to apply an ointment, as on the face and in the acute stages of the disease. They are generally mixtures of the mercurial compounds, oxide of zinc, callamine, tannic, carbolic and salicylic acids, starch, etc., with glycerine, alcohol, water or lime-water. According to their composition they may be either bland, stimulating, anti-pruritic or an-

tiseptic. They should either be daubed on the skin and allowed to dry, or cloths soaked in the lotion may be laid or bound on the part. Their use should often alternate with that of an oil as sometimes they make the skin dry and liable to crack. An especially good formula is a dram each of sulphide of potassium and sulphate of zinc dissolved separately in an ounce of water and then mixed. To this may be added carbolic acid, listerine, camphophenique, creolin, rose-water and many other things. It may be colored by the addition of calamine so it will hardly show on the lips or on red faces. The simple formula is known as lotio alba and in the Skin and Cancer Hospital was used by the gallon.

A lotion or more properly oil made by mixing equal parts of sweet-oil and lime-water, similar to carron oil is very useful in acute cases and by adding various amounts of stimulating or antipruritic ingredients may be adapted to almost any purpose.

Often the main symptom of which the patient complains is the intolerable pruritus. It keeps him awake, runs him down and often causes him to avoid society as the desire to scratch is so strong. Many times the patient would recover quickly if this could be stopped and the constant irritation and denudation of the epidermis by the scratching cease. To cure this most disagreeable symptom I know of no better internal treatment than large doses of the bromide of potassium, although some of the new coal-tar compounds, sulphonal, acetanilid, antipyrin, phenacetin, etc., are often of service. But as I have said before, never use opium for this purpose.

Externally we can do a great deal for the pruritus. In many cases if the disease is kept constantly covered with an ointment, especially one that is somewhat stimulating, it will be much less. When a change is made have the new dressings ready spread so that the disease will be exposed to the air for only a moment and a paroxysm of pruritus may often be prevented. In acute cases lotions

or oils containing carbolic acid, tar, camphor menthol, creolin, thymol, etc., are often of the greatest service. In chronic cases the same means may be used but may be somewhat stronger, and of especial value is a mixture of the ointments of oxide of zinc and picis bound on the parts. Alkaline lotions and those containing chloroform and chloral are useful.

A very valuable prescription for this purpose is one containing a dram each of carbolic acid and liquor potass. to four ounces of linseed-oil. If the finger-nails are kept short and smooth and the hands covered at night with a soft mitten much of the scratching and consequent irritation may be prevented.

Of the other methods of treatment which I have mentioned I will say that while they are often of service and while the disease may undoubtedly be cured by them, as a matter of fact they are not used to anything like the extent of the foregoing. Puffs and powders are principally used to keep parts from chafing and to subdue pruritus.

Considerable may be done with soaps. Their effects vary from the almost perfect blandness of the overfatted soaps to the active stimulation of those in which tar, carbolic acid, corrosive sublimate, etc., are incorporated. But when you consider the number of gallons of water with which in actual practice the small amount of medicament in a cake of soap is diluted you will realize that often their effect is overestimated. A dram of carbolic acid for instance in a cake of soap used for several hundred washings of perhaps a gallon each, will make a solution of which no vigorous pathogenic germ need have any fear.

The plasters and mulls introduced from Germany a few years since are practically ointments already spread and if fresh and easily procurable in the proper strength may be used as such. However, in a service of several weeks recently in the Dermatological Department of the

College of Physicians and Surgeons I never saw them used once, although the shelves were piled high with varieties.

The pastes, gelatines and jellies may be procured in a great variety of strengths and proportions but as a rule offer very few advantages except in the line of cleanliness over the ointments and often require considerable skill to properly compound. There is however one paste which for general application and practical use in the hospitals rivals even the common oxide of zinc ointment. It is the celebrated Lassar's paste, composed of starch and oxide of zinc, twenty-five per cent. each with fifty per cent. vaseline and a small amount of salicylic acid (generally about one per cent.) By varying the proportion of the acid and adding other ingredients it may be made either bland, stimulating or antiseptic.

The collodions, caustics, liniments, protectives, etc., are sometimes useful in eczema of peculiar varieties or situations but as a matter of fact at the present day are seldom employed.

A question often asked by laymen and sometimes by doctors is, "Can you cure eczema so it will stay cured." A sufficient answer to a medical man would be that when he can cure all of his cases of dyspepsia and bronchitis so they will never need any more treatment, when the laryngologist can insure that his cases of catarrh will never relapse, when the ophthalmologist can assure us that his cures of conjunctivitis will never recur, then it will be time for the dermatologist to assume that if his cases of eczema are once cured they will always stay so. But as a matter of fact, if the original cause is still active, if bad hygienic conditions and a defiance of every known law of health are persisted in, none of us can cure a catarrhal condition of the mucous membranes or skin so it can be guaranteed not to relapse.

This principle may be brought to a layman's mind by telling him that when his lawyer can so settle his legal

affairs that he will need him no more, when his minister can shrive him so he will sin no more, we will be able to cure his eczema so there will be no danger of a relapse.

But we can assure a patient that if he will follow proper advice in regard to diet, exercise, hygiene and local treatment we can reduce to a minimum the danger of a recurrence and in a great many cases it will never appear to any extent again.

We are not allowed much surgery nor radical measures in the treatment of eczema; we can not afford to remove a man's epidermis as a surgeon does his appendix vermiformis simply because it has been inflamed and liable to be again.

No woman could be induced to part with her entis vera for fear an inflammation would relapse, although a gynecologist might induce her to allow him to remove her appendages lest something of that kind should occur. And so, having to deal with an organ which is absolutely essential to existence,we must content ourselves with doing the best we can to make it approximate as nearly a normal condition as possible.

The importance of the proper treatment of eczema may be estimated from the fact vouched for on high authority that at some time between birth and death nearly every human being suffers from it. It may be in the form of the cradle-cap or diaper-eczema of infancy, the chapped hands or dandruff of maturer years, or the varicose or squamous eczemas of old age, but in some form or other nearly every human being suffers from it and many persons severely and often. Inasmuch as it is so common and often so severe, a proper knowledge of the best ways of preventing and curing it is correspondingly important. And in the hope that the ideas expressed in this paper may be of some use to the members of this Society or at least provoke a discussion of this important subject, it is respectfully submitted.

REPORT OF FOUR CASES OF PLACENTA PRÆVIA.

THEODORE G. WRIGHT, M.D.

PLAINVILLE.

At five o'clock on the morning of February eleven, 1896, I was called to attend in confinement a woman living within five minutes' walk from my office. The patient was thirty-one years of age and the mother of four living children, this being her fifth confinement. I had attended her in several labors which were normal and at the birth of the fourth child she was attended by a midwife. She informed me of her condition several months before this sickness but did not engage me to attend her as she intended to again employ a midwife. She expected to be confined about the first of January and I thought appearances indicated that she would be. The messenger who came for me February eleventh stated that she had been in labor all night but seemed to be making no progress and it was thought necessary to have a doctor as she was losing a good deal of blood. Upon making an examination I found the bedding considerably saturated with blood, the os well dilated, blood flowing from it, and the placenta slightly protruding. The child was lying in a transverse position, its head being on the right side of the mother. I sent for another physician whose office was but a few rods distant and he administered an anesthetic while I detached the placenta and turned and delivered the child. In detaching the placenta and immediately following its detachment the hemorrhage was profuse and alarming, the blood being forced in a large stream which covered my shoulder and side and deluged the bed with one sudden gust. As rapidly as possible I delivered the placenta, brought down the feet and delivered the child which seemed to be lifeless, and after making artificial respiration for a

short time I said to the other physician, I thought it was useless to do any more for the child but he advised further efforts and finally we had a living child and a living mother who made a good recovery.

Nine years ago in response to a circular letter from our County Reporter I gave a report of the three cases which I had seen in a practice of twenty-two years and from that time until now I have not seen or heard of any other case of placenta prævia in the vicinity where I am located.

As I reported nine years ago, the first case of placenta prævia I ever saw was fatal to both mother and child. The second was fatal to the child only and in the third case both mother and child were saved.

In the first three cases premature delivery was accomplished and in the fourth case delivery was at full term. In the first three cases labor occurred in the latter part of the eighth month or the first part of the ninth month, as nearly as could be ascertained. In each of the first three cases hemorrhage was first noticed several weeks before delivery.

It was sixteen years after my graduation before I ever met with a case of placenta prævia and the first case I saw was a patient of another physician, on the thirtieth day of December, 1881. I was called in great haste to see a woman who was taken very suddenly with a most profuse and alarming uterine hemorrhage. Another physician was in attendance when I arrived and the patient had evidently lost nearly all of her blood. She was supposed to be in the ninth month of pregnancy and had not expected to be confined for at least two or three weeks. She was forty-two years of age, the mother of ten children, eight of whom were living in 1887. She had always enjoyed perfect health and done all of the work of a large family, excepting for a short time after the birth of each child. She had had one miscarriage but had borne several children subsequently. Several

weeks before the above date she had a hemorrhage which occasioned some alarm, losing as was thought about a teacupful of blood, but she kept quiet for a while and the hemorrhage ceased and no physician was called. On the afternoon of December thirtieth, 1881, while at work in a back-kitchen she was taken suddenly with a severe hemorrhage which quickly filled an ordinary sized chamber-vessel which happened to be at hand. She was found in a fainting condition and carried to the nearest bed and physicians were summoned. When we arrived the bed was saturated with blood which had also gone through the bedding and stood in a pool upon the floor. We found partial dilatation of the mouth of the womb and the placenta directly over the opening, and decided to effect delivery as speedily as possible. By request of the family physician I removed the placenta, applied the forceps to the head of the child and completed the delivery. The child was dead. Very little blood was lost during the operation or subsequently but the pulsation and respiration of the mother ceased very soon after the delivery of the child and our efforts to restore were unavailing. Stimulants and ergot were administered before anything else was done.

My second case occurred within less than one year after my first experience above mentioned and is as follows:

Mrs. F., age twenty-five years, mother of one child three years old, was taken with slight uterine hemorrhage when about seven months advanced in a second pregnancy, and consulted me on that account. I believed it to be a case of placenta prævia and informed her of the danger to be apprehended. She was ready to follow my instructions implicitly and did so and during her remaining period of gestation kept extremely quiet. There was no serious hemorrhage until about the beginning of the eighth month when I was sent for in the night in great haste and informed that she was flowing

very badly. I found her in that condition having no pains and immediately applied the tampon, first introducing a sponge saturated with vinegar. The hemorrhage was arrested and I then summoned a physician from New Britain for consultation and assistance. He came immediately and as the patient was losing no blood we decided to wait and watch for awhile. After two or three hours blood began to escape from the vagina and we decided to deliver without further delay. An anesthesia was administered and I removed the placenta which was found over the os uteri, and then delivered the child with the forceps. The loss of blood was frightful, as it poured directly into the pail placed by the bedside to receive it, but the mother survived the operation and made a slow but complete recovery. The child was dead.

My third case occurred in the fall of 1885, and was quite similar to the second case but in this instance the lives of both mother and child were saved. Hemorrhage in this case was more troublesome before delivery and called for more attention than in either of the other cases, owing to an unwillingness on the part of the mother to follow strictly the directions given her in regard to exercise. After two or three weeks of efforts to prevent premature delivery I called a physician from New Britain in consultation and we decided to remove the child without further delay. By my request the doctor performed the operation and contrary to our expectation the child lived and the mother made a good recovery. This woman was thirty-seven years old and this was her seventh child. I think she was in the ninth month of pregnancy. I had attended her in several previous labors and she has had no children since the time now referred to.

Four cases of this condition in a medical practice of thirty-one years do not give a physician large experience of this particular trouble. I would like to know if other members of the Society have been equally fortunate or unfortunate in this respect.

THE FORCEPS IN LABOR.

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NORWICH.

The responsibility connected with the forceps in labor is unquestionably one of the greatest in the practice of obstetrics. The personality of the operator, his individual judgment and the use of an abundance of common sense must be brought to bear on the case in hand. It takes a great deal more than mere mechanical skill to determine when the forceps should be applied, and when natural forces alone should be depended upon for the delivery.

In the short time allotted for this essay it would be futile to attempt anything exhaustive upon the subject. Only a consideration of the more important points will be attempted. A previous knowledge of both the normal and abnormal pelvis and a familiarity with the mechanism of labor is assumed. It is well at the outset when considering a measure which brings so many benefits, to also remember that the forceps misapplied will bring a long train of evil results. Although this class of work as shown by statistics is improving from year to year, still plenty of cases come to the gynecologist, which is a sad commentary on instrumental labor. The larger proportion of severe cases of lacerated cervicesand perinei, according to Emmet, are due to the forceps wrongly used. In a measure so easy of application the danger is, of going to one of two extremes: Either the too frequent use, or the failure to use them often enough and at the proper time. A leading practitioner in one of our largest cities told me that it had been his rule for a number of years in an active practice, when the second stage went slow or delayed at all, to apply the forceps at once, since in his own words, "he could not afford the time to wait." On the other hand a recent writer has

laid down the rule that the forceps are indicated only when the life of mother or child is in danger. The benefits that come from an intelligent use are well shown by the report of two series of cases which occurred in the service of Dr. Norris at the Preston Retreat. In the first five hundred, forceps were used in fifty with only one death. In the second series, two hundred and twenty, forceps were used only seven times and twenty-eight babies were lost. Being criticized in this first series for using the forceps too frequently he decided during the next year to let nature take her own course and with the above unfavorable result.

The subject naturally divides itself under two heads: First, how, and second, when should the forceps be applied ?

How the forceps should be applied, is a question which every man present could doubtless answer from experience; therefore only several points will be noticed in passing.

Thorough asepsis should be maintained. A vaginal douche should be given and the operator should see that hands, instruments and dressings are surgically clean. Care should be taken when introducing the blades that the lip of the cervix is not caught nor injured. Plenty of time should be taken both in applying the forceps and in delivering. The force should not be excessive; not over seventy pounds according to Jewett who has used the dynamometer; although one hundred pounds or more is often used. The more time taken, e.g., thirty minutes or more in length of forcep cases, the less force in traction will be required.

Passing now to the consideration of when the forceps should be applied, we find the question not so easily defined. Although general rules are given, still the cases differ so much that there is a large scope for individual judgment. Very much depends upon the capacity of the pelvis. Pelvimetry can be carried out perfectly in the

Maternity Hospital; not always is it so easy in private practice. At the time of labor the true conjugate can easily be estimated. The rules according to a leading obstetrician is, If the conjugate at the brim is three and a quarter inches or over, a normal labor can be expected; if under three and a quarter and over two and three quarters with head free above the brim, version with head engaged, forceps.

During the labor before applying the forceps, it is always well to examine with the hand to determine the cause of obstruction. It is also wise to determine the position of the fetus in advance by external palpation, although it may change before labor begins. The position should always be determined at the beginning of labor. If the head has not entered the superior strait, being still free, version should always be elected, in preference to the forceps. In the brow and face presentations the position should be corrected as far as possible before applying the forceps,and in posterior presentations the occiput should be rotated to the front before applying them. Nature usually corrects these positions. In a case of mine, multipara, age twenty-four, occipito-posterior with some hemorrhage, labor had lasted thirty-six hours, and the bag of water had been ruptured when, about to send for assistance, the character of the pains suddenly changed and upon examination I found the occiput had spontaneously rotated to the front and the labor terminated easily. In far advanced cases where the position cannot be changed, the forceps are applied according to the ordinary custom in vertex cases.

In order to present the question in its most practical light and to demonstrate more fully when the forceps should be used, I will give the history of a few cases which have occurred in practice.

Case I. Mrs. S. ——, twenty-four years old, multipara. I had attended her in the first confinement about sixteen months before in an easy labor and accordingly was

certain that the pelvis was normal. She had been in labor six hours. Examination showed a vertex presentation well advanced in the first stage. The case progressed favorably and after a labor of about eight hours a living male child was born, weighing six pounds. Upon placing my hand over the fundus with the expectation of delivering the placenta, I discovered that it was a case of twins, and on examining per vaginam found a hand down. This was replaced with some difficulty without anesthesia, and the head engaged at the brim. Very little progress was made, however, the pains being inefficient. Assistance was called, and under chloroform-anesthesia the forceps were easily applied, but the delivery was very difficult, the head moulding very slowly. When one of us became fatigued the other took a turn and after fifty-five minutes a living male child was born, weighing nine pounds with a very large head. The cervix was badly lacerated but the perineum only slightly torn, not requiring repair. Unfortunately for ourselves and the mother we had only an old-fashioned forceps. With the axis-traction instrument the operation would have been much easier, the mother might not have been so badly torn and some time would have been saved. Although in this case the matter of time did not seem to be of much importance, in some cases it would be an important element. The later history of the infants: The first died within three months; the second or forceps child still lives in good health.

Case II. Mrs. T. ——, thirty-eight years of age, multipara, fourth confinement; was called about ten P. M., September eight, 1896. Found two doctors in attendance, one of whom had been there constantly since six A. M., the other since six P. M. The woman had been in labor since early morning. Examination revealed a transverse presentation with one arm down. Under chloroform found the arm and shoulder firmly impacted. It required all the muscular force which I could use and

about one half an hour's manipulation to replace the arm. By external manipulation and one hand in-utero I seized the head, not being successful in reaching a foot, which I brought to engage at the superior strait. During the procedure there was a sharp hemorrhage which stopped as soon as the head was brought down. After a short delay I applied the forceps and brought the head to the pelvic floor when the instruments were removed. The head was then delivered by pressure and traction with the hands; but the shoulders clung and it was only after each arm had been separately brought down over the chest and by using expressio-fetus by an assistant and traction on the neck that it was possible to deliver the child, which was dead and weighed fourteen pounds. The time of delivery after application of the forceps was forty-five minutes. The perineum, much to my surprise, was not ruptured. The placental stage was normal. In this case I feel certain that the child was dead before the forceps were applied, being unable to get the fetal heart. The doctor in attendance told me afterward that this case made an uninterrupted recovery.

Case III. Mrs. W. ——, aged twenty-six, primipara. Labor pains began about noon. I was called in the evening. Examination at eleven P. M., showed the os dilated about the size of a silver dollar, the head high up and engaged. True conjugate estimated at three and a half inches ; presentation normal; pelvis small and slightly contracted. Pains increased in force and frequency until three A. M. The case progressed very slowly until six A. M., when the patient having become exhausted a hypodermic was given of morphia gr. 1-6. At 7:30 A. M., dilatation being complete the membranes were ruptured, but the occiput descended very little if any, when at nine A. M., assistance was called. Under chloroform-anesthesia forceps were applied, some difficulty being experienced in passing the hand between the head and cervical wall. About thirty minutes was taken in

bringing the head to the pelvic floor when the forceps were removed, and all the time possible taken in the perineal stage, but in spite of all precautions the perineum was torn down to the sphincter ani, which was repaired at once. A nine-pound male child was born.

In cases of inertia-uteri, when there is no other complication during the second stage, the forceps should be applied only when the head neither recedes nor advances. It is my belief that where the passages and the powers are normal, the labor will be normal and the forceps will not be required.

When one or more of these conditions are at fault the labor becomes abnormal and the forceps may be required. The passages and passenger may be normal and the labor progress favorably when at once the pains grow feeble and stop. Instead of the forceps at once, a hypodermic of morphia has served me well at this stage. It acts either by starting up more active pains or by giving the mother rest. The uterus soon regains its tone and the case progresses favorably. If the inertia-uteri is not relieved after a sufficient time the forceps should be applied.

Case IV. Mrs. F. ——, aged twenty-three, primipara. Dry labor; waters broke and oozed away on March twenty-three. Patient strong and healthy; muscular type. Feeble pains during the day of the twenty-third and night following and on the twenty-fourth until about one P. M. when the pains grew stronger and more frequent. Called at three P. M. On examination the pelvis was found to be small, the true conjugate estimated at four inches. The head had become engaged, the position vertex left anterior, easily made out, os dilated to about the size of a silver dollar. Labor progressed slowly until six P. M.; then no progress for nearly two hours, the pains stopping. After a hypodermic of morphia gr. ¼, atropia gr. 1-150, the pain increased in power and the occiput moved down a little. At this point I used the Walcher posture which

served to help matters along at first, but without marked benefit. From 11:15 until 11:45, when I applied the forceps, there was no progress apparent in spite of the strong pains. Under anesthesia the head was apparently about half way through the canal and in about twenty minutes a nine-pound male child was delivered. It was a snug fit and the occiput shelled out with considerable difficulty under the pubic arch. Despite every precaution, the perineum was ruptured to the sphincter ani, which was repaired at once. The child was resuscitated with great difficulty, all the ordinary measures being exhausted, as dash of cold water, hot bath, friction, position, direct insufflation and Sylvester for three minutes; I finally resorted to Schultz's methods which made the child breathe.

In this case I believe if interference had been delayed for twenty or thirty minutes longer it would have been a still-birth. But the mother's strength was still good. This case shows that the mother's strength alone is not a safe guide. The second stage having lasted about two hours and the head remaining stationary for half an hour, the forceps were accordingly applied in this case as in the preceding and the results certainly go to prove the rule. By the timely aid of the forceps in these cases I believe many living infants could be born which without instrumental aid would be still-births. Reports from the Preston Retreat where autopsies are performed on every case of infantile death, show that death is not as a rule due to pneumonia or any other lesion save congestion of the brain resulting from compression.

In these four cases the operation was successful save one, the transverse presentation, and in that if proper interference and version had been practiced eight or ten hours before, a living child would doubtless have been born. The long-continued manipulation and futile attempt to deliver by traction on the arm probably killed the fetus.

Each case must be settled on its own merits. While the forceps are often applied unnecessarily as a time-saving measure, or too early, for instance early in the first stage before the head is fairly engaged or to the head in a faulty position, still the procedure has its legitimate uses and it is to secure the best results for both mother and child that we are all striving. To summarize the most important points made in this paper:

I. Thorough asepsis should be maintained in the use of the forceps.

II. In all cases when practicable, pelvimetry should be practiced about the thirty second week; and in all cases of difficult labor the diameter should be taken and action taken accordingly.

Before applying the forceps the size of the pelvis and the size and position of the presenting part should always be determined by introducing the hand.

III. The forceps should seldom if ever be applied during the first stage of labor, never to the head if free above the pelvis brim, version being preferred.

IV. The leading indication for the forceps is, if the second stage has lasted two hours, and the head has remained stationary half an hour. In cases of inertia of the uterus a hypodermic of morphia, gr. 1-6, is sometimes efficient in relieving the condition; but after a reasonable delay, apply the forceps at once.

V. Forceps should always be applied under partial or complete anesthesia. Excessive force should never be used in delivery, and plenty of time should be taken; in high forceps cases thirty minutes or more.

VI. Forceps should never be applied as a time-saver, simply because the operator is too busy to wait. Two important points should always be borne in mind in their use—the welfare of the mother and the life of the child.

VII. Although general rules are laid down for this operation, after all, each case must be considered by itself and decided on its own merits.

CHRONIC PAROXYSMAL HEADACHE,* COMMONLY CALLED MIGRAINE, HEMICRANIA OR SICK HEADACHE.

GUSTAVUS ELIOT, A.M., M.D.

NEW HAVEN.

The word headache, used without further qualification, indicates not a definite disease, but a symptom which is associated with many diseases and disturbances of function. This use of the word somewhat resembles the use of the word fever, which, used without qualification, also indicates a symptom common to many diseases, but qualified by certain adjectives is used to indicate certain definite diseases, such as typhoid fever or scarlet fever, of which fever is a prominent symptom. In medical literature and medical discussions, the word headache is frequently used as if pain in any part of the head were a distinct disease, without any regard to the causes which produce it, the particular part of the head affected, its persistency, or the frequency of its recurrence. The object of this paper is to recall the distinguishing characteristics of one form of headache which seems to be entitled to rank as a distinct disease of the nervous system.

Headache is a common symptom of many general febrile diseases, and of many local inflammatory affections. It is symptomatic of toxemic conditions, as in nephritis and disorders of the digestive organs. It may occur as a form of neuralgia. It sometimes is a symptom of abnormal ophthalmic conditions, especially of errors of refraction. It often is a symptom of catarrhal inflammation of the mucous membrane of the air passages, and especially of the frontal sinuses. It may be the result of unnatural activity of the nerve cells of the brain, as

* The address of the President at the semi-annual meeting of the New Haven County Medical Association, in Waterbury, October 15, 1896.

in the so-called congestive headache. It may be the result of inadequate nutrition of the brain, as in the so-called anaemic headache. It may be a reflex manifestation of disorders of distant organs, as of the uterus. Finally, cases are observed, in which headache occurs which cannot be classified in any of these varieties.

Many individuals suffer from a headache, which comes on at irregular intervals, which affects chiefly a part, or the whole of one side of the head, which lasts from several hours to two or three days, and which cannot be definitely connected with any clearly recognized cause. Such a headache may fairly be considered idiopathic,for it does not seem to have any constant relation to any definite pathological condition or functional disturbance.

In order to avoid being hampered by any preconceived notions suggested by the names in common use, and on account of the fact that these headaches occur at irregular intervals extending over many years, there is considerable propriety in calling the disorder in question Chronic Paroxysmal Headache. This form of headache is commonly called migraine, megrim, hemicrania, sick headache, bilious headache, nervous headache or neuralgic headache.

The symptomatology of these headaches is not unfamiliar to you. The pain may come on during the night, waking the patient up, or it may be present when the patient wakes at the usual hour in the morning, or it may come on during the day. Its duration is very variable. It may last for several hours, or for two or three days. It may occur at intervals varying from a few hours to several weeks or months. Vomiting may precede its final disappearance, which frequently occurs as the patient falls asleep. The pain is usually limited to a part or the whole of one side of the head. It usually begins and is worse in a particular part of one side—the temporal region, perhaps, being most frequently affected. Either side of the head may be affected in different at-

tacks in the same individual, although it commonly happens that in each individual one side is more frequently affected than the other. Sometimes the skin of the face and head on the affected side is pale and cool and the pupil contracted. In other cases the skin is red and hot, the arteries pulsate more strongly than usual, and the pupil is dilated. The pulse frequently is slow, full and hard. The onset of the headache is frequently preceded by ocular disturbances, seeing of spots or lines of light and sometimes hemianopsia.

The etiology of these headaches is somewhat indefinite. In many who suffer from them there is an inherited nervous diathesis. A family history of headaches, neuralgia, hysteria, epilepsy or insanity can frequently be elicited.

Case I. Chronic paroxysmal headache, illustrating the influence of heredity. Mrs. H., 44 years. Widow. Dressmaker. Has sick headaches which always come on the right side, and never on the left side. The pain is chiefly over the right eye but covers the whole side of the head. Generally, but not often, before the headache she sees dark spots. She has seen flashes of light. Her father always had trouble with his stomach. Her mother always had sick headaches. She is now 82 years old, and does not have them as she used to, although her head feels badly at times. This patient has four brothers and five sisters, and every one of them has sick headaches. One of these sisters has five daughters and one of them has sick headaches.

Malnutrition, general deterioration of the health and anaemia are powerful predisposing factors in the development of a tendency to these headaches. Mental anxiety, excitement, loss of sleep and fatigue from over-work, are perhaps the most common exciting causes of attacks. Disorders of digestion, especially when associated with constipation, sometimes precipitate attacks. In women, disorders of the sexual organs often act as an

exciting cause of an attack. Frequently they occur in connection with menstruation. Over-use of the eyes, especially if there are errors of refraction, frequently brings on individual attacks. Both children and adults are liable to suffer from the disorder, although in females the attacks frequently begin to be troublesome at puberty, and often become less frequent and less severe after the menopause. Women seem to be affected rather more frequently than men.

The pathology of these disorders has been the subject of much speculation and investigation, and a satisfactory explanation is yet to be found.

For many years the vaso-motor theory was commonly accepted. According to this theory the pain in the head is frequently due to a spasmodic contraction of the small vessels on the affected side of the head. This view derived apparent confirmation from the paleness and coolness of the skin, and the dilatation of the pupil on the affected side. But this theory did not explain all cases, and so it was assumed that in certain other cases there was a paralytic dilatation of the vessels, and this seemed to be confirmed by the flushing and heat of the skin and contraction of the pupil. The former cases were distinguished as angio-spastic, and the latter as angio-paralytic. These theories were strongly urged by Eulenberg and Du Bois Raymond, and were adopted and popularized in this country by William A. Hammond. Most neurologists now consider that they afford an inadequate explanation of the phenomena present.

Many have regarded it as a neuralgic affection. Anstie arrived at this conclusion after careful study, and, twenty-five years ago, advocated this view very strongly in his book on neuralgia. In some respects migraine certainly resembles neuralgia, especially neuralgia affecting the supra-orbital nerve.

Another theory, advocated by Haig, of England, is that these headaches are due to an accumulation of an excess

of uric acid in the blood. He was led to adopt this theory because in his own case he found, by repeated examinations of the urine, that these headaches were accompanied by a diminished excretion of uric acid and urates, and followed by an increased secretion. By prolonged study of the effect exerted upon the amount of uric acid and urates in the urine, by various food and drugs, as well as by exercise, he concluded that the headaches were directly dependent upon the presence in the blood of an excess of uric acid, and by reducing the amount of nitrogenous food ingested, he reduced the amount of uric acid in his blood, and at the same time the frequency and severity of his headaches.

Perhaps the most popular theory at the present time is, that most of these headaches originate from defects in the eye. This theory is especially popular among eye specialists, and is carried to various extremes by different men. It has long been recognized that many persons who had defective vision suffered from headaches if they used their eyes very closely, unless the defects were remedied by glasses. But to argue from this that most cases of migraine are due to defects in the eye is not at all logical. And yet this is what many specialists do, confusing migraine with other forms of headaches. For instance, Dr. Peter A. Callan, of New York, writing in 1891, says: "From an extended experience of years, with hundreds of cases, I am forced by experience to regard eye strain as the cause in over seventy-five per cent. of all cases of functional headache and migraine." Such a statement, of course, does not throw much light on the subject of migraine alone, for Dr. Callan evidently does not distinguish very closely between migraine and other headaches. Evidently ophthalmology is not an exact science in the treatment of errors of refraction, for we often see patients go from one specialist to another, getting different glasses from each, and cured by none. We also read almost opposite opin-

ions expressed by men whose views seem entitled to equal respect. In many of the cases where some defect is found in the eye, it is evident that this is not the entire cause of the trouble, because correction of the defect by glasses does not prevent the recurrence of the pain in the head.

Case II. Chronic paroxysmal headache, becoming habitual after the age of thirty, in a patient with an extreme degree of myopia. Miss A. About 44 years. No occupation. Oct. 6, 1896. Had two sick headaches when she was ten or twelve years old, but had no more until after she was thirty. Since, she has had them frequently. The pain comes on about nine o'clock in the morning, and sometimes, but not often, lasts into the second day. The pain in the head is preceded by a cloudiness before the eyes and by zig-zag lines. Sometimes these phenomena are not followed by a headache. The pain is accompanied by slight nausea but not by vomiting. The pain is usually about the left eye, but sometimes it is around the right eye. She has an extreme degree of myopia, and has been treated by several distinguished oculists, but still has the headaches very often.

It is rather necessary to make a few remarks upon diagnosis in order to make more clear exactly the class of headaches which it is intended to include in the present description, and to distinguish them from certain other forms of headache, which are believed to be distinct from migraine.

One form of pain in the head which seems easily distinguishable from migraine is neuralgia, affecting a particular nerve on one or the other side of the head, of which supra-orbital neuralgia may be taken as an example. Neuralgia affecting a nerve is characterized in typical cases by the pain being chiefly localized in the vicinity of the distribution of the nerve, by recurrence of the pain at nearly the same hour on successive days,

and by the occurrence of remissions in the severity of the pain after it has lasted several hours. The pain of migraine, on the other hand, may last longer, even to two or three days, at each attack, but an interval of several days or weeks usually elapses before another attack occurs, even if no treatment is employed during the interval. On the other hand it must be remembered that a patient may have attacks of genuine migraine at long intervals, and at other times may have genuine attacks of supra-orbital neuralgia occurring on successive days.

But, as Dr. J. J. Putnam has recently pointed out, there are cases of supra-orbital neuralgia, the symptoms of which are not typical, and which resemble in many respects attacks of migraine and may even appear to replace attacks of migraine in certain individuals. It should, however, be remembered that the same individual may suffer at different times from more than one kind of headache. One who suffers from occasional attacks of migraine may also have at other times attacks of headache from some reflex source, as the respiratory organs, the digestive organs, the sexual organs, or the eyes, or from neuralgia of one of the cranial nerves.

Many forms of headache are easily distinguished from migraine because of their constancy, their occurrence on both sides of the head at the same time with equal severity; their limitation to a particular part of the head, as the frontal, vertical or occipital regions; and by their obvious dependence upon some easily discernible and efficient cause.

There still, however, remains a large numer of headaches, the exact nature of which cannot be determined off-hand, but which must be made the subject of prolonged, continuous observation and careful consideration.

The treatment must be considered with reference first to the relief of the paroxysms, second to their prevention.

When the victim begins to feel the first premonitory

symptoms of an attack, he (or she) should at once lie in bed, in a partially darkened room, removed as far as possible from any noise, and supplied abundantly with cool, fresh air. The body should be warmly covered, and bottles of hot water, or hot bricks should be placed at the feet. In some cases hot applications, in others cold applications, to the head will afford relief.

Sometimes the administration of alcoholic stimulants at the very beginning of the attack will serve to alleviate it. In some cases a small dose of morphine will cut it short. But synthetical chemistry has in comparatively recent years given us a class of new remedies which far surpass in utility anything previously employed. The most effective of these is antipyrin, given in five or ten grain doses every hour. To persons who observe the hygienic directions already mentioned, it will rarely fail to afford relief. In some persons it causes, it is true, an alarming depression of the heart. This, however, rarely occurs in persons in ordinary health, who remain in bed, and may usually be counteracted by the administration of ammonia or alcoholic stimulants. Phenacetin in five grain doses repeated every hour, is usually regarded as a safer remedy, but is not quite as efficient. Acetanilid is probably much more frequently used, usually under some different name, and usually with fairly satisfactory result. The habitual use of drugs of this class is, however, fraught with danger, not only from their depressing action on the vital functions, but also because the prompt relief which they afford in many cases, leads the patient to neglect to observe those laws of hygiene which promote good health.

In order to prevent the paroxysms of migraine it is necessary to secure the normal action of every function of the body, and to prevent excessive or unnatural action of any organ.

The digestive organs must be closely watched. One or two movements of the bowels must be secured every

day. Dyspepsia and indigestion must be avoided. The liver must not be overtaxed by the ingestion of an excess of nitrogenous food. Defective teeth must be treated.

The mucous membranes must be kept in a healthy condition, and especially catarrhal and hypertrophic conditions of the nose, pharynx and sinuses must receive careful attention.

The generative organs must be carefully looked after, and excessive use or abuse of these must be interdicted, and any pathological condition discovered, must be relieved.

The special senses must be carefully investigated, and especially the eye. Errors of refraction and accommodation, as well as muscular insufficience should be ascertained, if they exist, and in most cases they should be remedied by appropriate measures. But it will be found that many cases of genuine migraine do not receive that striking benefit from glasses, which is frequently observed in those cases of headache which, from following immediately and constantly upon prolonged use of the eyes, are more obviously due to eye-strain.

Case III. Chronic paroxysmal headache, partially and temporarily relieved by glasses. Miss B. 17 years. Dressmaker's apprentice. March 5, 1896. Has been subject to headaches since she was a small child. Her mother was subject to headaches occasionally. Her father never has them. She has a brother who has them much as she does, and a sister who also has headaches frequently, and who also has naso-pharyngeal catarrh with some nasal obstruction. This patient has headaches frequently, sometimes every day, and sometimes every week or every two weeks. Rarely is she free from headaches for as long as two weeks. She usually wakes with a headache, but sometimes she is awakened by the pain in her head before her usual hour of waking. She is usually obliged to remain in bed all day, and the headache stops late in the evening as she goes to sleep. She

is usually half sick for two days after the headache leaves her. The pain is nearly always worse about the left eye. She rarely has it about the right eye. The attack commences with an aching in the eye. There are no visual symptoms. She is nauseated when the headache comes on and vomits two or three hours afterwards, but this is not accompanied or followed by any diminution in the severity of the pain. Sometimes she has headaches nearly every day. In June, 1895, she was fitted with glasses by a reputable oculist, and their use was attended with some benefit. In March, 1896, after following a tonic plan of treatment for three weeks, reducing her tea from eight or ten to three cups a day, and wearing her glasses constantly, she reported that her head was much improved. Nevertheless, after a month or two she went to another reputable oculist, and was fitted with two pairs of glasses. Two months later (July, 1896) I learned from her sister, that she was having headaches less frequently, but that they were as severe as they had ever been. During the present month she reports that, although the glasses helped her at first, during the last seven or eight weeks the headaches have become more troublesome again, and that for a week she has had one every day.

The brain should not be overtaxed by excessive use, and it should be allowed to recuperate after even moderate use by adequate rest. Excitement and worry should be avoided. Exercise out of doors, and abundance of fresh air when in doors, should never be neglected. Sleep should be secured regularly, in sufficient amount to allow complete recuperation from physical fatigue. In anaemic persons the blood should be improved by good food, fresh air and appropriate medication.

Certain remedies, which may perhaps be fairly called specific remedies, are often used in migraine with apparent benefit. The bromides administered daily are sometimes of use, especially in individuals who are of a dis-

tinctly neurotic temperament. Cannabis Indica, recommended by Seguin and many others, is of unmistakable value in many cases, when given continuously for long periods. The salicylate of sodium is of considerable value in patients of lithaemic tendency. Quinine is frequently of great benefit, especially in patients who have been subject to the influence of malarial poison, and when the headaches occur periodically with short intervals.

After considering all the measures of treatment which are alleged to be useful, one naturally asks as to the prognosis. In the present state of medical practice this, unfortunately, is not very satisfactory. The majority of patients do not care to undertake a systematic course of treatment. If by the use of a few tablets or powders they can gain relief of the present pain of a severe paroxysm, they will not take the trouble to follow up treatment in the interval when they are feeling well. Fortunately when the attacks become frequent and severe, it is not generally difficult, by careful study of the case, to suggest changes in the habits of life, and to prescribe remedies which will greatly diminish the frequency and severity of the paroxysms.

SURGICAL PAPERS.

ESSAY ON THE PROGRESS OF SURGERY.

W. S. MACLAREN, M.D.

LITCHFIELD.

The antiseptic treatment of wounds by the method of Schleich promises to become a great boon to both surgeon and patient.

This is the so-called "glutol" method. In the preparation of glutol a solution of five hundred grams of gelatin, with twenty-five drops of pure formation solution in water, is evaporated to dryness over a vapor of formalin. This evaporation results in a substance which is hard, transparent, without chemical activity; resistant to heat, moisture and other ordinary influences.

Experimenting with this substance Schleich introduced it into the peritoneal cavity of animals and found that part of it was absorbed, while part became incapsulated.

He introduced it into wounds at the same time with pathogenic bacteria and found that no infection occurred.

Using it clinically he found that suppuration was avoided except in those cases where there was necrotic tissue. The theory of the action of glutol is that it is acted upon by the living animal cells in such a way that the combination is broken up, the formalin is set free and the gelatin is absorbed. When there is much necrotic tissue, the profuse secretions prevent the glutol from coming in contact with the healthy cells and this action cannot take place. Under such circumstances therefore a solution of pepsin and hydrochloric acid must first be used to digest the necrotic tissue, or it must be removed by a free use of the curette. The dry, powdered glutol may be preserved by keeping it in the presence of a few drops of formalin solution. This powder may be mixed with lime salts and used to replace bone defects.

Kane calls attention to the use of asbestos as a surgical dressing. In many ways it is particularly adapted

to this use. It is absorbent, economical and very readily sterilized. When a dressing of this kind is removed, instead of throwing it away, it may be laid on the fire and in a few minutes rendered perfectly clean and ready to be reapplied. This makes it especially useful as a hospital and army dressing.

Mackenzie's treatment of aseptic wounds without bandages or dressings has a wide field of usefulness.

He holds the edges of the wound in apposition by the systematic use of buried catgut sutures, beginning at the bottom of the wound and placing successive rows up to the edges of the skin, the number of sutures, of course, varying with the nature of the case. The skin is brought together by a continuous suture of fine catgut, including a very small amount of tissue.

In wounds of the face, even the skin sutures may be buried, using a very fine, curved needle and including only the deeper layers of the skin, thus lessening the scar very materially. After the wound is sutured it is covered with a carbolized pad until all oozing ceases; it is then wiped with lint soaked in absolute alcohol. While still moist with the alcohol, it is painted with a solution of one part celloidin in four each of absolute alcohol and ether.

Schleich has presented a new local anesthetic which he calls "eucain." It is claimed for it that it is fully as efficient as cocaine and is free from danger. The salt used is the hydrochlorate which is soluble in water and does not decompose on boiling. The solution does not precipitate and does not require the addition of phenol or salicylic acid as a preservative.

It is efficient when painted on mucous membranes as well as when injected. The anesthesia produced is more extensive than that of cocaine and of longer duration.

Schleich's method of infiltrative anesthesia has come more prominently into use this year and is warmly advocated by such men as Weller Van Hook, J. J. Clark, Bransford Lewis and W. W. Keen.

CANCER.

The treatment of malignant tumors by the injection of the toxins of erysipelas still occupies a good deal of attention, though the tide of opinion seems to be setting more and more steadily against it.

Carr very earnestly urges that operations for the removal of breast-cancer, be commenced at the axilla, as by removing the axillary glands before the breast is disturbed we obviate the danger of forcing cancer cells from the axilla into the deeper regions during the operation.

ABDOMINAL SURGERY.

Mayo Robinson gives us a modification of the operation of pyoroplasty for benign stricture and a similar operation for simple stricture of the intestine. A longitudinal incision is first made through the stricture, this incision varying in length with the amount of contraction to be overcome. A decalcified bone bobbin is then slipped into the lumen of the pylorus or intestine as the case may be, the extremities of the incision in the viscus are then sutured togther, thus converting it from a longitudinal incision into a transverse one, increasing the circumference of the constricted portion by the length of the incision.

The bone bobbin secures a thoroughly patent channel and protects the suture-line for from twenty-four to twenty eight hours, by the end of which time union should be established. In uniting the cut edges he uses two continuous sutures, one of catgut for the mucous margin, and one of fine silk for the serous edges. He believes that this operation entails less risk and offers a far better prospect of permanent cure, than is held out to us by Loreta's operation.

Jaboulay and Briax describe a new method of circular intestinal suture, which may be applied very rapidly. Two sutures are passed, uniting the divided ends of the intestine at the mesenteric attachment and at a point

directly opposite. These sutures are left long, and moderate traction is applied to them by an assistant. This will cause the two segments of the intestine to lie side by side with their cut edges in close apposition. The posterior edges are then united by a continuous Glover suture in two rows. The first row unites the serous and muscular layers; the second unites the mucous layer.The anterior half is treated in a similar way, the order of course being reversed, the mucous layer being sutured first, then the serous and muscular layers. The preliminary long sutures are then cut short, and the operation is complete.

H. W. Allingham advises a new bobbin for intestinal anastomosis. The bobbin is of bone or ivory and in shape consists of two truncated cones joined by their apices. The flaring ends are decalcified, leaving a central groove, 3-16 of a centimeter wide, hard and unyielding, as a support for the sutures. It involves no sloughing of the intestine, and cannot come away until the decalcified ends are softened, when it is immediately liberated. In using it a purse-string suture is applied to each end of the divided intestine, the bobbin is then put in position, and these sutures drawn tight. As there is a slant from each end of the bobbin toward the center, the tighter the sutures are drawn, the closer the segments of intestine will be brought together. A few Lembert sutures are then introduced at various points for extra security; or if desired a continuous suture may be applied all the way around. It is also well to scarify the serous surfaces where they are to come together.

Dr. M. L. Jamison suggests the use of a bobbin made of half-cooked bread dough.

Dr. J. L. Johnson as strongly urges the use of carrot or potato. In fact the number of buttons, bobbins and other devices suggested to replace the Murphy button seems only limited by the number of men doing ab-

dominal work and clearly shows an increasing appreciation of the dangers attending its use; for if it was satisfactory surgically, so perfect a mechanical contrivance would not be easily superseded.

Thirty-four cases of gastro-enterostomy added to the list of Murphy button operations during the year, show a mortality of seven. Leakage has occurred in some; in others a great deal of trouble has been caused by the button slipping back into the stomach.

The Maunsell operation as advocated by Wiggin is growing steadily in favor, and it is becoming more and more apparent that in most cases an operation of this class is preferable to the use of any mechanical device.

The experimental work on dogs, done by Wiggin in '94, showing the dangers and disadvantages of the Murphy button, has been confirmed by Edmunds and Ballance.

With the increase in the number of typhlenteritis cases saved by surgery, we of course see an increasing number of cases of fecal fistulæ requiring attention. The best method of closing these fistulæ is a problem that is now demanding solution. Grigg Smith favors simple closure without opening the peritoneal cavity.

Wiggin has pointed out and in his work has demonstrated that when a fistula does not close spontaneously (and many of them do) it is because there are adhesions which interfere with the normal fecal current, and that it is imperative that these be broken up, before any operative procedure can be successful. Hence in these cases it is always necessary to open the peritoneal cavity.

Dr. Oswin of Chicago has devised a very simple method of making these operations aseptic. He first cleanses the abdominal wall as thoroughly as possible, then makes an oval incision around the opening of the fistula, the edges of the oval flap are then dissected up and brought tightly together by a continuous suture. This completely closes in the fistulous opening and pre-

vents the escape of intestinal contents. The hands of the operator and the field of the operation are then freshly sterilized, and the operation is continued as an ordinary enterostomy.

Mr. Harrison Cripps gives us a very simple and effective appliance for controlling artificial anus, and gastrostomy openings. From a sheet of rubber, the thickness of a shilling, he cuts a disc with a diameter double that of the opening to be controlled. Through the center of this disc he passes a double ligature. The disc is then rolled up and passed into the viscus, where it is released and drawn by means of the suture against its inner wall. It is readily held in place by tying the suture over a stiff roll of gauze or a piece of wire covered with tubing. When wishing to use the opening it is only necessary to crowd the disc inward. He claims that in this way he can keep patients absolutely dry and clean; if he can do that he does a good deal.

ARTERIAL SURGERY.

The recent work in the suturing of arteries, both experimental and clinical, seems about to open to us a new field, the limits of which can as yet only be vaguely imagined.

Dr. J. B. Murphy has been performing some very interesting and valuable experiments along this line on the dog. These experiments have demonstrated, not only the possibility of suturing ordinary wounds of the blood vessels, but also, that they may be resected. He has removed segments an inch in length and had no difficulty in reuniting the divided ends.

His method is to take two sutures of fine silk, each threaded in two needles. One of these sutures is passed through any point of the circumference of one of the divided ends; the other is then passed at a point directly opposite it in the same segment of the artery. The two needles of each suture are then passed into the lumen of

the other segment and brought out through the wall close together, in such a way that by applying traction on them one of the divided ends will be drawn inside of the other, thus reinforcing the line of union. The sutures are then tied to retain the ends of the artery in this position. Additional interrupted sutures are then applied, including the superficial coats of the parts to be reunited. The slight oozing ceases very quickly.

There seems to be no tendency to aneurism, and the lumen does not become obstructed by clot. The caliber of the artery is however decidedly diminished.

Dr. Murphy has also operated successfully upon two cases of incised wounds of large artery in man.

The success of these experiments and cases at once suggests to us the possibility of surgical interference in cases of aneurism of the large arteries.

NERVES.

Dr. A. J. Oelsner of Chicago in a study on nerve suture comes to the following conclusions:

1. Every severed nerve should be sutured, even after years.
2. The earlier the operation is performed the better.
3. If neither sensation nor motion is established within a year the nerve should again be exposed, the cicatricial tissue removed and the ends again sutured.
4. The ends should be clear cut and should contain neither crushed nor cicatricial tissue.
5. Tension must be avoided as far as possible.
6. The wound must heal without suppuration, to gain the best results.
7. Hemorrhage should be perfectly controlled to prevent intervening clot.
8. Carefully prepared catgut is the best material for sutures.
9. After suturing, it is well to stitch a fold of fascia over the united nerve-ends.

10. The extremity should be placed at rest.

11. The external incision should be ample.

Dr. Robert Abbe of New York speaks very highly of the intra-dural section of the posterior roots of spinal nerves for neuralgia. His claims are that even in weak patients the operation has been devoid of risk. It is sound in theory and has already yielded sufficient results to demand attention. It should be resorted to early in cases of ascending neuritis which have heretofore been subjected to successive nerve-stretching and resection and finally amputation, uniformly without benefit. The evidence shows that two additional roots higher up than the apparent origin of the pain should be included. There ought to be no risk in severing the posterior roots of the third and fourth cervical as well as those of the brachial plexus, as the phrenic nerve needs only motor supply.

SURGERY OF BONES.

Emil Markers reports the results in fourteen new cases of complicated fractures, ten cases of pseudarthrosis treated by the introduction of ivory pegs into the medullary canal of the fragments. Of the recent cases, all but one yielded a good result. One died of delirium tremens. In three cases wire had to be used in addition to the pegs.

Of the older cases, eight were entirely cured; two were unimproved. The operation is not dangerous. It permits perfect coaptation of the fragments and insures their retention in position. If suppuration and fistulae occur, the foreign body is removed after consolidation has taken place. Its advantages over wire suture are:

1. The ivory peg permits more exact coaptation and retention; the wire gets loose in many cases.

2. The operation of suturing is not simpler, nor is the technique more easily carried out.

3. The conditions for the healing-in of the wire are less favorable than those for the ivory. Frequently on removing the wire large sequestra are found. This was

never seen in the cases reported, after the use of the ivory pegs.

Bardeleben urges us to employ early motion in fractures, especially those of the lower extremity. He has treated a total of one hundred and eighty-one fractures in this way. A good result was obtained in every case.

The time required for healing was shorter then when the patient was confined to bed and it eliminated the danger of muscular atrophy from prolonged disuse, and of bronchial catarrh from prolonged recumbency.

A new method for wiring the patella subcutaneously comes to us from Barker. The wire used is in thickness just equal to No. 1 English silver catheter. Before the wire is introduced the fragments are brought together and rubbed till the gritting sensation makes it evident that all clots have been dislodged from between them They are then held in apposition by an assistant. With a narrow-bladed knife he makes a thrust through the center of the upper attachment of the ligamentum patellae, cutting clean to its bone and into the joint.

As the knife is withdrawn it is made to enlarge the wound upward for about two thirds of an inch. Through this opening, a special needle is passed behind the fragments and made to pierce the tendon of the quadriceps close to the upper edge of the upper fragment, exactly in the median line. When the needle shows beneath the skin, it is cut down upon with a knife, the edge of which is turned toward the patella, and cuts upon it. The knife is made to enter the joint by the side of the needle.

The needle is now passed out of the opening, threaded with the wire and withdrawn. The needle is then reinserted into the lower opening, passed in front of the fragments and out at the upper one. There it is threaded with the other end of the wire and this is also drawn out of the lower opening. All blood is then squeezed out by pressure and kneading. The wires are now twisted and the wound closed. The joint is not immobilized.

GYNECOLOGY.

Prof. Augustin Goelet has devised a new knife for denuding in trachelorrhapy, with which he claims that the operation can be completed in half the usual time. The knife has a double-edged, pointed blade set at nearly a right angle to the firm shaft and handle. In operating the knife is made to transfix the cervix beyond the angle of the tear, and cuts as it is drawn down, making a clean denudation.

Nourse describes a new operation for the radical relief of uterine flexions. He splits the cervix transversely up to the angle of flexion, then straightens the uterus and sews the severed cervix together in the straightened position.

The lip which corresponds to the convexity of the flexion then slightly overlaps the other at the os externum but it is claimed that this projection disappears in a few months.

Baldy has a new operation for procidentia. He does a hysterectomy, amputating the uterus at or below the internal os. The points to be observed are, to include both ovarian artery and round ligament in the first ligature on each side of the uterus; to place this ligature as near the pelvic wall as possible so as to leave but a small amount of broad ligament behind with the stump; to place but one other ligature on each side of the uterus, this ligature to include the uterine artery with as little other tissue as possible. A suture of heavy ligature silk is then made to pierce both ovarian and uterine stumps deeply and well back of the ligatures, and is pressed through the cervical stump, thus uniting then firmly together, after which the peritoneum is drawn over the cut ends of the stump and sutured.

THE TREATMENT OF PUS CASES IN OPERATING FOR APPENDICITIS.

M. M. JOHNSON, B.PH., M.D.

HARTFORD.

A great diversity of opinion exists as to the technique of dealing with pus cases when operating for appendicitis; especially as to what shall be done with the appendix.

In this class of highly infectious cases, including gangrene, perforation and pus, the writer has had an interesting and highly satisfactory experience.

When the diagnosis of an abscess is made, the same care is taken to thoroughly prepare the patient, hands of the operator and instruments, that would be in an aseptic case. Pyrozone and an ample supply of saline solution is at hand.

The incision two and a half inches in length, is made over the most prominent point of the tumor. When the abdomen is entered offensive pus flows out. The operator holds the incision wide open, while the assistant pours the saline solution into the abscess-cavity with a pitcher (the cleanest, cheapest and best irrigator ever used.)

Pyrozone is then poured into the abscess and washed out with the saline solution. This process is continued until the abscess-cavity is thoroughly disinfected. The appendix is usually easily found, either embedded in an infectious, exudite mass in the abscess-cavity, or situated in the abscess wall, perforated and gangrenous. Now the question is, what shall be done with the appendix, especially when it forms a part of the abscess wall ?

Our highest surgical authority is overwhelmingly in favor of not removing the appendix, for fear of infecting

the general peritoneal cavity. On the contrary, I have removed the appendix in every instance, without infecting the peritoneum. I have always found it a safe procedure, if the abscess cavity is thoroughly disinfected before the walls are broken through.

When we have opened and disinfected the first abscess, our work has only begun. We must bear in mind the frequency with which multiple abscesses occur. I continue to break up the adhesions until I have opened one abscess after another, disinfecting as I go, until five were opened in one case.

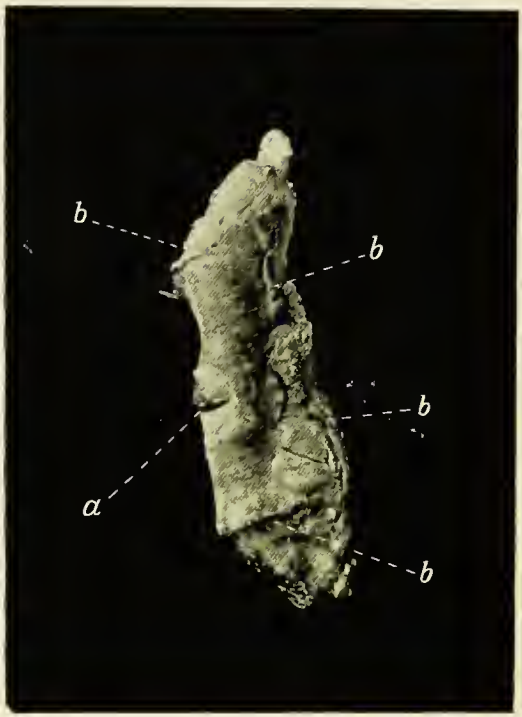
Dr. Mayer of this city, has stood by two different times, while I was searching for abscesses, and advised me to stop, as I had gone far enough; when the sudden flow of pus indicated that another abscess had been opened, and he said, "Well, go on."

It is evident that to stop with the opening and draining of the first abscess, leaving the others untouched, leaves the patient in about as dangerous a condition as he would have been if no operation had been performed. There is no doubt that many deaths occur from a general septicemia, resulting from unopened abscesses as centers of infection.

If I found that this method of operating was followed by a general infection of the peritoneal cavity, resulting in death in a large per cent. of my cases, I would certainly change my technique; but as long as my percentage is good, and my pus cases are making excellent recoveries, I am justified in holding to this method.

I will relate, briefly, a case which will illustrate this phase of the subject:

October 5th, 1895, I saw E. B., aged fifty-seven. There was a well-marked tumor in the right inguinal region, which the attending physician said had been there one week. It was evident that a large abscess had formed as the result of a perforated appendix. October 6th,



a. Perforation.
b, *b*, *b*, *b*. Attachment of abscess wall.

patient was taken to Waternook Sanitarium and properly prepared. The next morning the operation was performed. An incision two and a half inches long was made over the most prominent point of the tumor.

The caecum was found drawn well down into the iliac fossa. The attachment of the appendix was covered with a firmly adherent omentum. The adhesions were broken up and the omentum removed, which disclosed that the appendix entered the pus sac. Pressure with the finger at this point perforated the abscess wall and a pint or more of offensive pus escaped. The cavity was thoroughly disinfected with pyrozone, and washed out with the saline solution.

The wall of the pus sac was built around the point of perforation in the appendix. These adhesions were broken up and the appendix freed from the wall of the pus sac. The distal end of the appendix was found adherent to the promontory of the sacrum. This attachment was separated, and the gangrenous, perforated appendix removed. Continuing , two more pus cavities were opened and thoroughly disinfected. The wick drainage was inserted and the incision partially closed, and the dressing applied.

If there is danger of peritoneal infection as a result of breaking up adhesions, and stripping the appendix out of the abscess wall, this case afforded all the conditions necessary. Theoretically, this patient should have died from a general septic peritonitis in forty-eight hours.

The fact was, the patient made an uneventful recovery and went home in three weeks from the day of the operation, and has enjoyed good health and worked regularly since.

In the case which I will now relate, we have all the conditions of the last one, plus a general septic peritonitis and acute gastritis. As this case made a good recovery, it is worthy of consideration.

[Written by Dr. Nathan Mayer.]

On October third, in the evening, I saw Nathan Morris who during the day had suffered from colic pains and had vomited. There was no localization of the pain; the pulse was high. Morphine was administered and he appeared improved next evening, although severe attacks recurred. The second day the pain became localized in the caecal region. There was no general tympany, temperature in the rectum 102°, pulse eighty, ice-bag locally, morphine internally; next day, a calomel and salts purge. There was severe pain, but no muscular reaction on pressure, or tympany, but continued vomiting which lasted until the time of the operation. Temperature per rectum varied between 101° and 102°; the pulse was low and quick.

On the sixth day Dr. Johnson saw the case and agreed the symptoms were not pressing. On the tenth, temperature rose to 103°, pulse one hundred; attacks of pain became more frequent. The ice-bag was continued and another cathartic given.

A second consultation with Dr. Johnson, and an operation was decided on,despite the objections of the family.

He was removed to Waternook Sanitarium on the eleventh, where he arrived in a collapsed state. It was with difficulty that the rapid pulse could be distinguished. Stimulants and black coffee were administered per rectum, and strychnine hypodermically, as he vomited everything administered by the stomach, owing to acute gastritis.

It was owing to this treatment, that the patient by the next morning got into a semi-condition to stand an operation which could be deferred no longer.

He went under ether easily, and then Dr. Johnson opened the abdomen. After considerable search among the exudite, he uncovered a pus cavity. The adhesions were broken up with the utmost care; during the exploration, a number of pus cavities were disclosed and emp-

tied, which seemed to radiate in different directions and showed no communications. On further search, deep in the pelvic cavity, the remains of the appendix were discovered, beyond any space that could be seen. After further manipulation, a flat membrane, the remains of the appendix, was brought into view, which showed a ragged opening and had been adherent to the caecum. The free wall was ulcerated away entirely, and a patch of the attached wall was also gone. The exudite was very extensive. The wound was partially closed after thorough disinfecting.

At the time of the operation, the patient was suffering from acute gastritis and general septic peritonitis, besides the appendicular condition just disclosed.

Three days after the operation, the caecum perforated and emitted much fecal matter. A profuse flow of yellow serum continued from the wound, during the exudative stage of the peritonitis. No intrusion was made into the peritoneal cavity beyond what was necessary to remove the appendix, and open the surrounding pus sacs. Frequent irrigations and free drainage were continued. The perforation closed spontaneously. Patient made a good recovery and went home six weeks after the operation.

The final good result in this case was due to the thoroughness with which the multiple pus sacs were opened and drained, and the infectious appendix removed.

The expression of the opinions of our most eminent surgeons (Annals of Surgery, June, 1896) on the question of removing the appendix in pus cases, is strongly against it.

McBurney says: "There are certainly some cases, not few in number, in which the appendix is so deeply embedded in the wall of the abscess, or so difficult to define at all, that to insist upon its discovery and complete removal would be to incur quite unjustifiable risk."

Dr. Bull says, in cases where the abscess is distinctly

circumscribed, with firm walls, containing several ounces of pus, he does not attempt to remove the appendix.

Dr. Senn says it has been his habit for years, in cases of acute appendicitis, with extensive suppuration, to simply incise, disinfect, and drain the abscess. He considers a further search for the appendix hazardous, as it often results in a fatal septic peritonitis.

Drs. Halsted and Richardson concur in the opinions expressed.

In the very able article by Drs. A. J. McCash and Forbes Hawkes (in the May number of the American Journal of Medical Sciences), it is stated that in twenty-seven cases of localized abscess, the appendix was removed in thirteen cases—not removed in fourteen cases. The indications for not removing the appendix, are when the appendix is not clearly seen or felt in the wound, after evacuating the pus. Yet in the same paragraph it is stated, that when the abscess cavity is thoroughly disinfected with 1-1000 bichloride solution, should a small opening be made into the peritoneal cavity, the danger of infecting the general peritoneal cavity is not great, provided a ganze drainage is used. Ten cases are then cited where the appendix was removed (in simple abscess) and the peritoneal cavity opened in each case, and all recovered.

The reason for these recoveries is evident, when it is clearly stated that the abscess cavity was thoroughly cleansed with a 1-1000 solution of bichloride.

If these ten cases were successful, why not give the fourteen cases where operation was not performed, a chance for recovery by a similar treatment?

In the same article it is also stated, that in eleven cases of general septic peritonitis, nine were operated upon, two not operated upon. Of the nine operated upon, six died and three recovered. Died, sixty-six and two thirds per cent.

In all these opinions quoted, no mention is made of the

condition of multiple abscesses. The whole discussion is confined to the opening and draining of one abscess, and leaving the appendix in. A large death-rate must result from septicemia, caused by the multiple abscesses as centers of infection.

The death-rate in this class of cases will be greatly reduced when a more thorough operative technique is adopted. We are dealing with a pyemic condition with the gangrenous appendix as the primary cause of infection. It should be removed and all the pus centers evacuated and thoroughly disinfected. Your patient is then safe.

While I believe in free drainage, yet I never make my incision long enough to allow the intestines to escape from the abdominal cavity. I break up adhesions, open abscesses, and remove the appendix; yet I manipulate the intestines as little as possible.

The practice of McCash and Hawkes, of making the incision as long as possible, allowing the intestines to come out in mass into a towel, with the necessary manipulating and handling in the process of washing and returning, with hands but shortly before covered with pus from the abscess, must be a direct method of spreading infection, and the whole procedure must cause an unnecessary shock to the nervous system.

AFTER TREATMENT.

The wound is left partially open and is thoroughly irrigated with the saline solution, as long as pus is present. The wick drainage is inserted for twenty-four hours; after this, rubber tubing, with scrim gauze drawn through it, is continued until the wound granulates from the bottom, so that drainage is unnecessary. The wound is cleansed with pyrozone for three or four days; it is then discontinued, as it destroys granulation.

No form of opium is ever used following the operation. Strychnine is administered hypodermically for the first

three days; it is then given internally. Patient is liberally nourished with animal food.

Number of pus cases,	64.
Recoveries,	60.
Deaths,	4.
Total,	64

The paper was remarked upon by several members. Dr. MacLaren did not agree with the writer as to irrigation. The pelvic cavity is a large one and the lower part of it is immovable. The intestines are yielding and movable. If water is poured down from above upon them, the intestines may be washed in with the stream and may act as a valve, shutting off access to the cavity below. The valve may even close tightly and the water be turned back without entering the abscess cavity. By using a tube which may be thrust down below the intestines one can introduce water all through the infected parts. Every part exposed is washed out thoroughly and where the water strikes, the pus and sloughing material is removed. A funnel with end of glass ground off is the best for such purposes.

Dr. Wiggin was much interested in the paper. He is loth to make it a rule that wherever there is an abscess the appendix should be removed. He does not believe it wise in all cases. Each case must be studied by itself. If there are many abscesses, open them, but not through a small incision. It might be done through a median incision or through a large one in the side, but he doesn't see how all parts can be reached through an opening small in size. The peroxide has a penetrating power and is efficient whenever it enters the tissues. It is his observation that septic cases do not bear anesthetics well. If you do too much of an operation you lose your patient. We must go slow and err on the side of conservatism rather than on that of brilliant surgery.

Dr. Ingalls.—We can't lay down any rule for removing

the appendix. The force of the water if used in a heavy stream, may break through and make a peritonitis. In searching for adhesions the first care should be not to perforate into the general cavity. If the appendix has sloughed it is oftentimes mixed with the exudite. Sometimes it is attached so that it will be dangerous to remove it. If it is attached and drainage is good, it will come away. If the pus is thoroughly evacuated and the parts thoroughly cleansed there is no danger. The use of water in a pitcher carries power. There is danger of its backing into the peritoneal cavity.

Dr. J. W. Wright agreed with Dr. Ingalls. He thinks that the appendix may become as harmless as the wall of the sac. The less you interfere the better off you are. You may lighten up new sources of inflammation. The one duty is to open up the pus cavity and allow it to drain freely, not explore it by force. He has seen bad results from attempting too much, when if the exudite had been left it would have been carried away. If there are cavities additional to the one opened they generally break through the line of least resistance into the cavity which has already been opened. They will drain toward the general cavity, nature forming adhesions.

Dr. Calef.—Before such methods were used as those in vogue, saline solutions and weak corrosive sublimate were the customary applications. Peroxide was not known. The cavity was packed loosely with iodoform gauze and many patients got well. He would like the opinion of doctors rather than of surgeons who operate, as to the results of the disease.

Dr. Johnson, in closing the discussion, expressed his thanks for the remarks of the gentlemen. As to irrigating, he said, each surgeon could use his favorite method. The important point was that it should be intelligently and thoroughly done. Adhesions which are so firm that they can with difficulty be broken up with the fingers of the operator, are not liable to give way to water flowing

from a pitcher held a few inches above the abdomen. He thought the objection to a definite principle governing the treatment of a gangrenous appendix untenable. He considered a gangrenous appendix a menace to the life of the patient, and it should be removed, as much as a severed artery should be closed by pressure. These are questions of fact and not of opinion. The doctor then remarked, that as long as his death rate in this class of patients was so low, he must beg the pardon of the gentlemen for his difference of opinion, but should continue his present method.

LAPAROTOMY AT THE HARTFORD HOSPITAL: REPORT FOR THE YEAR ENDING SEPTEMBER 30TH, 1896.

H. G. HOWE, M.D.

HARTFORD.

Surgical statistics are generally rather dry reading, and usually only referred to in our libraries when the probable success of an operation is in question; but when taken from our immediate neighborhood or from our own cases, they become of extreme interest.

With the work at the Hartford Hospital in this line you are conversant, as you, individually, have been responsible for the admission of the patients, the cases being quite generally from this part of the State. With an assemblage of very nearly 1,700 cases in the Hospital during the past year (an increase of several hundred over any previous year), we have performed five hundred operations, seventy-six of which were operations on the abdomen. They were classed as follows:

43 cases of Appendicitis,	with 3 deaths.
11 cases of Hernia,	with 3 deaths.
1 case of Nephrotomy,	with 1 death.
3 cases of Fecal Fistula,	with no death.
1 case of Tubercular Peritonitis,	with no death.
1 case of Sarcoma of Omentum,	with 1 death.
1 case of Psoas Abscess,	with no death.
1 case of Ovarian Cyst,	with no death.
1 case of Ovarian Cyst and Hydrosaloynx,	with no death.
1 case of Ovarian Cyst, Double,	with no death.
4 Hysterectomies,	with 3 deaths.
2 cases of Abdominal Abscess,	with no death.
1 case of Adhesion of Peritoneum,	with 1 death.
3 cases of Intestinal Obstruction,	with 2 deaths.
2 cases of Exploratory Incision,	with no deaths.

A total of seventy-six cases with fourteen deaths. This

gives a death-rate for all cases of eighteen per cent. or eighty-two per cent. of recoveries.

Taken separately we have a rate of recoveries as fol lows:

Ninety-three per cent. Appendicitis Operations.
No per cent. of Nephrotomy.
One hundred per cent. of Fecal Fistulæ.
One hundred per cent. of Tubercular Peritonitis.
No per cent. of Sarcoma of Omentum.
One hundred per cent. of Psoas Abscess.
One hundred per cent. of Ovarian Cysts.
Twenty-five per cent. of Hysterectomy.
One hundred per cent. of Abdominal Abscess.
No per cent. of Peritoneal Adhesions.
Thirty-three per cent. of Intestinal Obstruction.
One hundred per cent. of Exploratory Incisions.

We have lost no cases of appendicitis since January first, 1896, all the deaths occurring previously to that date Two of these were due to low condition of the patients when admitted, from the long standing of the disease, accompanied with extensive general peritonitis, and would undoubtedly have died in a few hours if not operated upon. The third case was in a very low condition when operated upon and died of shock.

Nine of the cases of recovery had a fecal discharge through the wound for a varying period of time, from a few hours to weeks. All recovered without secondary operations except one. This one had a successful operation for intestinal anastamosis. Six of the above cases of recovery were complicated by a general peritonitis, with marked symptoms peculiar to the disease.

The cases were usually operated upon just as soon as a positive diagnosis was made by the visiting surgeon, or as soon after as the patient could be properly prepared. Most of the operations were sent in for the operation, having been attended by physicians outside of the Hospital during the onset of the disease. Many were opera-

ted upon and recovered when it seemed almost impossible for them to live, so extensive was the peritonitis or so dense the adhesions.

The appendix was amputated in nearly all the cases, always when possible. All pus cases were drained, as also were some that were manipulated a good deal in searching for the appendix or abscess cavity.

The fatal hernias were all strangulated, three in number. Only one strangulated hernia recovered.

Too much stress cannot be placed upon the necessity of haste in operating upon these cases. All depends upon the condition of the bowels and nothing upon the operation, which is in itself as now performed almost harmless. Our cases are often too old to be operated upon when received. The varieties received were:

Femoral Hernia,	2 cases with no deaths.
Inguinial Hernia,	4 cases with 1 death.
Umbilical Hernia,	2 cases with 2 deaths.
Ventral Hernia,	3 cases with no deaths.

The three operations for fecal fistula were all successful. One was by intestinal anastamosis; one by purse-string operation, (both being performed by Dr. Wiggin by request), and one by curetting and packing.

The psoas abscess was diagnosed by abdominal section, and after the closing of the abdominal wound, opened freely on the side by an extra-peritoneal incision. The three ovarian cysts (one of which was double) all made a good recovery. The hysterectomy operations were all performed under urgent necessity. Three were fatal. The other cases of intestinal obstruction were operated upon as a dernier resort, two being fatal and one a recovery. The Murphy button was used in one of the fatal cases.

The operations were performed by members of the Hospital Staff, (Drs. Jarvis, Davis, Storrs, Ingalls, Campbell, and myself,) with the exception of the two operations upon the bowels by Dr. Wiggin, assisted by Dr. Ingalls and myself.

REPORT OF FIVE CASES OF UTERINE RETRO-DISPLACEMENT, TREATED BY VAGINAL FIXATION. (Mackenrodt.)

FREDERICK HOLME WIGGIN, M.D.

LITCHFIELD.

During the last few years, differences of opinion have been so great as to the proper method of treating retro-displacements of the uterus which give rise to symptoms, by operative measures, that reports of cases, especially those treated by the more recent procedures are of interest, and will be useful in helping us to form an opinion as to the best method for relieving this, at times, annoying local trouble.

CURETTAGE, FOLLOWED BY VAGINO-FIXATION, OÖPHOREC-TOMY AND APPENDICITIS.

B. S ——, a married woman, twenty-seven years of age, was admitted to the Gynecological Ward of the New York City Hospital, November twenty-two, 1895. She stated that her first menstrual period occurred during her fifteenth year, that the menstrual flow was regular, and of the tri-weekly type, and that it was preceded by pain, located in the lower abdominal region. Eight years ago she had a child, the labor being normal in all respects. Five months prior to admission, her last menstrual flow had occurred, and since that time she had suffered from metrorrhagia. Vaginal examination revealed an enlarged, hard, tender and retro-placed uterus, accompanied by an enlarged and tender ovary on its right side. The case was diagnosticated as one of chronic endometritis, retrodisplaced uterus and small ovarian cyst. On December second, after the usual preparation of the patient, and under ether narcosis, the patient was re-

examined vaginally, and as the right ovary felt smaller than when the previous examination was made, it was decided not to open the peritoneal cavity, but to perform curettage and vagino-fixation of the uterus, after it had been anteverted according to the method devised by Mackenrodt of Berlin. These procedures having been carried out in the usual manner, excepting for the fact that no gauze was placed in the uterine cavity, the convalescence was uneventful, and the patient left the Hospital with the uterus in good position, on December thirtieth. On January fifth, 1896, the patient was readmitted to the Gynecological service of the Hospital, complaining of much pain in her right side. On January thirteenth, after the usual preparation of the patient and under ether narcosis, the abdominal cavity was opened by an incision to the left of the median line, splitting the rectus muscles of that side, and incising the other tissues. The uterus was found to be well anteverted and adherent. Several small cysts were found in the left ovary. These were excised, and the resulting wounds were sutured with fine silk. The right ovary contained a larger cyst, and as there appeared to be no normal ovarian tissue, it was removed, after the peritoneal cavity had been freely irrigated with normal saline solution. The wound in the abdominal wall was closed by a single row of silkworm gut sutures which were passed through all the layers of tissue. On January twenty-second, the patient's bodily temperature rose to 103° F., and she complained of severe abdominal pain in her right inguinal region, radiating down her right thigh. Vaginal examination at this time proved negative. As the symptoms continued with unabated severity, on January twenty-third, under ether narcosis, the pelvic cavity was opened by an incision in the posterior vaginal wall, and the region explored with the finger. Palpation revealed the fact that there were no adhesions about the left ovary, but that high up on the right side some adhesions existed,

Those within reach were broken up, but no pus escaped. After free irrigation, a piece of iodoform ganze was placed in the pelvic cavity for the purpose of effecting drainage should the abscess rupture in this direction. On January twenty-fourth, the vaginal packing and pelvic gauze were removed, but there was no discharge of a purulent character. The patient's temperature was 104°, and she complained of severe, lancinating pain in the right inguinal region. On January twenty-fifth, the patient's condition was unchanged. She was prepared, and placed under ether narcosis, and the abdominal wall was incised. In this way, a large abscess was reached, and evacuated. It seemed probable that it was of appendical origin, as at the time of the oöphorectomy, the appendix was adherent, but as it did not appear to be much injured, on examination, it was not removed. The further convalescence was uneventful.

Lizzie Sammons (332 E. 34th. St.), a single woman, twenty-three years of age, was admitted to the Gynecological service at the City Hospital, January twenty-second, 1896. She stated that her first menstrual period occurred during her thirteenth year; that it had been irregular and painful. She had had one child, one year prior to admission. The labor had been severe, and had been followed by some hemorrhage, fever, abdominal pain, and a vaginal discharge which had continued. Vaginal examination revealed the facts that the uterus was somewhat enlarged, that it was movable, but that it was posterior. On January twenty-seventh, after proper preparation of the patient, and under ether narcosis, the cervix was dilated, and the uterine cavity curetted and irrigated with a 1 to 4,000 bichloride solution. The anterior vaginal wall was next incised, and after the bladder had been separated from the uterus, the fundus was caught by bullet-forceps, drawn forward, and fastened to the vaginal flaps by means of two heavy catgut sutures. The vaginal wound was closed with the aid of interrup-

ted catgut sutures. The patient's convalescence has been uneventful, her bodily temperature hardly rising above normal. The menstrual flow was re-established on February twenty-second; it was painless, and of four days' duration. In March, it was noted that the uterus had remained in good anterior position.

S. C ——, a single woman, was admitted to the Gynecological Ward of the City Hospital on December tenth, 1895. She stated that her first menstrual period occurred during her ninth year, and that the menstrual flow had been regular, and of the monthly type until recently. It had always been accompanied by pain in the sides and back. Eight months ago, she had had a child, and since that time her health had been poor, as she had suffered from menorrhagia and metrorrhagia. Vaginal examination revealed an enlarged, tender and retroplaced uterus. On December fourteenth, after the patient had been prepared in the usual manner, and under ether narcosis, the cervix was dilated and a curettage performed. After this, Mackenrodt's operation was performed. The patient's convalescence was uneventful. On December thirtieth, as she complained of pain in her lower abdomen, an exploratory laparotomy was performed. The position of the uterus was satisfactory. The appendages were somewhat adherent, but were otherwise normal. After the adhesions had been broken up, and the peritoneal cavity had been freely irrigated with hot saline solution, the abdominal wound was closed by a single row of silk-worm gut sutures, passing through all the different layers of tissue. The wound healed primarily, and the convalescence was uneventful. On January twenty-second, the patient was allowed to leave her bed. On January twenty-ninth, it was recorded that on vaginal examination, the uterus was found to be anterior, and that the patient had stated that her pain had disappeared.

M. G ——, a widow, thirty-two years of age, was admitted on November fourteenth, 1895 to the Gynecolo-

gical Ward of the City Hospital. She stated that her first menstrual period occurred during her fourteenth year; that menstruation had been regular and of the monthly type, but painful before the flow was established, and that this pain was felt in the lower abdomen and small of the back. Her last menstrual period had occurred on November first, and since that time she had been suffering from metrorrhagia. She also stated that three years ago she had undergone a laparotomy for the removal of an ovarian cyst, and that this had been accompanied by an attack of cystitis. Three months prior to admission to the Hospital, she had undergone a curettage and a trachelorrhaphy. Vaginal examination revealed the fact that the patient had a large rectocele,and that stenosis of the external os existed, and that the uterus was retrodisplaced. On November twenty-second, 1895, after the patient had been prepared in the usual manner, and had been placed under ether narcosis, the cervix was drawn down, and after a probe had been passed into the cervical canal, the latter was incised and dilated. The uterine cavity was then curetted, and after irrigation, an Outerbridge dilator was introduced into, and left in the cervical canal. After this, the anterior vaginal wall was incised, the bladder separated, the uterus anteverted and attached to the anterior vaginal wall, according to the method of Mackenrodt of Berlin. The peritoneal cavity was not opened. The patient's convalescence was uneventful, excepting for the fact that the necessary catheterization lighted up the chronic vesical inflammation which had existed for some years prior to the last operation. This made it necessary to wash out the bladder with a boracic acid solution. On December eleventh, it was noted that the wound of the anterior vaginal wall was healed excepting at one small point, and that the uterus was anteverted and adherent. On December twentieth, the cervical dilator was removed, the canal being well opened. On January twentieth, it was found that the position of the uterus was satisfactory.

S. S ——, a single woman, eighteen years of age, was admitted to the Gynecological Ward of the City Hospital on December twelfth, 1895. She stated that her first menstrual period occurred during her eleventh year, that menstruation had been more or less irregular, and that it had been accompanied by pain, before, during and after the flow had been established. She had had no children, but in May, 1894, she had had a miscarriage at two months, which had been followed by a long illness of a feverish nature, and by severe pain in the lower abdominal region. This pain had been rather more severe on her left side, and had radiated into the small of the back, and down both thighs. It had been increased by the upright position or by walking. She also stated that she had had syphilis, the first symptom of which had appeared during June, 1894, and that in March, 1895, she had submitted to a curettage, which procedure had temporarily improved her condition. Vaginal examination revealed the fact that the uterus was enlarged, tender and retroplaced, and that an enlargement of the right ovary existed. On December thirtieth, after the usual preparation and under ether narcosis, the anterior vaginal wall was incised, the bladder separated, and the fundus of the uterus drawn forward, and the vesico-uterine fold of the peritoneum incised. On examination, the left ovary and tube proved to be normal, but the right ovary was found to contain a cyst, and this was removed. The uterus was then attached by three catgut sutures to the anterior vaginal flaps, which were united by a continuous suture of catgut. On January fourth there was a slight elevation of the patient's temperature, and she complained of colicky, uterine pain. Vaginal examination revealed the fact that the uterine body was acutely flexed on the cervical portion, the sutures having been placed too low down on the body. Under chloroform anesthesia, the sutures were removed, and some of the adhesions broken up, and the uterus placed in a better position. It was

found that these adhesions were already very strong. The patient progressed favorably until January fifteenth, when she was attacked by scarlet fever, and was removed to the Willard Parker Hospital.

In the cases herewith reported, with the exception of the fifth, the vesico-uterine fold of the peritoneum was not divided. The failure to do this necessitated the performance of a second operation at an early day in Case I. The writer believes that in all cases thought to require this operation, the vesico-uterine fold of the peritoneum should be divided, and the exact condition of the adnexa determined by aid of sight, as well as by touch. This addition to the original technic does not in any way increase the slight risk which the patient runs who is subjected to this procedure. The opposition to this method of treating uterine retrodisplacements, which has been encountered of late by Mackenrodt, has, Dr. Vineberg believes, been due to the employment of a faulty technic. In this view, the writer concurs. Recently it has been stated in various journals that Mackenrodt has abandoned this procedure. In view of these reports, the writer communicated with Dr. H. F. Brownlee, of Danbury, Connecticut, who had recently visited Dr. Mackenrodt's clinic, and asked him to express his opinion as to the correctness of these statements. He has received the following reply:

My Dear Doctor:

In reply to yours of yesterday, I have not seen the statement you refer to, and can hardly believe that it is reliable. I spent two months in Berlin last summer, June and July, and took a private course with him during that time, and became quite well acquainted with him. At that time, he was thoroughly satisfied with his operation, but was making a strong fight against the method used by Dursen, Olshausen, and others, i.e.—the fixation of the fundus with silk-worm gut. He makes a point that

where only catgut is used, the uterus is held only by adhesions, and that these adhesions do not interfere with pregnancy, while a silk-worm or any other non-absorbable suture, is a serious danger if pregnancy takes place. He told me that a great number of his cases had borne children since operation, with no trouble whatever.

He has said for a long time that trouble would arise from these permanent stitches, and in a short time before my departure, his prophesy was fulfilled in a case at the Charité where a laparotomy was necessary to delivery. A Porro operation was done, I think by Gussrow, resulting fatally, and the case was exhibited at a subsequent meeting of the Berlin Gynecological Society.

I believe Mackenrodt to be a thoroughly honest man, and if he were convinced that his operation was wrong, would readily acknowledge it, but I do not believe the statement true, for I think it impossible for him to have made such a radical change after two years' experience, and being so well satisfied at such a recent period.

I have done two operations here. My first was all right, and the result so far good. It was done in October, 1895. My second was unfortunate through some faulty catgut, which gave way on the second day, allowing the fundus so much freedom that I did not get adhesions firm enough to hold, and in three months, the fundus was again in the posterior cul-de-sac. I did the operation over again, four weeks ago, and used a kangaroo-tendon suture for the fundus (two). The result so far is good. Of course, both of these cases are too recent to form definite conclusions, and neither has become pregnant, so the cases are of no use to you."

The writer believes that if the technic about to be described is adhered to, the results obtained will prove entirely satisfactory, and that the operation of vaginal fixation will, in time, be proved to be the most satisfactory means at our command for the permanent relief of those suffering from retrodisplaced uterus.

The patient is prepared as for a vaginal hysterectomy, and is placed on the table in the dorsal position, with the thighs flexed and held in place by a Clover crutch. As in this class of cases there is more or less endometritis, it is well to begin the operation by curetting the uterus with a sharp curette, gauze not being placed in the cavity. Any existing laceration of the cervix should be repaired, sutures of catgut being used. These steps having been taken, the cervix is grasped and drawn downward and forward by the aid of a pair of bullet-forceps. Then a portion of the anterior vaginal wall, about three quarters of an inch below the meatus urinarius, is taken up in the same way and drawn forward and upward, thus stretching the wall. An incision is made, beginning at the last named point, and continuing to the cervix. If this wall is more or less prolapsed, the incision instead of being straight should be oval, allowing for the removal of sufficient tissue to overcome this defect when the sutures which close the vaginal wound are placed. These flaps are dissected from the inferior surface of the bladder into which a sound is passed, and by its aid the thickness of the bladder-wall is estimated, and its lower border defined. A needle, threaded with pedicle silk, is passed through the inferior edge of either flap and tied, the ends being kept long. These serve as retractors and the flaps being held aside, a curved transverse incision is made at the cervico-vesical junction. The bladder is freely separated from the uterus by blunt dissection with the finger, the vesico-uterine fold of peritoneum being divided by the aid of scissors. The patient's hips are elevated, which allows the bladder and intestines to gravitate from the uterus, the fundus of which is brought into view, and is seized by a pair of bullet-forceps, and drawn forward. The ovaries and tubes are inspected, after any existing adhesions have been broken up, and if diseased, are removed. A suture of chromicized catgut or kangaroo tendon is passed by means of a curved Hagedorn needle through

the left vaginal flap at a point slightly distant from its superior margin, then through the muscular tissue of the anterior uterine wall, close to the fundus, and then through the right vaginal flap near its upper margin. A second suture is passed in the same way, about one-third of an inch below the first. The uterus being well anteverted, the sutures are tied loosely. The balance of the wound in the anterior vaginal wall, after free irrigation with saline solution and the application of hydrogen dioxide, if there is much oozing, is closed by means of interrupted sutures of horse-hair, and the wound is sealed by painting it over with a ten per cent. solution of iodoform in ether. A small quantity of gauze is placed in the vagina for the purpose of effecting drainage, and an antiseptic pad is applied to the vulva.

In reply to a question from Dr. Wolff as to the location of the second incision, Dr. Wiggin said that where the operation failed was in making the incision too low down. This throws the cervix back in the hollow of the sacrum.

OBITUARIES.

* * * *and there at Venice gave*
His body to that pleasant country's earth,
And his pure soul unto his captain Christ,
Under whose colors he had fought so long.

RICHARD II, Act IV, Sc. 1.

HENRY W. HOUGH, M.D., OF PUTNAM.

BY FREDERICK A. MORRELL, M.D.

PUTNAM.

Henry W. Hough, son of William and Philena (Wightman) Hough, was born in Bozrah, Connecticut, February, six, 1810. He was a direct descendant of Edward Hough of Westchester, County of Cheshire, England. On his mother's side he was a descendant of Rev. Valentine Wightman of Groton, the first Baptist minister of Connecticut, and of Rev. Edward Wightman, who was burned at Litchfield, England, for heresy, in 1712. He attended the district school of Bozrah until he was eighteen years of age, when he entered Bacon Academy of Colchester. Among his old papers I find the following, which speaks for itself:

"Colchester, October fifteen, 1831. The bearer, Mr. Henry Hough, has been studying with me for some time past, and his improvement has been particularly creditable and becoming a scholar. He is a young gentleman of good moral character, and I very cheerfully recommend him to the notice of any who may wish to employ him as a teacher of youth. Signed, Charles P Otis, Principal of Bacon Academy."

From this time, 1831 to 1834, he taught school during the winter months, spending his spare hours in the office of Dr. Johnson, the family physician, and worked on a farm during the summer. In 1834 he entered the College of Physicians and Surgeons, New York, where he remained for one year. He then entered Yale Medical School, from which he graduated in 1836, in a class of eighteen. Soon after graduating he located in New Boston, where he remained one year. In 1837 he removed to Killingly Hill, now Putnam Heights. Not finding

this location to his taste, he moved into Putnam where he lived until his death.

In 1837 he married Hannah O. Huntington of Bozrah. His wife became an invalid very soon after this marriage, and for seventeen years she was not able to walk. She was also afflicted with blindness. His friends tell me that during all these years, he was never heard to murmur, but that with true devotion, he strove in every way to make her comfortable and happy. She died in 1855. Two years later, he married Mary Cripp of Putnam, who died in 1894.

September, twentieth, 1862, he was appointed Assistant Surgeon of the Eighteenth Regiment of Connecticut Volunteers, serving in that capacity until honorably discharged, November sixth, 1863.

His long career in medicine, extending over more than sixty years, took him back to a generation that has long since passed on. I have had him point out to me men who are now grandfathers, and he would remark in his cheery way, "I was present when that man came into the world." During the active part of his professional career he kept abreast of the times but, during the later years of his life, he was inclined to look with distrust upon the progress of medical science. He would sometimes remark, "I can't see that you young men, with all your innovations, save any more lives than we old fellows did in the old way. I used to treat my cases of diphtheria with small doses of calomel, a little ipecac, and stimulate them, and most of them would pull through." And yet how much nearer he was to the most approved methods of treatment of the present day than many of his brother practitioners. He loved his profession and devoted his life to it. He was ever kind to the needy and unfortunate, never refusing to respond to the calls of the poor, night or day. This never-failing response to the calls of charity caused the doctor to be the victim of a shameful imposition, only a few months be-

fore his death. One dark cold night in winter, he was summoned to attend a poor man in a distant part of the city. As he was the soul of honor himself, he never suspected evil in others, and he started out to add one more to his many deeds of charity. Upon reaching the house of the supposed patient he found that the family knew nothing of the summons and were not in need of his services. Even then the innocent old man did not suspect treachery, and great was his surprise, upon reaching home, to find that during his absence his house had been entered and several valuable articles stolen. He was ever ready to help young men just starting in practice and to give them the benefit of his long years of experience. During the latter part of his life he became very deaf, and for this reason he mingled very little with people, causing some to say he had grown hard and cold, but those who knew him intimately knew this was not true. He was a loving husband, a faithful physician, a true friend, and an honorable, upright citizen.

PINCKNEY WEBSTER ELLSWORTH, M.D., OF HARTFORD.

BY H. P. STEARNS, M.D.

HARTFORD.

Dr. Pinckney Webster Ellsworth was born in Hartford, Connecticut, December fifth, 1814. He was the eldest son of Hon. William Wolcott and Emily (Webster) Ellsworth.

William Wolcott Ellsworth was Governor of Connecticut during two terms; also a member of Congress from the State, and the Chief Justice of the Supreme Court.

Dr. Ellsworth's grandfather was Oliver Ellsworth, the third Chief Justice of the United States, and doubtless more influential than any other person in devising and shaping the laws of the country in its formative stage, and perhaps also in framing its constitution.

Dr. Ellsworth's grandfather on his mother's side was Noah Webster, LL. D., the renowned lexicographer.

By tracing his genealogy further back we find that it brings us to William Bradford, the second Governor of the Plymouth Colony. In other lines we find Hon. William Greenleaf and Governors Roger and Oliver Wolcott, father and son; and also the present Governor of Massachusetts, and Senator Wolcott of Colorado.

Dr. Ellsworth received the education of his earlier years in the Hartford Grammar School; he entered Yale College in 1832, and graduated with the class of 1836.

After graduating he commenced the study of law, but soon abandoned it for the study of medicine. He attended lectures in Philadelphia, and graduated from the College of Physicians and Surgeons, New York, in 1839. For a short period he was House Physician in Bellevue Hospital, New York City.

Equipped with such an academical and professional

education, and a prestige of family inferior to no other in the country, Dr. Ellsworth nailed his name to his door, and sailed out on the ocean of professional experience at the age of twenty-five years. He doubtless encountered some head-winds, and found adverse currents and eddies which swerved him from his course at times, but on the whole, if we can judge from the story of his record, he made a brilliant passage during the first ten years of his professional life. He seems to have had little of the weary waiting which hangs so heavily on the hands and hearts of most young physicians. He was especially fortunate in his acquaintance and professional relations with Dr. Amariah Brigham, who was a surgeon of considerable eminence in Hartford at that time and doubtless was influenced by the accounts which Dr. Brigham had to give of his opportunities for observation and study while in Europe, from which he had recently returned. At any rate we find that young Ellsworth left Hartford in the early forties, and visited Europe for the special purpose of studying general surgery and that of the eye.

At about the time he returned Dr. Brigham abandoned the general practice of medicine and surgery, and became Superintendent of the Retreat for the Insane. This left a broad field which Dr. Ellsworth was not slow to enter, and which he seems to have cultivated very effectively.

For instance: During the first ten years of his professional experience, that is, from twenty-five to thirty-five years of age, he did in his practice in Hartford and vicinity, no less than one hundred and seventy surgical operations, not counting many minor ones.

These operations embraced amputations of limbs, tying of arteries,removal of large tumors, removal of half of the lower jaw; many removals of the breast for scirrhus tumors (the largest weighing five pounds); eleven cases of cataract, and forty for strabismus, etc., etc. He claimed to have been the first in the State to operate successfully for strabismus. (See Operations for Strabismus: Re-

ported in the Boston Medical and Surgical Journal, Vol. 23, p. 416.)

Two of the operations of a special character were for remedying contractions from burns,one of them being the first time such an operation was ever performed in the United States. (See Boston Medical and Surgical Journal, Vol. 28, p. 356, 1843.)

Another consisted of a section of the median nerve of tetanus in 1843. (See Boston Medical and Surgical Journal, Vol. 29, p. 232.)

Another reported in the Boston Medical and Surgical Journal, Vol. 36, p. 169, was a ligature of the ulnar and radial arteries for a wound in the palmer arch.

In a monograph by the late Dr. Ephraim Cutter of Woburn, Mass., on thyrotomy, he refers to a case reported by Dr. Ellsworth in the Medical and Surgical Reporter, Phil., No. 12, p. 234, Vol. XVI, and says: "Dr. Ellsworth was not aware of the modified operation when he operated. He is therefore justly entitled to a credit of originality in simplifying the operation. Indeed one is amazed at his boldness when it is remembered that he performed the operation at his very first visit, after using the laryngoscope for the very first time in his life, and without any precedent known to him. We cannot characterize this procedure as rashness, as the doctor (i.e., Dr. Ellsworth) writes: 'I was led to study up the subject by the death of a little boy in that neighborhood (that is, of Mrs. K.), who was taken to New York; but the case was not then clearly made out, and no operation was attempted. I think now, the boy might have been saved. At any rate I determined, if another case presented, there should be some cutting before the case was given up.'"

It is of course proper to refer to the fact that the large majority, if not all of these operations, would not compare in the difficulties of technique with many of the surgical operations of to-day. On the other hand it may be said that since that time the discovery of surgical an-

esthesia has occurred, by which much of surgical progress has been made possible; and in addition the discovery of antisepsis which has rendered many operations successful which would otherwise have been so fatal as to prevent their becoming common.

In 1842 he read a paper before the Hartford County Medical Society on delirium tremens.

He was the first to perform a capital operation (an amputation of the thigh) while the patient was anesthetized by the influence of nitrous oxide gas. This occurred June fourteenth, 1848.

In 1854 Dr. Ellsworth delivered the address to the graduating class of the Medical Institution of Yale College. This address seems to be replete with good counsel, and I am led to quote two or three paragraphs:

"You have to contend against the superstitions of men. I told you, gentlemen, you would see giants. Superstition, with its twin sisters, Ignorance, and Fraud, are to the medical pilgrim, what were Pope and Pagan to Christian of old, and like them sit at their cavern's mouth, paved with the bleaching bones of untold millions. From their unhallowed union has sprung the Hydra, Pathy, Ology, and Ism, a seven-headed, ten-horned monster, drunk with human blood and to whose ears groans are melody. Like Bunyan's giant, the Apocalyptic beast, there is given 'him a mouth speaking great things and blasphemies,' 'and he doeth great wonders' 'and deceiveth them that dwell on the earth' and all the world wonders after the beast.

You see we have Scripture for it that 'vox populi' is by no means 'vox dei.'

In relation to your intercourse with one another: A desire should always actuate you to consult the feelings of your associates. Professional reputation is a delicate thing; it may be marred by a breath. Never in counsel permit a patient to feel that you distrust the judgment of his regular attendant; and to avoid the necessity of

this has arisen the practice universally adopted, of consulting apart from the patient and his friends. If you have contrary views, express them, yet always in terms of delicacy and respect, remembering that a constant attendant has opportunities of forming an opinion you have not, and that there may be idiosyncrasies which would make your opinion, otherwise good, of less value A contrary course may awaken feelings of hostility terminating only with life.

Fourth.—Abide fully and in spirit by the regulations of the societies with which you are connected. Your happiness and welfare are intimately connected therewith. Any systematic attempt to increase business by manoeuvering and undercharging is a miserable exposure of weakness. The public understand that no man will be content with small and insufficient fees, while his brethren receive greater, unless he rates his abilities at a low price. A man to be respected must respect himself. Small fees are set off against small skill. Besides, a great injustice is done the profession."

In July, 1861, Dr. Ellsworth was appointed by Gov. Buckingham as a Brigade Surgeon, and was present at the first battle of Bull Run. In the autumn of the same year he was appointed a Brigade Surgeon of Volunteers by the President, but, I believe, did very little if any active service in consequence of ill-health.

Dr. Ellsworth was the author of many articles which appeared in the medical journals, and some of which were republished in European journals.

In 1845 he read a paper before the Connecticut Medical Society on the subject of scarlatina, for which he was awarded a prize by the Society.

He wrote a biographical sketch of the late Dr. Horace Wells, and ably defended Dr. Wells' claim to the honor of the discovery of surgical anesthesia.

In 1860 he published a pamphlet on "The Two Natures of Christ in their relation to Physiology and Revelation."

How deeply the views presented in this monograph affected the theological world I am unable to form an opinion; but it is said to have been carefully thought out, and to be interesting.

He became a member of the Connecticut Medical Society in 1840, and was also an Honorary Member of the New York Medical Society.

He became a member of the First Church in Hartford in June, 1843, and was very regular in his attendance upon its services until near the close of his life at the age of eighty-two years.

Dr. Ellsworth appears to have inherited some of the physical and intellectual vigor of his very renowned ancestry. He was industrious, careful and methodical in the discharge of his professional duties as a physician and surgeon to an advanced age.

WILLIAM FREDERICK LACEY, M.D., OF DANBURY

Dr. William Frederick Lacey died at his home in Danbury on the thirtieth day of March, 1896. He was the youngest of six children, two of whom were physicians, and the son of Dr. Noah A. Lacey who was practicing in Brookfield when Dr. W. F. Lacey was born. He attended Yale, graduated in 1840 and settled in Danbury where he obtained a large practice. A year before his death he had a paralytic stroke. He was a man of genial and social disposition, was full of anecdotes and often at the bedside would tell a little story which would cause a laugh from the patient. He was noted as a very successful physician in all kinds of fevers. When he started practice in Danbury he was the youngest practitioner in the State.

JOHN WELCH BIDWELL, M.D., OF WEST WINSTED

BY EDWARD H. WELCH, M.D.

WEST WINSTED.

The death of Dr. Bidwell, April nineteenth 1897, removes one of the oldest physicians of Litchfield County. Dr. James Welch, Dr. Steele and Dr. Bidwell have for nearly half a century been the medical practitioners in Winsted and vicinity, and each one was sure of a welcome in many a home. The sudden demise of Dr. Bidwell, the latest survivor of the three, brings sorrow to many hearts and a sense of loneliness to many homes, and leaves the medical profession in the town to younger men. Dr. Bidwell will be specially missed by the permanent invalids, for besides the remedies in so many cases peculiarly fitted for their maladies, he brought to them the most patient attention, kindly sympathy and cheerful suggestion, so that his visit was an anticipated boon to those in sick-rooms, and his very presence a benediction to them.

Naturally a quiet man and of a reticent disposition, he was always cordial and genial to his friends, and those who knew him best prized him most. In his own home there must be desolation that cannot be described, and among the medical men there is a vacancy which cannot be filled. As the veterans in the profession close up their broken ranks, it must be with the feeling that a faithful one has fallen.

Dr. Bidwell was the oldest grandson of the late Dr. Benjamin Welch, Senior, of Norfolk, and naturally chose the practice of medicine for his life-work. Dr. Welch and his five sons were in the active practice of medicine for a hundred years and more, and several members of the family in the next generation are carrying on the work.

A few paragraphs may give the outline of the life of Dr. Bidwell, but words fail to measure his fidelity and

earnestness in his chosen work. He was the beloved physician. His record is on high.

John Welch Bidwell was born in South Tyringham (now Monterey), Berkshire County, Mass., October twentieth, 1824. He attended the private school of Alexander Hyde at Lee, Mass., and the Norfolk Academy. He spent four years in the study of medicine with his uncles, Drs. Asa, James, Benjamin and William Welch; attended one course of lectures at Woodstock, Vermont, and completed his education at the Berkshire Medical College at Pittsfield, Mass. In 1849 he went as Government Surgeon with an overland train to California, and spent three years there and in Oregon. Returning in 1852, he formed a copartnership with his uncle, Dr. James Welch, in Winsted, which was dissolved by mutual consent after a few years.

In 1855 he represented the town of Winchester in the General Assembly.

In 1863 he married Miss Alice J. Hart of Barkhamsted, who survives him.

In 1872 he was President of the Litchfield County Medical Association and has been one of the Examining Board of Surgeons for eight years.

From early manhood Dr. Bidwell has been a consistent Christian and since 1860 he has been a member of the Second Congregational Church in Winsted.

Besides his widow and an only daughter he leaves one sister, Mrs. Alice C. Bidwell of Monterey, Mass.

EDWIN ALLEN HILL, M.D., OF EAST KILLINGLY.

BY RIENZI ROBINSON, M.D.

DANIELSON.

Dr. Edwin Allen Hill, born in Griswold, New London County, was typical of the New England rugged hills, among which he was born and among which he spent his long term of service as a medical practitioner. His powers of endurance challenged the admiration of his fellow-workers. His usual mode of travel was for many years a two-wheeled gig, familiar to all the country around, exposed to the sun, wind and storm, to each and all of which he was seemingly indifferent. The brightest sunshine did not hasten, neither did the worst of storms delay him in making his regular round of professional calls.

His ride was extensive, much of the territory sparsely settled, the roads rough and hilly, and with no physician near enough to be called a competitor, his vacations were few and short; for no one could easily take the work off his hands and he would not think of leaving his sick ones unprovided for.

Notwithstanding his isolated field of work, with its hard roads and long drives, in his last illness he remarked to the writer that he had never in consequence of sickness spent a day in bed during forty-five years of practice. Such was his power of endurance that during the early part of his life, before the advent into the country of the trained nurse, he sat many a night by the bedside of his patients, administering his own medicines, in fact doing the work of nurse as well as physician. The following day he would make his usual long drives, unmindful of the loss of sleep and rest.

He was graduated from the Medical department of Harvard University at the age of twenty-five, always re-

taining a warm affection for his Alma-Mater. The same year he commenced work in East Killingly and for forty-five years was one of the busiest of men.

Outside of his profession he took an active part in school, town and church affairs, serving as a member of the School Board at different times, also as Selectman of the town of Killingly continuously from 1881 to 1890. He held the office of Clerk of the Baptist Church, of which he was a member, at the time of his death. He belonged to the several Masonic bodies, Moriah Blue Lodge, the Chapter,Council and Columbian Commandery.

At an early age he married Miss Sarah F. Farrar, a New Hampshire girl. There were born to them several childen, of whom three survive, one son, Dr. Charles E. Hill, a member of our Society, now occupying the same field his father held so many years, and two daughters.

The life-work of Dr. Hill may be summed up in a few words. He was loved and respected by his patrons, honored by his town and credited by the profession as one who faithfully, conscientiously and without thought of self did worthy battle for his patients, and the high calling of practical medicine.

ABRAHAM TRAVIS CLASON, M.D., OF DANBURY.

BY F. P. CLARK, M.D.

DANBURY.

Dr. Abraham T. Clason, a prominent practitioner, died at Danbury, June sixteen, 1896, of heart disease. Dr. Clason was born at Peekskill on the Hudson, attended medical lectures at the Medical Department of the University of New York, from which school he graduated with honor, March 1865. He soon settled in Danbury and built up a large practice, and up to within a week of his death was in active work. He was a member of the Fairfield County and State Societies.

BYRON WOOSTER MUNSON, M.D., OF SHARON.

BY GEORGE L. PORTER, M.D.

BRIDGEPORT.

Dr. Byron Wooster Munson, the son of Harris B., and Maria (Leavenworth) Munson, was born at Oxford, New Haven County, Connecticut, December three, 1845. His early education was acquired in the common and high schools of Seymour; his professional studies were prosecuted at the Yale Medical School from which institution he was graduated January fourteen, 1869. Within the year he settled in Easton, and there conducted a successful practice until 1871 when he removed to Bridgeport. Here he remained until 1887 when he was appointed by the Governor of the State, Superintendent and Surgeon of the Soldier's Home at Noroton. In 1891 he resigned this position and re-established himself in practice at Sharon, where he remained until his death, January three, 1897. He was a member of the Bridgeport Medical Association, of which for five years, he was Secretary and afterwards Vice President, member of the Fairfield County Medical Association and of the Connecticut Medical Society. He was also a member of Post Elias Howe, Jr., G. A. R., of which he was Surgeon from 1879 to 1885, and Medical Director of the Connecticut Department, G. A. R., 1885-6. During his residence in Sharon he held the positions of Justice of the Peace, Health Officer and Secretary of the Board of School Visitors.

Previous to "the sixties," every robust New England boy was ambitious "to see the world" and had almost a natural longing for "a life on the ocean wave," and in response to this desire young Munson was "entered" upon articles of the clipper ship, David Crockett, as a boy "before the mast." The ship cleared from New York for San Francisco, arriving after a voyage of one

hundred and fourteen days. The return was made in eighty-eight days and was eventful from the fact, that they were chased by the Confederate privateer, Jeff Davis. Upon his return, he desired to enlist in the army but his parents refused their consent. He reshipped on the ship Conqueror and made a voyage to London, returning in May, 1863. Upon December three with his father's permission, he enlisted in Co. G, First Connecticut Cavalry, and was soon made Corporal. The regiment was ordered to the Army of the Potomac and assigned to the command of General Sheridan. While on detached service, Corporal Munson, acting as a Sergeant, with one hundred men, made a forced march, which lasted the greater part of a night and a day, and from exposure at this time he suffered an attack of sunstroke. After a protracted convalescence, which was an irksome experience to the impatient soldier, he rejoined his command, then in the Shenandoah Valley. Upon March two, 1865, Sergeant Munson was wounded, taken prisoner and sent to Libby Prison in Richmond; was paroled March twenty-eight and returned to the Union lines, passing on the trip down the James River, a detachment of his own cavalry regiment, and a group of civil and military officers, among whom were President Lincoln and Generals Grant, Sherman and Sheridan.

The Connecticut Cavalry performed provost duty in Washington city until the muster-out in August, 1865. He returned to his home, reviewed his studies in the High School of Seymour, perfected himself in those preparatory to his chosen profession, entered the Yale Medical School, was graduated as a Doctor of Medicine, and accepted a berth as Surgeon of the packet-ship Great Western, upon which he made a voyage to Liverpool and devoted all his spare time there to visiting the hospitals. Upon his return he established himself in practice in Easton, Connecticut. In 1871 he removed to Bridgeport. Some time thereafter he became an active member of

the Grand Army of the Republic. His army experience and personal ability gave him standing and authority among his comrades and he was made Surgeon of Post Elias Howe, Jr., and afterwards promoted as Medical Director of the Department. In 1885 he presented to the State Encampment a plan for the establishment of a Soldiers' Home, to be under the control of the State. The proposition received the endorsement of the convention, and was finally adopted by the State. A "Soldier's Hospital Board of Connecticut" was created, to be composed of the Governor, Adjutant-General, Surgeon-General, ex-officio, and three members of the G. A. R., selected by the Department Commander and appointed by the Governor for a term of two years, or until the appointment of their successors. The deliberations of the Board resulted in the transfer of Fitch's Home for Soldiers at Noroton to the State of Connecticut. Dr. Munson was selected by the Department officers of the G. A. R., as a desirable professional head for such an institution and he was appointed by the Governor as Superintendent and Surgeon for the Home in April, 1887. He at once enthusiastically assumed his new responsibilities and was generously supported by the Board. Military discipline was kindly but firmly enforced; sanitary regulations were established. The food was improved in quality, and great care taken in its preparation. The old soldiers were liberally supplied with comfortable clothing and with many luxuries. The dormitories were made pleasant and kept clean. Additional land was purchased, old buildings were remodeled and new ones erected; driveways were laid out, gardens were cultivated, lawns and terraces were rolled and trimmed, until in July, 1891, the Home was much better fitted for its purposes and far more beautiful and attractive in its entire appearance than in the spring of 1887. At that time there were accommodations for a little more than one hundred and seventy-five beneficiaries. In the winter of 1890-91 over three hundred found there a home.

These services of Dr. Munson were so highly appreciated, that twice the Hospital Board increased his salary. He performed the duties of superintendent, surgeon and physician, commanding officer, adjutant, police officer, commissary, quartermaster and notary public. He inspected all food and supplies before purchasing, so that nothing of an inferior quality should be used in the Home, corresponded with the relatives of the old soldiers, with the G. A. R. Posts of which they were members, and with other societies with which they might be connected, and made out or revised, or completed their applications for pensions. He was constantly interviewed and as he thought, often misrepresented by the reporters of the press.

The Home was not only a military post, it was a hospital. The beneficiaries were nearly all invalids and often unreasonable; their complaints prejudiced outsiders. The exhaustive, continuous and multifarious work, required of Dr. Munson, was too much for one man. The responsibilities demanded an administrative or commanding officer and a surgeon and this necessity is now recognized and acted upon by the State.

Dr. Munson had the robust physique of his family, was over six feet in height, weighed about two hundred pounds, was of remarkable strength and endurance, did not use tobacco or intoxicating liquor but the over-work necessitated by the duties of his position, exhausted his powers; family bereavements sobered his naturally hopeful and buoyant disposition, and personal sickness made him realize that he could not continue his work at Noroton, and he resigned his position there in July, 1891.

This action was no doubt somewhat influenced by what he regarded as an unwarranted professional interference, on the part of a State official, and although enjoying the confidence of the Executive Committee of the Board, and requested by them to withdraw his resignation, he insisted upon its acceptance.

In social life his associates found in him a courteous, generous and desirable companion. In athletic sports few could equal his prowess in personal efforts. He was an enthusiastic sportsman, proficient with both rod and gun, was an expert swordsman and an experienced horseman. In his professional relations he was zealous in maintaining and defending medical laws, ethics and duties, and in claiming rights and recognition, and was honorable in his dealings with the brethren. In 1867, he married Miss Isabella Dutton of Milford who died about a year later. In 1870 he married Miss Jemima Marsh of Easton, who, with two children, survive.

The name of Dr. Munson will recall to those who personally knew him, the memory of a genial and hospitable associate, a proven sportsman, a patriotic, loyal soldier, an able administrator, an accomplished and ingenious medical practitioner, and a reliable friend—in brief, to many of us Dr. Byron Wooster Munson remains a representative type of "Nature's Noblemen."

ELISHA MUNGER, M.D., OF NEW LONDON.

BY A. W. NELSON, M.D.

NEW LONDON.

Elisha Munger, born April seventeen, 1848, at Northfield, Litchfield County, twin with Elijah, was son of William S. Munger, farmer. He had five brothers, four surviving, who were his bearers. He had the benefit of the common school and labored upon his father's and other farms until the age of twenty-four. He then became a student with Dr. Ralph S Goodwin of Thomaston, and later at Yale Medical College where he graduated in 1875.

He had already laid aside money enough, supplemented by earnings as a teamster and charcoal burner occasionally during his studies, to pay his way to his medical degree. Thus early was shown that energetic spirit ever manifested in his career.

He began his life-work at Niantic, New London County, in 1875, and soon was busy in the varied rounds of a general practitioner. That in the country, we all know, includes much that is special in the city; with him, many fractures and all forms of minor surgery. In fractures he was soon free from the interferences of the "natural bone setters." A suit against him for alleged malpractice in a broken arm was well parried by a reputation increased and better than ever by his counsel, Mr. Waller. In court a great crowd of witnesses suddenly rose up to swear together, having been treated successfully for fractures by Dr. Munger. The sensation and advantage could not be overcome by any objection of the opposing counsel who lost his case.

At Niantic he sang in the Congregational choir, was on the School-board, was one term a representative in the Legislature, at which time he became one of the staff of

the Putnam Phalanx. From 1889 to 1893 he was on the Board of United States Medical Examiners at New London, Drs. Burchard and Nelson being associated with him.

Probably this, as also the good reports from Niantic, led in 1891 to his removal to the larger field of New London, where he bought the house in which he lived on Huntington Street.

With the organization of the Memorial Hospital of New London he was elected in 1893 one of the staff; he was always present to perform the services of his assigned term.

He was a member of the City Medical Society but seldom wrote or spoke when present. With his change of home it was not long before (with much of his country practice retained) he was about the busiest man of the city. Though not especially seeking it, for several years he had an obstetric practice of one hundred births a year, many outside of the city, not however a large part of them. This shows what a busy man he was.

He was not wont to take vacations, long or short, for rest, sport or pleasure. Little he knew of rest except from sleep in the few hours he spared at night. But in the winter of 1895-96 he spent five or six weeks with Mrs. Munger and friends at Fort Worth, Florida, much to his physical advantage. An asthma brought on by exposure on very cold days was the cause of this unusual relaxation. This over-work sometimes brought a degree of nervousness and impatience and an inability of enjoying quiet when he had opportunity. It was a physical rather than a mental restlessness, and he was not a victim of insomnia. He slept in the early night, like a boy you might say, and usually arose at five o'clock or soon after, and was early about his occupations. That time was a stimulant and a tonic to him; he felt well in the rays of the early morning sun.

These well-marked characteristics he had. He made

many friends and was interested in their success much more than is usual with busy men. He was sometimes very sociable or humorous; he seldom had time to be convivial, and then in moderation. His only excess was work. He hardly used tobacco. He cared little for party politics dissociated from personal preferences and friendly candidates. He did little general or newspaper reading: he had not the time. He read about his cases and talked about them impersonally for their advantage with other physicians. He was fond of old furniture and had several rare old clocks and other such articles.

In the care of the sick, rich or poor, he was skilfully prompt, indefatigable and agreeable. His judgment was good and his resources in emergencies large.

When at a loss to bring about a recovery he was quick to suggest more aid and advice. His most frequent consultants were Drs. Bacon and Russell of New Haven, Curtis of Hartford, lately deceased, and in his own city, Thomson and Nelson. Some of these men, all he counted as friends, he saw frequently, almost daily, in consultations or otherwise.

The Morning Telegraph speaks truly of him: "After weeks of suffering, the silent hand of the reaper has been laid upon Dr. Elisha Munger. He died at his residence on Huntington Street at 6:20 o'clock last evening and the news of his passing away will bring sorrow to many who have known him during the busy life that he led as a physician.

"Dr. Munger was a man of retiring disposition but in the practice of his profession he was confident of his ability and his intuitive faculty for analyzing the character of his patients was what had probably been the most potent factor in building up the great practice he enjoyed previous to his last illness. It was also this faculty which made him firm friends with his patients. He was a very hard worker and it was his devotion to his practice that weakened his system, so that he never ral-

lied from the operation for appendicitis which was performed upon him on March ten last by Dr. M. M. Johnson of Hartford.

He had been ill two days only before the operation but there was perforation and pus from a large fecal concretion and adhesions. He gave the history of a previous attack. He died May fourteen, 1897.

Dr. Munger was five feet, eight inches in height; in weight, one hundred and seventy-five pounds. He shaved clean except the moustache. He had regular features, a clear complexion, abundant, light brown hair and blue eyes, the look of youth. He was quick in physical as well as in mental movements. His wife and son, William R. Munger, a medical student of Yale, survive him.

JOSEPH ALEXANDER LIVINGSTON, M.D., OF WEST CORNWALL.

BY IRVING L. HAMANT, M.D.

NORFOLK.

Dr. Joseph Alexander Livingston was born August twenty-seven, 1869, in East New York, now Brooklyn's twenty-sixth ward.

His early education was received in the Brooklyn grammar schools, he being the first boy in his school to receive a Regent's diploma from the Academic Department.

Finishing this course he entered the employ of Whitall, Tatum & Co., New York. Here was stimulated a natural inclination to the study of medicine. After some preliminary reading with Dr. George Law of Brooklyn, he entered the Long Island College Hospital Medical School from which he graduated, well up in his class, in March, 1890.

During his medical course Dr. Livingston did a large amount of special work in the Hoagland Laboratory in histology and pathology, holding during his last year the position of instructor in these branches.

In the midst of this work he injured his eyes, a misfortune from which he never fully recovered. Total blindness at one time was feared. This was the beginning of a long period of ill-health, part of the time being spent in Southern California.

When at last he was able to resume active work, he established himself among the Litchfield hills, locating at West Cornwall, where he remained until his final illness. His death occurred at the home of his parents in Brooklyn, N. Y., December thirty-one, 1896, of typhoid fever.

Dr. Livingston was a devoted son and brother, and one who made warm and firm friends. He was possessed of

a refined nature, loving all that was beautiful in literature and art, not a reader of many books but always seeking the best. Of music he was almost passionately fond, and was himself a violinist of no small merit and culture.

He had many qualities which go to make a skilful and successful physician. Detesting all manner of sham, and severe and unhesitating in its exposure, he was ever ready and willing to render assistance to the worthy. To the poor and helpless he was unusually generous, choosing to do charitable deeds to those around him, rather than theorize about those at a distance.

The basis of his skill lay in his excellent judgment, which was uncommonly matured for one of his years. As a tribute to his skill, I quote from one who knew him well in his field of labor: "He has been exceptionally missed here and I am continually surprised at the way in which his abilities were respected, even by people with whom he had sharp differences. He appeared to be as well-read in his profession as any physician with whom I have been well acquainted."

Dr. Livingston was a Free Mason, and was buried with Masonic honors by Tyrian Lodge of Brooklyn, in behalf of Hamilton Lodge of Sharon, Conn., of which he was a member.

Laying aside all feeling of personal grief, one cannot but entertain much sorrow that such a conscientious physician has gone from our Association. And when we consider the achievements of so few years, we cannot but wonder what might have been the results of the steady improvement through a long life-work.

EDWIN JOSEPH MEEKS, M.D., OF STAMFORD.

BY SAMUEL PIERSON, M.D.

STAMFORD.

Dr Edwin J. Meeks was born at Lower Saucon, Pa., December sixteen, 1864, and died in the Presbyterian Hospital, New York, on June nine, 1895, of hemorrhage complicating typhoid fever, contracted during the epidemic then prevailing in Stamford. His little daughter was a victim of the poisoned milk and during her serious illness Dr. Meeks was almost constantly by her side; loss of sleep and anxiety had so weakened him that he became in some unknown way infected by the poison, and from the very start was desperately ill. His naturally strong constitution and perfect habits kept him alive for four weeks, when he finally succumbed to most profuse hemorrhage of the bowels. Dr. Meeks graduated from Harvard University in 1887, and from Bellevue Medical College in 1890. In this year he married Miss Anna Connable, of Xenia, Ohio, who survives him, with one daughter.

Dr. Meeks remained in New York for two years more taking hospital and post-graduate work, and then settled in Stamford for the practice of his profession.

During the three years of his residence here, Dr. Meeks acquired the respect and confidence of the community at large as well as that of his professional brethren, by his thorough knowledge of his profession, his genial temper, integrity of character, and the frank and manly candor of his disposition. His untimely death is most sincerely mourned by all who had the pleasure of his acquaintance.

His funeral services which were held in New York, were attended by a large delegation of the Stamford Medical Society, and other friends.

EDWARD GEORGE MADDEN, M.D., OF NEW HAVEN.

Dr. E. G. Madden died at his home, No. 224 Congress avenue, on Thursday, March twelve, 1896, at four o'clock. He was stricken with apoplexy on Wednesday night. Dr. Madden was born in Ireland, August five, 1864. He came to this country with his parents, while still quite young. They settled in the town of New Britain, where the deceased attended the High School, from which he graduated in 1882.

He entered the Yale Medical School in 1883, and such was his application and progress, that he completed the three years' course in two years, graduating in 1885. After a competitive examination he was appointed to a position in the New Haven Hospital where he remained one year. He then opened an office in New Haven, for the general practice of medicine and met with immediate success.

Dr. Madden was married in 1891 to Miss Catherine Starrs of New Haven. A friend speaks of him thus: "The death of Dr. Madden can ill be borne by the community. Taken away at the very threshold of a bright and useful career, he will long be remembered by his grief-stricken relatives and by the poor and the needy, who enjoyed the benefits of his kindness, by the friends who were clasped to him as by ties of steel, and by every one who in him suffered the loss of an exemplar of Christian goodness and noble manhood."

LAWRENCE STEPHEN BUCKLEY, M.D., OF STAMFORD.

BY F. SCHAVIOR, M.D.

STAMFORD.

Dr. L. S. Buckley was born at Branford in this State, thirty-four years ago, and receiving his early education in the High School at that place, went to pursue his studies in the Vermont State University at Burlington. Later, he graduated from the Medical Department at Dartmouth, and further prepared himself for medical practice at the Bellevue Hospital Medical College, New York. He began practice as assistant to his brother, who was already established in the profession at Holyoke, Mass., and in December, 1890, moved to Stamford. A year later, he associated himself with Dr. F. Schavior, whose office he shared for the last four years. In every place and position he continued to win respect and friendship, both on account of his professional attainments and for the charm of his quiet, sincere and gentle manners.

On Monday, June seventeen, while driving an excited or vicious horse, the animal kicked in the dash-board and struck the doctor so violently in the abdomen that he was thrown from the vehicle. A blow from the horse's hoof had ruptured the duodenum. This made necessary a laparotomy and repair of the injured parts. However, after a few days it was realized that the tissues had been so severely contused that union did not take place.

The Stamford Advocate made the following comments:

"The death of Dr. Buckley is from every point of view a distressing and lamentable event. It is the occasion of genuine and profound grief to his brethren of the medical profession and to his host of patients and friends. Quiet, unassuming, genial and gentlemanly in disposition, he made friends wherever he was known, and had within a few years acquired an extensive practice, and the good will of hundreds in every class and walk of life."

MEMBERS OF THE SOCIETY.

HONORARY MEMBERS.

ANDREW JACOB FULLER,	Bath, Maine.
SAMUEL HAYES PENNINGTON,	Newark, N. J.
ARTHUR WARD,	Newark, N. J.
PAUL AUGUSTINE STACKPOLE,	Dover, N. H.
ADRIAN THEODORE WOODWARD,	Brandon, Vt.
WILLIAM McCOLLOM,	Brooklyn, N. Y.
BENJAMIN EDDY COTTING,	Boston, Mass.
SAMUEL THOMAS HUBBARD,	New York City.
GEORGE FIRMAN HORTON,	Tarrytown, Pa.
AGRIPPA NELSON BELL,	Brooklyn, N. Y.
EDWARD CONSTANT SEGUIN,	New York City.
JOHN SHAW BILLINGS, U. S. A.,	Washington, D. C.
THOMAS ADDIS EMMETT,	New York City.
EDWIN MOTT MOORE,	Rochester, N. Y.
WILLIAM HENRY WELCH,	Baltimore, Md.
ROBERT FULTON WEIR,	New York City.
SIR JOSEPH LISTER,	London, Eng.
EDWARD G. JANEWAY,	New York City.
EDWARD R. SQUIBB,	Brooklyn, N. Y.
HON. CHARLES E. GROSS,	Hartford, Conn.
E. L. B. STICKNEY,	Springfield, Mass.
DAVID WEBSTER,	New York City.
ALEXANDER J. C. SKENE,	Brooklyn, N. Y.
SIR JAMES GRANT,	Ottawa, Canada.
HENRY O. MARCY,	Boston, Mass.
T. MITCHELL PRUDDEN,	New York.
WILLIAM W. KEEN,	Philadelphia.
T. GAILLARD THOMAS,	New York.

ACTIVE MEMBERS.

The Names of those who have been Presidents are in Capitals.

HARTFORD COUNTY.

JARVIS K. MASON, M.D., of Suffield, President.

James Campbell, of Hartford, Vice President.

George K. Welch, M.D., of Hartford, Clerk.

Censors—Everett J. McKnight, M.D., Joseph A. Coogan, M.D.,
Samuel W. Irving, M.D.

Annual Meeting, Third Wednesday in April.

Hartford:

GURDON W. RUSSELL, No. 207 Farmington Avenue.
Panet M. Hastings, No. 130 Capitol 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. 116 Main Street.
Nathan Mayer, No. 268 Main Street.
William M. Hudson, No. 105 Elm Street.
George C. Jarvis, No. 98 High Street.
David Crary, No. 490 Main Street.
John B. Lewis, No. 56 Prospect Street.
Gustavus P. Davis, No. 56 Prospect Street.
James Campbell, No. 34 Congress Street.
Charles E. Froelich, No. 47 Pratt Street.
John Dwyer, No. 13 Charter Oak Street.
Harmon G. Howe, No. 137 High Street.
William T. Bacon, No. 3 Pratt Street.
William W. Knight, No. 95 Trumbull Street.
Thomas D. Crothers, No. 50 Fairfield Avenue.
George L. Parmele, No. 25 Pratt Street.
Ellen F. H. Gladwin, No. 705 Asylum Street.
Samuel B. St. John, No. 26 Pratt Street.
George R. Shepherd, No. 32 Farmington Avenue.
Frederick S. Crossfield, No. 26 Pratt Street.
Marcus M. Johnson, No. 74 Pearl Street.
William D. Morgan, No. 238 Main Street.
John F. Axtelle, No. 211 Main Street.
Noah Cressy, No. 214 Pearl Street.
George K. Welch, No. 47 Pratt Street.
Phineas H. Ingalls, No. 112 High Street.
Edward K. Root, No. 238 Main Street.
Luther A. Davison, No. 3 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. 182 High Street.
Charles C. Beach, No. 199 Main 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. 98 High Street.
Thomas F. Kane, No. 141 Main Street.
Arthur J. Wolff, No. 1 Spring Street.
Ansel G. Cook, No. 164 High Street.
Mrs. L. Darnstadt Kean, No. 67 Pearl Street.
Edwin A. Down, No. 190 Retreat Avenue.
Daniel F. Sullivan, No. 64 Church Street.
Joseph H. Cahill, No. 51 Church Street.
Everett J. McKnight, No. 370 Asylum Street.
Benjamin S. Barrows, No. 78 High Street.
H. Walter Murlless, No. 55 Church Street.
Michael A. Bailey, No. 65 Church Street.
George N. Bell, No. 44 High Street.
Frank L. Waite, No. 26 Pratt Street.
Charles S. Stern, No. 268 Main Street.
Oliver K. Isham, No. 211 High Street.
Franklin L. Lawton, No. 32 Congress Street.
John H. Rose, No. 3 Pratt Street.
John B. Waters, No. 103 Trumbull Street.
Joseph B. Hall, No. 21½ Pratt Street.
Edward O. Elmer, No. 61 Francis Avenue.
Janet M. Weir, No. 31 Spring Street.
John F. Dowling, No. 643 Main Street.
Philip D. Bunce, No. 18 Pratt Street.
Homer L. Law, No. 100 Washington Street.
Wilton E. Dickerman, No. 19½ Pratt Street.
Richard S. Griswold, No. 44 Church Street.
John B. Boucher, No. 92 Main Street.
Levi B. Cochran, No. 397 Capitol Avenue.
James W. Ward, No. 437 Capitol Avenue.
James H. Naylor, No. 41 Main Street.
Charles P. Botsford, No. 701 Main Street.

AVON:

John L. North.

BERLIN:

Robert E. Ensign,
Charles A. Gillin.

BRISTOL:

John J. Wilson.
William W. Horton.

CANTON—Collinsville:

George F. Lewis,
Ida Gridley-Case,
William H. Crowley.

EAST HARTFORD:

Edward H. Griswold,
Thomas J. O'Connell,
Walter G. Murphy,
*Charles A. Fox.

BURNSIDE:

Franklin H. Mayberry.

EAST WINDSOR—Broadbrook:

Howard O. Allen.

ENFIELD:

Rial Strickland.

Thompsonville:

Edward F. Parsons.
George F. Finch,
Henry G. Varno.

Hazardville:

Simon W. Houghton.

FARMINGTON:

Franklin Wheeler.
Charles Carrington.

*Exempted from taxation.

GLASTONBURY:

Henry C. Bunce,
Charles G. Rankin.

South Glastonbury:

Henry M. Rising.

MANCHESTER,

Francis H. Whiton,
John T. Dooley,
John C. Taylor.

South Manchester:

Julian N. Parker,
William R. Tinker,
Thomas H. Weldon.

NEW BRITAIN:

*BENJAMIN N. COMINGS,
*George Clary,
Edwin B. Lyon,
Jay S. Stone,
Erastus P. Swasey,
Michael J. Coholan,
George J. Holmes,
Lawrence M. Cremin,
Wilbur T. Bunnell,
Samuel W. Irving,
James F. Donahue,
Henry Doutteil,
Robert M. Clark,
Hermann Strosser.

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.

SUFFIELD:

Jarvis K. Mason,
Matthew T. Newton,
Philo W. Street.

WEST SUFFIELD:

William E. Caldwell.

WETHERSFIELD:

Abner S. Warner,
*Roswell Fox,
Edward G. Fox,
Arthur W. Howard.

WINDSOR:

*Samuel A. Wilson,
Newton S. Bell.

WINDSOR LOCKS:

Sidney R. Burnap,
Joseph A. Coogan. —137

NEW HAVEN COUNTY.

CHARLES S. RODMAN, M.D., of Waterbury, President.

FRANK W. WRIGHT, M.D., of New Haven, Vice President.

JOSEPH H. TOWNSEND, M.D., of New Haven, Clerk.

County Reporter—CHARLES E. PARK, M.D., Waterbury.
Censors—M. C. WHITE, M.D., M. MAILHOUSE, 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. 86 Broadway.
Moses C. White, No. 214 Crown Street.
F. L. Dibble, No. 257 Church Street.
T. H. Bishop, No. 215 Church Street.
FRANCIS BACON, No. 32 High Street.

*Exempted from taxation.

W. L. Bradley, No. 203 Crown Street.
A. E. Winchell, No. 60 Pearl Street.
Robert S. Ives, No. 339 Temple Street.
Evelyn L. Bissell, No. 308 Crown Street.
Arthur Ruickoldt, No. 71 Olive Street.
Walter Judson, No. 1145 Chapel Street.
Frederick Bellosa, 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.
F. O. White, No. 514 Howard Avenue.
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 M. 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. 227 Franklin Street.
C. J. Foote, No. 305 Howard Avenue.
Marvin Smith, No. 73 Pearl Street.
S. J. Maher, 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.
J. F. Baker, No. 630 State 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.
Louis J. Gaynor, No. 48 College Street.
Harry B. Ferris, No. York Street.
Edward S. Thomson, No. 1179 Chapel Street.
Henry F. Klenke, No. 758 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. 12 High Street.
R. A. McDonnell, No. 312 Elm Street.

E. P. Pittman, No. 52 Sylvan Avenue.
James A. Moore, No. 223 Grand Avenue.
Isaac N. Porter, No. 194 Dixwell Avenue.
Ernest H. Arnold, No. 15 Wall Street.
Robert E. Peck, No. 486 Elm Street.
Robert H. McNair, No. 249 Crown Street.
Daniel A. Jones, No. 746 Chapel Street.
William C. Wurtemberg, No. 38 Elm Street.
Chauncey S. Lamb, No. 10 Park Street.
Robert O. Moody, No. 1204 Chapel Street.
Edward S. Moulton, No. 252 York Street.
Frederick N. Sperry, No. 76 Wooster Street.
William F. Verdi, No. 172 St. John Street.
Frederick W. Pirritte, No. 215 Orange Street.
Charles J. Bartlett, Medical College.
Morris D. Slattery, No. 352 Howard Avenue.
John J. Seibold, No. 313 Grand Avenue.
Ward H. Sanford, No. Edwards Street.
William M. Kenna, No. 129 Olive Street.
Ambrose K. Brennan, No. 49 Humphrey Street.
Ralph S. Goodwin, Jr., No. 159 Orange Street.
Leonard C. Sanford, No. 216 Crown Street.
Willis H. Crowe, No. 68 Whalley Avenue.
Archibald McNeil, No. 149 Beardsley Street.

Westville:

A. W. Marsh.

Ansonia:

Louis E. Cooper,
Frederick C. Goldstein.

Branford:

C. W. Gaylord,
Walter Zink,
A. J. Tenny,
George H. Townsend.

Cheshire:

M. N. Chamberlain,
E. T. Cornwall.

Derby:

T. J. O'Sullivan,
F. N. Loomis,
Royal W. Pinney.

Guilford:

George H. Beebe.

Hamden:

E. D. Swift,
†O. F. Treadwell.

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,
F. P. Griswold,
E. D. Hall,
H. W. Delesdernier,
H. A. Meeks,
John L. Gartland,
William Galvin,
J. W. H. La Pointe.

Milford:

E. P. Heady,
E. C. Beach,
A. L. Tuttle.

Naugatuck:

Frank B. Tuttle,
Thomas M. Bull,
Frederick A. Spring,
James W. Robbins,
William J. Delaney,
Edwin H. Johnson.

North Haven:

R. B. Goodyear.

Orange—West Haven:

J. F. Barnet,
William V. Wilson,
Durell Shephard.

†P. O. New Haven.

*Exempted from taxation.

OXFORD:
Lewis Barnes.

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 H. Holmes,
Walter L. Barber,
C. W. S. Frost,
*F. M. Cannon,
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,
Charles H. Brown,
Isaac P. Fiske,
Edward W. Goodenough,
Myron L. Cooley,
Frederick G. Graves,
David W. McFarland,
George Holbrook,
John R. Poore,
James L. Moriarty,

Waterville:
Joseph S. Holroyd. —177

NEW LONDON COUNTY.

WILLIAM S. C. PERKINS, M. D., of Norwich, President.

ABIEL W. NELSON, M.D., of New London, Vice President.

CHARLES B. GRAVES, M.D., No. 2 Mercer Street, New London, Clerk.

County Reporter—CHARLES B. GRAVES, M.D., of New London.

Censors—L. S. PADDOCK, M.D., WM. M. BURCHARD, M.D.,
F. N. BRAMAN, M.D.

Annual Meeting, first Thursday in April; semi-annual, first Thursday in October.

COLCHESTER:
Myron W. Robinson.

EAST LYME—Niantic:
Frederick H. Dart,
Edward C. Chipman.

GRISWOLD—Jewett City:
George H. Jennings.

GROTON:
Edmund P. Douglass,
Frank W. Hewes.

LEBANON:
Norman L. Drake.

MONTVILLE:
*John C. Bolles.

Uncasville:
Morton E. Fox,
William M. Burchard.

Mystic:
Frank A. Coates,
A. M. Purdy.

NEW LONDON:
Abiel W. Nelson,
FRANCIS N. BRAMAN,
John G. Stanton,
Charles B. Graves,
Joseph R. Crofton,
Hiram B. Thompson,
Harold H. Heyer,
Carlisle F. Ferrin,
Thomas W. Rogers.

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,

*Exempted from taxation

NORWICH—*Continued.*

George R. Harris,
Charles H. Perkins,
Rush W. Kimball,
William A. Korn,
Charles V. Buttler,
Henry B. Stevens,
James J. Donahue.

Taftville:

George Thompson.

OLD MYSTIC:

*Albert T. Chapman,
William H. Gray.

STONINGTON:

Charles E. Brayton,
George D. Stanton.

VOLUNTOWN:

Warren Russell Davis.

WATERFORD:

George M. Minor. —49

FAIRFIELD COUNTY.

W. H. DONALDSON, M.D., of Fairfield, President.

JOHN C. LYNCH, M.D., of Bridgeport, Vice President.

WILLIAM W. GRAY, M.D., of Bridgeport, Clerk.

County Reporter—W. B. COGSWELL, of Stratford

Censors—W. S. WATSON, M.D., F. B. BAKER, M.D.,
J. W. WRIGHT, M.D.

Annual Meeting, Second Tuesday in April, at Bridgeport, semi-annual in October.

BRIDGEPORT:

Andrew J. Smith, No. 85 Barnum Avenue.
GEORGE L. PORTER, No. 266 State Street.
Robert Lauder, No. 192 Fairfield Avenue.
Curtis H. Bill, No. 285 State Street.
N. E. Wordin, No. 174 Fairfield Avenue.
F. M. Wilson, No. 317 State Street.
T. F. Martin, No. 115 Golden Hill Street.
F. B. Downs, No. 256 State Street.
J. W. Wright, No. 229 State Street.
A. W. Lyons, No. 289 State Street.
A. A. Holmes, No. 316 Broad Street.
Charles C. Godfrey, No. 248 State Street.
S. M. Garlick, No. 316 State Street.
Henry Blodgett, No. 313 State Street.
J. C. Lynch, No. 284 State Street.
C. C. Hoyt, No. 623 State Street.
G. W. Osborn, No. 339 Broad Street.
J. R. Topping, No. 131 East Main Street.
B. W. White, No. 276 State Street.
Jacob May, No. 348 Broad Street.
F. C. Graves, No. 309 State Street.
G. B. Cowell, No. 120 East Washington Avenue.
C. N. Haskell, No. 343 State Street.
George E. Ober, No. 129½ East Main Street.
B. DeF. Sheedy, No. 311 State Street.
D. C. DeWolfe, No. 289 Fairfield Avenue.
Harry S. Miles, No. 317 State Street.
Charles S. Banks, No. 248 State Street.
Fessenden L. Day, No. 313 State Street.

*Exempted from taxation.

BRIDGEPORT—*Continued:*

Edward Fitzgerald, No. 126 East Washington Avenue.
George S. Ford, No. 231 State Street.
Robert G. Leverty, No. 93 Washington Avenue.
Frank M. Tukey, No. 293 State Street.
William W. Gray, No. 358 State Street.
James D. Gold, No. 282 State Street.
Reuben A. Lockhart, No. 8 North Washington Avenue.
Harriet A. Thompson, No. 233 Warren Street.
Joseph B. Burroughs, No. 350 Stratford Avenue.
Frederick J. Adams, No. 952 State Street.
W. J. A. O'Hara, No. 259 East Main Street.
David M. Trecartin, No. 315 State Street.
G. Stanley Heft, No. 254 State Street.

BETHEL:

A. E. Barber.
Charles R. Hart.

BROOKFIELD:

Junius F. Smith.

DANBURY:

F. P. Clark.
E. A. Stratton.
W. S. Watson.
D. Chester Brown.
W. F. Folllansbee.
Richard Ellis.
H. F. Brownlee.
John H. Benedict.
Nathaniel Selleck.
Clayton P. Bennett.
Willliam F. Wood.
George E. Lemmer.
Charles F. Craig.
John A. Wade.

DARIEN:

George H. Noxon.

Noroton:

William F. French.
WM. G. BROWNSON.

FAIRFIELD:

W. H. Donaldson.
Andrew M. Ewing.

Greenfield Hill:

M. V. B. Dunham.

Southport:

Robert E. Purdue.

GREENWICH:

Frank Terry Brooks.

HUNTINGTON—Shelton:

Gould A. Shelton.
D. A. Richardson.
William S. Randall.

MONROE:

John G. Stevens.

Stepney:

SETH HILL.

NEW CANAAN:

Clarence H. Scoville.

NEWTOWN:

Edward M. Smith.

NORWALK:

James G. Gregory.
R. L. Higgins.
S. H. Huntington.
William J. Tracey.

South Norwalk:

W. C. Burke, Jr.,
A. N. Clark.
C. G. Bohannan.
Lauren M. Allen.
Henry C. Sherer.
John T. Kennedy.
Jean Dumortier.

East Norwalk:

Frederick B. Baker.

REDDING:

Ernest H. Smith.

RIDGEFIELD:

Russell W. Lowe.
Willis E. Weed.

STAMFORD:

A. M. Hurlbutt.
Samuel Pierson.
A. N. Phillips.
C. R. Hexamer.
P. P. Van Vleet.
F. Schavoir.
Wm. A. B. Treadway.
F. P. Rogers.
Roswelle G. Phillip.
James A. Meek.
George Sherrill.
Nathaniel P. Washburne.
Watson E. Rice.

Frank M. Tiffany,
Daniel A. Hanrahan,
Frederick L. Mullville.

STRATFORD:
W. B. Cogswell,
G. Fred Lewis.

WESTON—Lyon's Plain:
F. Gorham.

WESTPORT:
George B. Bouton,
F. Powers,
Loren T. Day,
F. D. Rulund.

WILTON:
A. B. Gorham.

GEORGETOWN:
Howard P. Mansfield.

SOUTH WILTON:
Edward Everett Smith.
—116

WINDHAM COUNTY.

HENRY L. HAMMOND, M.D., of Killingly, President.

ROBERT C. WHITE, M.D., of Willimantic, Vice President.

GEORGE W. MAY, M.D., of Willimantic, Clerk.

County Reporter—NATHANIEL HIBBARD, M.D., of Danielson.

Censors—T. M. HILLS, M.D., LOWELL HOLBROOK, M.D.,
E. H. DAVIS, M.D.

ABINGTON:
Ezra B. Pike.

BROOKLYN:
A. H. Tanner.

CHAPLIN:
Charles M. Knight.

DANIELSON:
Rienzi Robinson,
Nathaniel Hibbard,
W. H. Judson,
C. J. Le Clair.

KILLINGLY:
Ashael E. Darling,
Henry L. Hammond.

East Killingly:
Charles E. Hill.

PLAINFIELD:
E. H. Davis.

Moosup:
Charles N. Allen,
W. W. Adams.

Central Village:
*Charles H. Rogers.

POMFRET:
S. B. Overlock.

PUTNAM:
John B. Kent,
F. A. Morrell,
Omar LaRue,
Warren W. Foster.

THOMPSON:
LOWELL HOLBROOK.

No. Grosvenordale:
J. F. McIntosh.

WINDHAM:
F. E. Guild.

Willimantic:
Frederick Rogers,
T. MORTON HILLS,
*O. B. Griggs,
C. J. Fox,
T. R. Parker,
John Weldon,
A. D. David,
R. C. White,
*Farnam O. Bennett,
George W. May.

WOODSTOCK:
Laura H. Hills.

Woodstock Valley:
Henry R. Lowe.
—34

*Exempted from taxation.

LITCHFIELD COUNTY.

WILLIAM S. MACLAREN, M.D., of Litchfield, President.

EDWARD H. WELCH, M.D., of West Winsted, Vice President.

JOHN C. KENDALL, M.D., of Norfolk, Clerk.

County Reporter—GEORGE D. FERGUSON, M.D., of Thomaston.

Censors—R. S. GOODWIN, M.D., J. L. BUEL, M.D.,
T. L. HANCHETT, M.D.

Annual Meeting, second Tuesday in October; semi-annual, fourth Tuesday in April.

BARKHAMSTED—Riverton:
H. D. Moore.

Cornwall Bridge:
W. M. S. Curtis.

GOSHEN:
J. H. North.

KENT:
W. M. Barnum.

LITCHFIELD:
C. O. Belden,
J. T. Sedgwick,
John L. Buel,
W. S. MacLaren,
J. R. Bolton,
Charles I. Page,
Etta May Hadley-Judd.

NEW HARTFORD:
*Jerry Burwell,
Josiah Swett.

NEW MILFORD:
G. E. Staub.

Gaylordsville:
H. B. Griswold.

NORFOLK:
John C. Kendall,
I. L. Hammant,
Lucius D. Bulkley,
Frederick S. Dennis.

NORTH CANAAN—Canaan:
C. W. Camp,
F. H. Lee.

PLYMOUTH—Terryville:
W. P. Swett,
W. W. Wellington,
M. P. Robinson.

SALISBURY:
P. H. Sellew.

Lakeville:
W. Bissell,
G. H. Knight,
W. B. Bissell.

SHARON:
C. W. Bassett.

THOMASTON:
Ralph S. Goodwin,
George D. Ferguson.

TORRINGTON:
William L. Platt,
T. S. Hanchett,
Elias Pratt,
J. W. Johnson,
J. S. Bissell,
J. D. Hayes,
A. L. House.

WASHINGTON:
ORLANDO BROWN,
William J. Ford.

New Preston:
R. A. Marcy.

WATERTOWN:
W. S. Munger,
Eugene C. French.

WINCHESTER—Winsted:
E. L. Pratt,
W. S. Hurlbert,
Salmon G. Howd.

West Winsted:
E. H. Welch,
W. S. Richards.

WOODBURY:
D. R. Podger. —49

*Exempted from taxation.

MIDDLESEX COUNTY.

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

FRANK K. HALLOCK, M.D., of Cromwell, Clerk.

County Reporter—F. E. POTTER, M.D., of Portland.

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:
*Albert E. Worthington,
George N. Lawson.

East Hampton:
Albert Field.

CHESTER.
Sylvester W. Turner,
Fred. Sumner Smith.

CLINTON:
Herbert S. Reynolds.

CROMWELL:
Winthrop B. Hallock,
*Frank K. Hallock,
Charles F. Bush.

DURHAM:
Earl Mathewson.

EAST HADDAM:
M. W. Plumstead.

ESSEX:
Charles H. Hubbard.

HADDAM:
Miner C. Hazen,
Selden W. Noyes.

KILLINGWORTH:
Edward P. Nichols.

MIDDLETOWN:
*George W. Burke,
FRANCIS D. EDGERTON,
James Olmstead,
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,
Frank E. Coudert,
Lewis Maitland,
Daniel A. Nolan,
William H. Wilson,
Roger C. Downey.

OLD SAYBROOK:
John H. Granniss.

PORTLAND:
Cushman A. Sears,
Frank E. Potter,
James Murphy.

SAYBROOK—Deep River:
Edwin Bidwell,
H. T. French.

WESTBROOK:
Thomas B. Bloomfield,
Frederick S. Cowles. —42

*Exempted from taxation.

TOLLAND COUNTY.

WILLIAM L. HIGGINS, M.D., of South Coventry, President.

ELI P. FLINT, M.D., of Rockville, Vice President.

EDWIN T. DAVIS, M.D , of Ellington, Clerk.

County Reporter--C. B. NEWTON, M.D., of Stafford Springs.

Censors--E. P, FLINT, M.D., E. K. LEONARD, M.D.,
F. L. DICKINSON, M.D.

Annual Meeting, third Tuesday in April ; semi-annual, third Tuesday in October.

BOLTON:
*CHAS. F. SUMNER.

COVENTRY:
William C. Haven.

South Coventry:
Henry S. Dean,
W. L. Higgins.

ELLINGTON:
E. T. Davis.

MANSFIELD--Mansfield Depot:
F. E. Johnson.

ROCKVILLE:
*Francis L. Dickinson,
Frederick Gilnack,
E. K. Leonard,
T. F. Rockwell,
Fred W. Walsh,
E. P. Flint,
T. F. O'Laughlin.

SOMERS:
A. L. Hurd.

STAFFORD--Stafford Springs:
C. B. NEWTON,
T. H. Raftery,
F. L. Smith.

TOLLAND:
*W. N. Simmons.

VERNON:
*A. R. GOODRICH. —19 9)

*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.
Abrams, 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.
Arnold, Ernest Hermann,	Yale, '94,	New Haven.
Atwater, Caleb Huntington,	P. & S., N. Y., '71,	Wallingford.
Axtelle, John Franklin,	L. I. Coll.Hosp., '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, '68, 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.
Baker, John Francis,	L. I. Coll.Hosp., '89,	New Haven.
Baldwin, Edward Robinson,	Yale, '90,	Cromwell.
Banks, Charles Lincoln,	P. & S., N. Y., '91,	Bridgeport.
Barber, Alvin Elizur,	Berkshire, '54,	Bethel.
Barber, Walter Lewis,	Bellevue, '73,	Waterbury.
Baribault, Arthur Octave,	Vict. Med. Col., '89,	New Haven.
Barnes, Irving Ferguson,	Univ. N. Y., '90,	Collinsville.
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.
Bassett, Clarence Wheeler,	Univ. N. Y., '82,	Sharon.
Beach, Charles Coffing,	P. & S., N. Y., '82,	Hartford.
Beach, Edward Charles,	Yale, '88,	Milford.
Beckwith, Frank Edwin, M.A., '81,	P. & S., N. Y., '71,	New Haven
Beebe, George Hoxie,	Univ. N. Y., '78,	Guilford.
Belden, Charles Ogilvie,	P. & S., N. Y., '82,	Litchfield.

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.
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, Clayton Powers,	P. & S., N. Y., '90,	Danbury.
Bennett, Farnham Orris,	Berkshire, '59,	Willimantic.
Bidwell, Edwin,	Yale, '47,	Deep River.
Bill, Curtis Harvey,	Univ. N. Y., '59,	Bridgeport.
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., '53,	Yale, '56,	Lakeville.
Bissell, William Bascom, A.B., Yale '88.	P. & S., N. Y., '92,	Lakeville.
Blodget, Henry,	Bellevue, '81,	Bridgeport.
Bloomfield, Thomas Blanch,	P. & S., N. Y., '76,	Westbrook.
Bohannan, Charles Gordon,	Univ. N. Y., '78,	So. Norwalk.
Bolles, John Calvin,	Vt. Med. Col., '40,	Montville.
Bolton, James Robert,	Univ. N. Y., '86,	Litchfield.
Botsford, Charles Porter,	Yale '94,	Hartford.
Boucher, John Bernard,	P. & S., Balt., '94,	Hartford.
Bouton, George Beriah,	Y., '56; N. Y. M., '56,	Westport.
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.
Brennan, Ambrose Kirk,	Yale, '93,	New Haven.
Brewer, Edward Pliny, Ph.D.,	Dartmouth, '79,	Norwich.
Brooks, Frank Terry, B.A., Yale,	P. & S., '93,	Greenwich.
Brown, David Chester,	Yale, '84,	Danbury.
Brown, Charles Henry,	Univ. N. Y., '93,	Waterbury.
Brown, Orlando,	Yale, '51,	Washington.
Browne, William Tyler, Ph.B., '78,	Harvard, '82,	Norwich.
Brownlee, Harris Fenton,	P. & S., N. Y., '88,	Danbury.
Brownson, William Greene, M.A.,	Univ. N. Y., '65,	Noroton.
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,	Plainville.
Bull, Thomas Marcus,	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.
Burchard, William Metcalf,	Georgetown, '66,	Uncasville.
Burke, George Whitney, B.A., '91,	Yale, '43,	Middletown.
Burke, William Craige,	L. I. Col. Hosp., '75,	So. Norwalk.
Burke, William Patrick John,	Yale, '90,	New Haven.
Burnap, Sidney Rogers, A.B., Union, '58,	P. & S., N. Y., '62,	W'ds'r Locks.
Burns, Edward,	Univ. N. Y., '82,	New Britain.
Burroughs, Joseph Birkbeck,	Syr. Med Coll., '81,	Bridgeport.
Burwell, Jeremiah,	Berkshire, '39,	New Hartford.
Bush, Charles Ellsworth,	Yale, '94,	Cromwell.
Butler, Charles Voorhes,	Univ. N. Y., '93,	Norwich.

Name.	Medical Graduation.	P. O. Address.
Cahill, Joseph Henry,	Balt. Univ., '92,	Hartford.
Cahill, Thomas Matthew,	Yale, '88,	New Haven.
Caldwell, William Elry,	Balt. Md. Col., '95,	W. Suffield.
Calef, Jeremiah Francis, B.A., '77,	Yale, '80,	Middletown.
Camp, Charles Welford,	Univ. N. Y., '75,	Canaan.
Campbell, Arthur Joseph,	P. & S., Balt., '85,	Middletown.
Campbell, James,	Univ. Vt., '71,	Hartford.
Cannon, Frederick Miller,	Univ. N. Y., '67,	Waterbury.
Carmalt, 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.
Castle, Frank Edwin,	Yale, '70,	Waterbury.
Chamberlain, Myron Newton, B.A., '57,	Yale, '66,	Cheshire.
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., '88,	Yale, '90,	New Haven.
Chipman, Edward Clifford,	P. & S., N. Y., '91,	Niantic.
Churchill, 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, Dartmouth,	Yale, '57,	New Britain.
Cleaveland, Daniel Athearn,	Bowdoin, '56,	Middletown.
Coates, Franklin Avery, A.B., '72; A.M., '75,	P. & S., N. Y., '75,	Mystic.
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.
Comings, Benjamin Newton, B.A., M.A.,	Dartmouth, '42, Castleton, Vt., '45,	New Britain.
Conkey, Caroline 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.
Cooley, Myron Lynus,	Buffalo, '86,	Southbury.
Cooper, Louis Edward, Ph.B., '84,	Yale, '86,	Ansonia.
Cornwall, Edward Thomas,	P. & S., N. Y., '81,	Cheshire.
Coudert, Frank Edmonds, Ph.D.,	Univ. N. Y., '90,	Middletown.
Cowell, George B.,	P. & S., N. Y., '88,	Bridgeport.
Cowles, Frederick Stanley,	Yale, '93,	Westbrook.
Craig, Charles Franklin,	Yale, '94,	Danbury.
Crane, Augustin Averill, B.A., '85,	Yale, '87,	Waterbury.
Crary, David,	Yale, '69,	Hartford.
Cremin, Lawrence Michael,	Univ. N. Y., '81,	New Britain.
Cressy, Noah, Ph.D.,	Berkshire, '62,	Hartford.
Crighton, Andrew John,	P. & S., Balt., '91,	Willimantic.
Crofton, Joseph Richard,	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,	P. & S., Balt., '93,	Cornwall B.

Name.	Medical Graduation.	P. O. Address.
Daggett, William Gibbons, B.A., '80,	Univ. Pa., '84,	New Haven.
Darby, Charles Sinclair,	Charl'st'n Med., '60,	Stamford.
Darby, Charles Sinclair, Jr.,	Univ. N. Y., '90,	Stamford.
Darling, Ashael Ebenezer,	Harvard, '72,	Killingly.
Dart, Frederick Howard,	P. & S., N. Y., '84,	Niantic.
David, Adelard David,	Dartmouth, '89,	Willimantic.
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,	Moosup.
Davis, Gustav Pierpont, B.A., '66,	P. & S., N. Y., '69,	Hartford.
Davis, Warren Russell,	Univ. Vt., '82,	Voluntown.
Davison, Luther Augustus,	Univ. N. Y., '82,	Hartford.
Day, Fessenden Lorenzo, B.A.,	Bellevue, '93,	Bridgeport.
Day, Loren True,	Yale, '80,	Westport.
Dean, Henry Spalding,	Jefferson, '52,	So. Coventry.
Dean, Horace Camillus,	Univ. N. Y., '85,	New Britain.
DeForest, Louis Shepard, B.A., '79; M.A., '91,	Univ. Jena, '85,	New Haven.
Delaney, William Joseph,	McGill Univ., '87,	Naugatuck.
Delesdernier, Horace William,	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.
Dibble, Frederick Levi,	Yale, '59,	New Haven.
Dickerman, Wilton Elias,	Yale, '93,	Hartford.
Dickinson, Francis Lemuel,	Yale, '40,	Rockville.
Donahue, James Francis,	Univ. Vt., '92,	New Britain.
Donahue, James Joseph,	P. & S., Balt. '96,	Norwich.
Donaldson, William Henry,	Univ. N. Y., '81,	Fairfield.
Dooley, John Thomas,	Univ. N. Y., '87,	Manchester.
Douglass, Edmund Peaslee,	Univ. N. Y., '89,	Groton.
Doutteil, Henry,	Yale, '79,	New Britain.
Dowling, John Francis,	L. I. Coll.Hosp., '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.
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.
Dwyer, John,	Univ. N. Y., '71,	Hartford.
Edgerton, Francis Daniels, A.M., '61,	Univ. Vt., '61, P. & S., N. Y., '64,	Middletown.
Eggleston, Jeremiah Dewey,	P. & S., N. Y., '79,	Meriden.
Eliot, Gustavus, B.A., '77; A.M., '82,	P. & S., N. Y., '80,	New Haven.
Ellis, Richard,	P. & S., N. Y., '88,	Danbury.
Elmer, Oliver Edward,	P. & S., Balt., '94,	Hartford.
Ensign, Robert Eleazer,	Albany, '57,	Berlin.
Evans, Alexander William, Ph.B., '90,	Yale, '92,	New Haven.
Ewing, Andrew Melville, C.M., Trin. Univ., '86,	M. R. C. S., '88,	Fairfield.
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.

Name.	Medical Graduation.	P. O. Address.
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'nville.
Fisher, William Edwin,	Univ. Pa., '76,	Middletown.
Fiske, Isaac Parsons,	Univ. N. Y., '75,	Waterbury.
Fitzgerald, Edward,	P. & S., Balt., '84,	Bridgeport.
Fleischner, Henry,	Yale, '78,	New Haven.
Flint, Eli Percival,	Yale, '79,	Rockville.
Follansbee, Willard Francis,	P. & S., Chic., '86,	Danbury
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 Codrington, B.A., '69,	Yale, '75,	New Haven.
Foster, Warren Wooden,	Harvard, '82,	Putnam.
Fox, Charles Anson,	P. & S., N. Y., '81,	E. Hartford.
Fox, Charles James,	Univ. N. Y., '76,	Willimantic.
Fox, Edward Gager,	Univ. N. Y., '83,	Wethersfield.
Fox, Morton Earl,	L. I. Coll.Hosp., '93,	Montrose.
Fox, Roswell,	Univ. N. Y., '47,	Wethersfield.
French, Eugene Cowles,	Univ. Mich., '82,	Watertown.
French, Howard Truman,	P. & S., N. Y., '91,	Deep River.
French, Wm. Freeman, B.A., M.A.,	Univ. N. Y., '84,	Noroton.
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,	Merlden.
Garlick, Samuel Middleton, B.A., Dart., '74,	Harvard, '77,	Bridgeport.
Gartland, John Lawrence,	Univ. N. Y., '91,	Meriden.
Gay, George Clifton,	Univ. Mich., '90,	Waterbury.
Gaylord, Chas. Woodward, B.A., '70,	Yale, '72,	Branford.
Gaynor, Louis Joseph,	Univ. N. Y., '91.	New Haven.
Gilbert, Samuel Dutton, B.A., '69,	Yale, '71,	New Haven.
Gillin, 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, Yale, '88,	Bridgeport.
Gold, James Douglass, Ph.B.,	P. & S., '91,	Bridgeport.
Goodenough, Edward Winchester, B.A., Yale, '87,	Yale, '93,	Waterbury.
Goodrich, Alfred Russell,	Berkshire, '46,	Vernon.
Goodwin, Ralph Schuyler,	P. & S., N. Y., '66,	Thomaston.
Goodwin, Ralph Schuyler, Jr., Ph. B., Yale, '90,	P. & S., N. Y., '93,	New Haven.
Goodyear, Robert Beardsley,	Yale, '68,	North Haven.
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.

Name.	Medical Graduation.	P. O. Address.
Gray, William Henry,	P. & S., N. Y., '89,	Old Mystic.
Gray, William Wetmore, B.S., Dickinson, '85,	B. S., Dickinson, '85, Bellevue, '90,	Bridgeport.
Gregory, James Glynn, B.A., '65,	P. & S., N. Y., '68,	Norwalk.
Griggs, Edward Luther,	L. I. Coll. Hosp., '64,	Waterbury.
Griggs, Oliver Burnham,	Univ. N. Y., '47,	Willimantic.
Griswold, Edward Hammond,	Univ. N. Y., '78,	E. Hartford.
Griswold, Frederick Pratt,	P. & S., N. Y., '76,	Meriden.
Griswold, Hamilton Byron,	Univ. Vt., '86,	Gayl'dsville.
Griswold, Julius E.,	Univ. N. Y., '78,	Portland.
Griswold, Richard Sill,	Bellevue, '96,	Hartford.
Griswold, Rufus White,	P. & S., N. Y., '54,	Rocky Hill.
Guild, Frank Eugene.	L. I. Coll. Hosp., '85,	Windham.
Goldstein, Frederick Carl,	Yale, '93,	Ansonia.
Hadley-Judd, Etta May,	Woman's Med. Coll. Phila. '95,	Litchfield.
Hall, Edward Dormenio,	Harvard, '73,	Meriden.
Hall, Joseph Barnard,	Yale, '92,	Hartford.
Hallock, Frank Kirkwood, A.B., A.M., '82,	P. & S., N. Y., '85,	Cromwell.
Hallock, Winthrop Bailey,	L. I. Coll. Hosp., '64,	Cromwell.
Hammant, Irving Lewis,	L. I. Coll. Hosp., '90,	Norfolk.
Hamilton, Charles Allen,	Univ. Vt., '86,	Waterbury.
Hammond, Henry Louis, Ph.B., '64,	Harvard, '66,	Killingly.
Hanchett, Thatcher Swift,	Bellevue, '64,	Torrington.
Hanrahan, Daniel Aloysius,	Bellevue, '95,	Stamford.
Harley, Mary,	Wom. Col. N. Y. Infirmary, '92,	Middletown.
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.
Hastings, Panet Marshall, A.B., '38; A.M., Hamilton, '81,	P. & S., N. Y., '42,	Hartford.
Haven, William Chadbourne,	Univ. N. Y., '77,	Coventry.
Hawkes, Wm. Whitney, B.A., '79,	Yale, '81,	New Haven.
Hawley, George Rufus,	L. I. Coll. Hosp., '92,	Danbury.
Hayes, James Dermot, B.S., Man. Coll., N. Y.,	Univ. N. Y., '94,	Torrington.
Hayes, John Francis,	Univ. N. Y., '79,	Waterbury.
Hazen, Henry C.,	P. & S., N. Y., '92,	Haddam.
Hazen, Miner Comstock,	Univ. Mich., '55,	Haddam.
Heady, Elias Buel,	Yale, 72,	Milford.
Hewes, Frank William,	Univ. Vt., '94,	Groton.
Heyer, Harold Hankinson,	Univ. N. Y., '87,	New London.
Hexamer, Carl Reisig, B.S., '83,	P. & S., N. Y., '86,	Stamford.
Hibbard, Nathaniel, A.B., '78,	Harvard, '82,	Dan'lsonville.
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, Thomas Morton,	Yale, '63,	Willimantic.
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.
Holmes, Walter Hamilton, A.B., '75,	Harvard, '79,	Waterbury.
Holroyd, Joseph Scripture,	P. & S., N. Y., '95,	Waterville.
Horton, William Wickham,	Univ. N. Y., '79,	Bristol.

Name.	Medical Graduation.	P. O. Address.
Hotchkiss, Norton R.,	Univ. Md., '91,	New Haven.
Houghton, Simon Willard,	Bellevue, '79,	Hazardville.
House, 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.
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. Heidelburg, '71, M. S., London,	L. I. Coll.Hosp., '75,	Meriden.
Huntington, Samuel Henry,	Yale, '76,	Norwalk.
Hurd, Alonzo L., B.S., Me., '82,	Univ. Vt., '91,	Somers.
Hurlbert, William Sharon,	Univ. N. Y., '89,	Winsted.
Hurlhut, Augustus 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. Coll.Hosp., '75,	Jewett City.
Johnson, Edwin Hines,	Univ. Vt., '88,	Naugatuck.
Johnson, Frederick Eugene,	Univ. N. Y., '69,	Mansfield.
Johnson, John William,	P. & S., Balt., '93,	Torrington.
Johnson, Marcus Morton, Ph.B., Brown, '70,	Univ. N. Y., '77,	Hartford.
Jones, Daniel Albion, B.A., Yale, '84; D.M.D., Harvard, '89,	Yale, '92,	New Haven.
Judson, Walter, B.A., '64; M.A., '67,	P. & S., N. Y., '70,	New Haven.
Judson, William Henry,	Jefferson, '78,	Dan'lsonville.
Kane, Thomas Francis,	Bellevue, '87,	Hartford.
Kean, Mrs. L. Darnstadt,	Wom. Med., Pa., '87,	Hartford.
Kendall, John Calvin, B.A., '70,	P. & S., N. Y., '75,	Norfolk.
Keniston, 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, '69,	Putnam.
Kimball, Rush Wilmot, A. B., '87, Williams,	L. I. Coll.Hosp., '90,	Norwich.
Klenke, Henry Frederick,	Univ. N. Y., '92,	New Haven.
Knight, Charles Milo,	Louisville, '93,	Chaplin.
Knight, George Henry,	P. & S., N. Y., '86,	Lakeville.
Knight, William Ward,	Univ. N. Y., '76,	Hartford.
Korn, William Alfred,	Yale, '92,	Norwich.
Lamb, Chauncey Stafford,	Buffalo, '93,	New Haven.
Lambert, Benjamin Lott,	Univ. N. Y., '83,	New Haven.
Law, Homer Lyon,	Jefferson, '69,	Hartford.
Lawson, George Newton, B.A., '90,	Yale, '92,	M. Haddam.

Name.	Medical Graduation.	P. O. Address.
Lawrence, George W.,	Yale, '90,	Cromwell.
Lawton, Franklin Lyman, Ph.B., Yale, '90,	Yale, '93,	Hartford.
Lauder, Robert, M.A.,	Yale, '71,	Bridgeport.
LaPierre, Julian,	Bellevue, '71,	Norwich.
LaPointe, John William Henry,	Lavalle Univ., Montreal, '92,	Meriden.
LaRue, Omer,	Vict., Montreal, '71,	Putnam.
Lawlor, Timothy Chris. Ambrose,	Bellevue, '92,	Rockville.
Leavenworth, Daniel Carroll,	Yale, '65,	New Haven.
LeClair, Charles Joseph,	Victoria, '87,	Dan'lsonville.
Lee, Frank Herbert,	Albany, '88,	Canaan.
Lemmer, George Edward,	Bellevue, '85,	Danbury.
Leonard, Elbridge Knowlton,	Conn. Med., S'y.,'66,	Rockville.
Leverty, 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.
Lockhart, Reuben Arthur,	Yale, '91,	Bridgeport.
Look, Frank Byron,	Bowdoin, '84,	Middletown.
Loomis, Francis Newton, B.A., '81,	Yale, '83,	Birmingham.
Loveland, John E., A.B., '89,	Harvard, '92,	Middletown.
Lowe, Henry Russell,	Dartmouth, '82,	Woodstock V.
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, Stephen John,	Yale, '87,	New Haven.
Mailhouse, Max, Ph.B., '76,	Yale, '78,	New Haven.
Maitland, Lewis,	Univ. Pa., '95,	Middletown.
Mansfield, Howard Parker,	L.I. Coll.Hosp., '93,	Georgetown.
Marcy, Robert Adrian,	Univ. N. Y., '82,	New Preston.
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,	Willimantic.
May, Jacob,	Rush, Chicago, '76,	Bridgeport.
Mayberry, Franklin Hayden,	Univ. Vt., '85,	Burnside.
Mayer, Nathan,	Cincinnati, '57,	Hartford.
McCabe, Edward Michael, B.A., '84,	Yale, '87,	New Haven.
McDonald, Edward Walsh,	Univ. N. Y., '71,	Waterbury.
McDonnell, Ralph Augustine, B.A., '90,	Yale, '92,	New Haven.
McFarland, David Walter,	Univ., N. Y., '85,	Waterbury.
McGaughey, James David,	Jefferson, '70,	Wallingford.
McIntosh, James Fabien,	Victoria, '87,	N.G'sv'n'rd'le.
McKnight, Everett James, B.A., Yale, '76,	P. & S., N. Y., '79,	Hartford.
McNair, Robert Hamilton,	Jefferson, '90,	New Haven.

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.
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. Coll Hosp., '85,	Waterford.
Moody, Mary Blair,	Buffalo, '76,	New Haven.
Moody, Robert Orton, B.S., Cornell, '91,	Yale, '94,	New Haven.
Moore, Howard Doolittle,	Bellevue, '87,	Riverton.
Moore, James Albert, B.A., Yale, '92,	Yale, '94,	New Haven.
Morgan, William Dennison, A B, Trinity, '72,	P. & S., N. Y., '76,	Hartford.
Moriarity, James Ligouri,	Harvard, '96,	Waterbury.
Morrell, Frederick Augustus, B.A., Oberlin, '91; M.A.,	L.I. Coll.Hosp., '85,	Putnam.
Moulton, Edward Seymour, B.A, Oberlin, '91, M.A.,	Yale, '94,	New Haven.
Mullville, Frederick Louis,	Bellevue, '96,	Stamford.
Munger, Carl Eugene, Ph.B., '80,	P. & S., N. Y., '83,	Waterbury.
Munger, Walter Seward,	Yale, '55,	Watertown.
Murtless, Hubert Walter,	Louisville Med. Coll., '93,	Hartford.
Murphy, James,	Univ. Pa., '95,	Portland.
Murphy, Michael Daniel,	Bellevue, '84,	Middletown.
Murphy, Walter Graham,	Alb'y Med.Coll.,'90,	E. Hartford.
Naylor, James Henry,	Univ. Vt., '95,	Hartford.
Nelson, Abiel Ward,	Harvard, '61,	New London.
Newton, Cyrus Brownlie,	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.
Nickerson, Nehemiah,	N.Y. Med. Coll.,'57,	Meriden.
Nicoll, John,	Yale, '54,	New Haven.
Noble, Henry Smith, A.B., '59,	P. & S., N. Y., '71,	Middletown.
Nolan, Daniel Andrew, Ph.G., '94,	Med.Chir. Col., Pa.,	Middletown.
North, James Howard,	L.I. Coll. Hosp., '73,	Goshen.
North, John Leopold,	Louisville, '94,	Avon.
Noxon, George Henry,	Balt. Med. Coll., '93,	Darien.
Noyes, Selden Walkley,	Univ. Pa., '68,	Haddam.
Ober, George Eugene,	Univ. Vt., '90,	Bridgeport.
O'Connell, Thomas James,	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,	Albany, '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.
Olmstead, James, B.A., '72,	Yale, '74,	Middletown.
Osborn, George Wakeman, B.A., '84 ,	P. & S., N. Y., '87,	Bridgeport.
Osborne, Oliver Thomas,	Yale, '84,	New Haven.
O'Sullivan, Thomas Jefferson,	Bellevue, '76,	Birmingham.
Overlock, Selden Barden,	Bellevue, '89,	Pomfret.

Name.	Medical Graduation.	P. O. Address.
Paddock, Lewis Sloat, M.A.,	N.Y. Med. Coll., '54	Norwich.
Page, Charles Ithamar,	P. & S., N. Y., '90,	Litchfield.
Park, Charles Edwin,	Yale, '81,	New Haven.
Parker, Julian Newell,	Yale, '67,	S. M'chester.
Parker, Theodore Raymond,	Univ. N. Y., '80,	Willimantic.
Parmele, George Luther, D.M.D.,	L.I. Coll.Hosp., '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, George Augustus,	P. & S., N Y., '91,	Meriden.
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.
Philip, Rosavelle Gardner,	Wom. Med. Coll., N. Y. Inf., '75,	Stamford.
Phillips, Alfred Noroton,	P. & S., N. Y., '83,	Stamford.
Phinney, Elisha,	Yale, '35,	Yantic.
Pierce, Elbridge Worthington,	Univ. N. Y., '85,	Meriden.
Pierson, Samuel,	P. & S., N. Y., '81,	Stamford.
Pike, Ezra Barker,	Bowdoin, '97,	Abington.
Pinney, Royal Watson,	P. & S., N. Y., '88,	Derby.
Pirritte, Frederick Winchelle,	Univ. Toronto, '93,	New Haven.
Pitman, Edwin Parker, B.A., '86,	Dartmouth, '91,	New Haven.
Platt, William Logan,	P. & S., N. Y., '81,	Torrington.
Plumstead, Matthew Woodbury,	Jefferson. '87,	E. Haddam.
Poore, John Robinson,	Harvard, '94,	Waterbury.
Porter, George Loring, B.A., '59,	Jefferson, '62,	Bridgeport.
Porter, Isaac Napoleon, 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, Edward Loomis,	Univ. N. Y., '84,	Winsted.
Pratt, Elias,	P. & S., N. Y., '87,	Torrington.
Purdy, Alexander Marshall,	Univ. Vt., '84,	Mystic.
Rainville, Frederick Edmund,	Univ. Vt., '91,	Wauregan.
Raftery, Thomas Henry, B.A., '76, M.A., Holy Cross, '86,	Worcester, '86, P. & S., N. Y., '86,	Stafford S'gs.
Randall, William Sherman, Ph.B.,	Yale, '83,	Shelton.
Rankin, Charles Goodrich, A.M., '87, Williams, A.B., '84,	Chic.Med. Coll., '86,	Glastonbury.
Reilly, James Michael,	Yale, '78,	New Haven.
Reynolds, Herbert Sumner,	Univ. N. Y., '81,	Clinton.
Rice, Watson Emmons,	Univ. Mich., '72,	Stamford.
Richards, William Spencer,	Univ. N. Y., '89,	W. Winsted.
Richards, Dwight Alphonso,	Yale, '81,	Shelton.
Ring, Henry Wilson, A.B., '79; M.A.,	Me. Med. Coll., '81,	New Haven.
Rising, Henry Martin,	Yale, '68,	S.Glastonb'ry.
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,	Colchester.
Robinson, Paul Skiff, PhB., Yale, '89,	Yale, '91,	New Haven.
Robinson, Rienzi,	L.I. Coll.Hosp., '69,	Danielson.

Name.	Medical Graduation.	P. O. Address.
Rockwell, Thomas Francis,	Univ. N. Y., '81,	Rockville.
Rodger, David Robert, A.B., Hamilton, '82,	P. & S., N. Y., '88,	Woodbury.
Rodman, Charles Shepard,	P. & S., N. Y., '68,	Waterbury.
Rogers, Charles Henry, B.A., '44,	Yale, '47,	Cen. Village.
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.
Ruickoldt, Arthur,	Univ. Jena, '65,	New Haven.
Ruland, Fred Davis,	P. & S., N. Y., '89,	Westport.
Russell, George Washington,	Bellevue, '96,	Waterbury.
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,	Wallingford.
Russell, Willis Adams,	Univ. N. Y., '81,	Essex.
Sanford, George Willis,	Berkshire, '36,	Simsbury.
Sanford, Leonard Luther, B.A., Yale, '90,	Yale, '93,	New Haven.
Sanford, Ward Harding,	Balt. Med. Coll., '95,	New Haven.
Sawtelle, Frederick George,	L.I. Coll.Hosp., '80,	Pomfret.
Schavoir, Frederic,	P. & S., Balt., '87,	Stamford.
Scoville, Clarence Henry,	Balt. Med. Coll., '95,	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.
Seibold, John Jacob,	St. Louis Med. Coll., '91,	New Haven.
Selleck, Nathaniel,	Univ. N. Y., '89,	Danbury.
Sellew, Phillip Hamilton,	Jefferson, '90,	Salisbury.
Sheedy, Bryan DeForest,	Univ. N. Y., '84,	Bridgeport.
Shelton, Gould Abijah, M.A., '91,	Yale, '69,	Shelton.
Shepard, Durell,	Yale, '64,	West Haven.
Shepard, George Reubens,	Yale, '66,	Hartford.
Sherer, Henry Clifford,	Univ. N. Y., '92,	So. Norwalk.
Sherman, Henry Arthur,	Jefferson, '88,	Putnam.
Sherrill, George,	P. & S., '91,	Stamford.
Simmons, Willard Nelson,	Univ. Vt., '89,	Tolland.
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.
Smith, Andrew Jackson,	P. & S., N. Y., '63,	Bridgeport.
Smith, Edward Everett,	L.I. Coll.Hosp., '71,	So. Wilton.
Smith, Edward Montrose,	P. & S., N. Y., '82,	Newtown.
Smith, Edward Wier, A.B., Yale, '78,	McGill, Mont., '82,	Meriden.
Smith, Ernest Herman, A.B., Amherst, '85,	P. & S., '89,	Redding.
Smith, Frank Lewis,	Univ. N. Y., '75,	Stafford Spgs
Smith, Frederick Sumner, B.A., Yale, '79,	Yale, '82,	Chester.
Smith, Herbert Eugene, Ph.B., Yale, '79,	Univ. Pa., '82,	New Haven.
Smith, Junius Foster,	L.I. Coll.Hosp., '90,	Brookfield.

Name.	Medical Graduation.	P. O. Address.
Smith, Marvin,	Univ. N. Y., '83,	New Haven.
Smith, Newton Phineas,	P. & S., N. Y., '82,	Norwich.
Smith, Oliver Cotton,	L.I. Coll.Hosp., '83,	Hartford.
Sperry, Frederick Noyes,	Yale, '94,	New Haven.
Spring, Frederick,	Univ. N. Y., '85,	Naugatuck.
Stanley, Charles Everett,	Univ. Pa., '76,	Middletown.
Stanton, George Dallas,	Bellevue, '65,	Stonington.
Stanton, John Gilman, B.A., Amherst, '70,	Wurtzburg, '73,	New London.
Staub, George Edwards,	L.I. Coll. Hosp., '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 Ebenezer,	Yale, '81,	New Haven.
Stevens, Henry Burt,	Harvard, '94,	Norwich.
Stevens, John Gale,	Yale, '84,	Monroe.
St. John, Samuel Benedict, B.A., Yale, '66,	P. & S., N. Y., '75,	Hartford.
Stone, Jay Stephen,	P. & S., N. Y., '65,	New Britain.
Storrs, Melancthon, B.A., Yale, '52,	Yale, '53,	Hartford.
Stowe, William Harvey,	Yale, '88,	New Haven.
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 Francis, A.B., Niagara Univ., '89,	Niagara Univ. '91,	Hartford.
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,	Scotland.
Tenney, Arthur John, Ph.B., Yale, '77,	Yale, '83,	Branford.
Thompson, George,	Me. Med. Coll.,'89,	Taftville.
Thompson, Harriet Adaline,	Women's Med. Col. Phila., '95,	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. M'chester.
Topping, Jacob Reed,	Univ. N. Y., '82,	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. Buckingham,	Univ. Mich., '83,	Stamford.
Treadwell, Oliver Ferd., B.A., Yale, '62,	Yale, '65,	Hamden.
Trecartin, David Munson,	Dartmouth, '94,	Bridgeport.

Name.	Medical Graduation.	P. O. Address.
Tudor, Mary Starr,	Women's Med. Col., Phila., '93,	So. Windsor.
Tukey, Frank Martin, B.A., Bowdoin, '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,	Naugatuck.
Van Vleet, Peter P.,	Bellevue, '69,	Stamford.
Varno, Henry G.,	P. & S., Balt., '82,	Thomp'ville.
Verdi, William Francis,	Yale, '94,	New Haven.
Voorhes, Charles DeWitt,	Univ. N. Y., '89,	Groton.
Wade, John Alexander,	Bellevue, '93,	Danbury.
Waite, Frank Louis,	Bellevue, '88,	Hartford.
Walsh, Frederick William,	P. & S., Balt., '84,	Rockville.
Ward, James Ward,	P. & S., Balt., '95,	Hartford.
Warner, Abner Spicer, A.B., Dartmouth, '42,	Dartmouth, '48,	Wethersfield.
Washburn, Nathaniel P, Ph.B., Yale, '71,	Univ. N. Y., '91,	Stamford.
Waters, John Bradford,	Univ. Vt., '90,	Hartford.
Weed, Willis Edward,	P. & S., N. Y., '83,	Ridgefield.
Weir, Janet Marshall,	Queen's Un. Kingston. Ont., '91,	Hartford.
Watson, Wilbur Seymour,	L. I. Col. Hosp., '87,	Danbury.
Webb, Daniel Meigs, B.A., Yale, '46,	Yale, '49,	Madison.
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,	Willimantic.
Weldon, Thomas Henry,	Univ. N. Y., '83,	S. M'chester.
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.
White, Benjamin Franklin,	L. I. Col. Hosp., '86,	Bridgeport.
White, Frederick Olin,	Yale, 73,	New Haven.
White, Moses Clark, B.A., Wesleyan, '45, M.A., Yale,	Yale, '54,	New Haven.
White, Robert Creighton,	Univ. Vt., '89,	Willimantic.
Whiton, Francis Henry,	Dartmouth, '72,	Manchester.
Whittemore, Frank Hamilton,	Bellevue, '74,	New Haven.
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 Hugh,	P. & S., N. Y., '77,	Middletown.
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.
Witter, William,	Yale, '65,	Norwich.
Wolff, Arthur Jacob,	Tex. Med. Col., '76, Bellevue, '83,	Hartford.
Wood, William Francis,	P. & S., Balt., '93,	Danbury.
Wooster, Charles Morris,	Univ. N. Y., '79,	Tariffville.

Name.	Medical Graduation.	P. O. Address.
Wordin, Nathaniel Eugene, B.A., Yale, '70; Yale, M.A., '72,	Jefferson, '73,	Bridgeport.
Worthington, Albert Brownell,	Yale, '47,	M. Haddam.
Wright, Frank Walden,	Bellevue, '80,	New Haven.
Wright, John Winthrop, A.B., Amherst, '77,	Univ. N. Y., '80,	Bridgeport.
Wright, Theodore Goodelle,	Univ. N. Y., '65,	Plainville.
Wurtemberg, William Charles, Ph.B., Yale, '89,	Yale, '93,	New Haven.
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.

DEPARTMENT OF MEDICINE

(YALE UNIVERSITY.)

FACULTY.

Rev Timothy Dwight, D D , LL.D., President.

Moses C. White, M.D., *Professor of Pathology.*

Charles A. Lindsley, M.D., *Professor of the Theory and Practice of Medicine, Emeritus.*

William H. Carmalt, M.D., *Professor of the Principles and Practice of Surgery.*

James Campbell, M.D , *Professor of Obstetrics and Diseases of Women and Children.*

Thomas H. Russell, M.D., *Professor of Clinical Surgery and Surgical Anatomy*

Herbert E. Smith, M.D , *Professor of Chemistry, and Dean.*

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.*

Graham Lusk, Ph.D , *Professor of Physiology.*

Louis S. DeForest, M.D., *Clinical Professor of Medicine.*

Henry L. Swain, M.D., *Clinical Professor of Diseases of the Throat and Ear.*

Benj. Austin Cheney, M.D., *Assistant Professor of Obstetrics and Diseases of Women and Children.*

Charles J. Bartlett, M.D., *Assistant Professor of Pathology.*

OTHER INSTRUCTORS.

Professor William H. Brewer, Ph.D., *Lecturer on Sanitary Science and Public Health.*

Henry P. Stearns, M.D , *Lecturer on Insanity.*

Samuel B. St. John, M.D., *Lecturer on Opthalmology.*

Henry Fleischner, M.D., *Lecturer on Dermatology and Clinical Medicine.*

Charles J. Foote, M.D., *Instructor in Clinical Medicine.*

Arthur N. Alling, M.D., *Instructor in Ophthalmology.*

Louis B. Bishop, M.D , *Assistant in the Medical Clinic.*

Charles A. Tuttle, M.D., *Lecturer on Orthopaedic Surgery.*

Leonard W. Bacon, Jr., M.D., *Instructor in Operative Surgery.*

Warren A. Spalding, *Demonstrator of Pharmacy.*

Ralph A. McDonnell, M.D , *Instructor in Materia Medica and Clinical Dermatology.*
Robert E. Peok, M.D., *Assistant in the Medical Clinic.*
Leonard C. Sanford, M.D., *Assistant Demonstrator of Anatomy.*
Edward S. Moulton, M.D., *Assistant in Gynecology.*
Robert O. Moody, M.D., *Assistant in Pathology.*
James A. Moore, M.D., *Assistant in the Medical Clinic.*
Ernst H. Arnold, M.D.. *Clinical Assistant in Orthopedic Surgery.*
William H. Parker, B.S , *Instructor in Chemistry.*
Chauncey S. Lamb, M.D., *Assistant in the Surgical Clinic.*
Ambrose K. Brennan, M.D., *Assistant in Obstetrics and Pediatrics.*
Frederick N. Sperry, M.D., *Assistant in the Eye and Ear Clinic.*
William F. Verdi, M.D., *Assistant in the Surgical Clinic.*
Frederic C. Bishop, M.D., *Assistant in the Eye and Ear Clinic.*
Clifford W. Kellogg, M.D., *Assistant in Histology and Gynecology.*

THE CURRICULUM.

The college year begins on the first Thursday of October, and extends until 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 new, and fully equipped for thorough and systematic work by students.

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 about 12,000 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 and other subjects, the 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 these 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.

PRIZES.

The Campbell Gold Medal is awarded to that member of the graduating class who has attained the highest rank in the examinations of the course.

The Keese Prize of $140 is awarded 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.