Association of American Medical Colleges

PROCEEDINGS OF THE SEVENTEENTH ANNUAL MEETING HELD AT WASHINGTON, D. C. MAY 6 1907

CONTENTS.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

Minutes of the Seventeenth Annual Meeting, Held at Washington, D. C., May 6, 1907.

MORNING SESSION.

Pursuant to call, the Association convened in the Hotel Raleigh, and was called to order by the president, Dr. George M. Kober, at 10 a. m.

The president, on behalf of the Association, welcomed the delegates and the visitors, and explained briefly the reasons which led up to the change in the time and place of meeting from that provided for in the Constitution and by vote of the Association at the last meeting.

President's Address.

The first vice-president, Dr. F. C. Waite, then took the Chair, while the President delivered the annual address. (See page 26.)

On motion of Dr. J. R. Guthrie, a committee of three was appointed to consider the recommendations contained in the President's address, said committee to report later during the session. The Chair appointed on this Committee, Drs. W. J. Means, D. C. Bryant, and Thos. C. Evans.

Reading of Papers.

Dr. Egbert Le Fevre, Dean of the University and Bellevue Hospital Medical College of New York, read a paper entitled "Giving Credit for Work Done in Literary Colleges; the Combined Course," which was discussed by Drs. H. B. Ward and F. C. Waite. See page 36.)

Here Dr. Eli H. Long moved that Dr. Le Fevre be accorded honorary membership in the Association. The motion was carried by a unanimous vote.

Dr. W. J. Means followed with a paper entitled "Should Licensure Examinations Be in Two Parts, and How Shall They Be Conducted?" (See page 54.)

The discussion on the paper was opened by Dr. E. H. Long, continued by Drs. D. C. Bryant, Torald Sollmann, B. D. Myers, F. C. Waite, A. R. Baker, T. C. Evans, H. B. Ward, Egbert Le Fevre, R. Winslow, M. G. Motter, A. D. Bevan, J. C. Wise, F. E. Bunts, J. R. Guthrie, J. C. Oliver, and closed by Dr. Means.

The Association then adjourned until 2 p. m.

AFTERNOON SESSION.

The Association reassembled at 2 p. m., and was called to order by the President.

Dr. Murray Galt Motter, of the National Confederation of State Examining and Licensing Boards, read a paper en-

titled "Some Further Steps in the Advancement of Medical Education." The paper was discussed by Dr. H. B. Ward. (See page 71.)

Dr. William S. Thayer, of the Johns Hopkins University Medical Department, read a paper on "The Teaching of Internal Medicine." The paper was discussed by Drs. B. D. Myers and David Streett, and by Dr. Thayer, in closing.

Dr. Torald Sollmann, of the Medical Department of the Western Reserve University, read a paper entitled "Teaching Materia Medica, Pharmacology and Therapeutics," which was discussed by Dr. Eli H. Long, Dr. B. D. Myers, and, in closing, by the author. (See page 83.)

On motion, it was decided to take up the consideration of the amendment abolishing the granting of time credits for a baccalaureate degree at 4 p. m.

Dr. Frank Baker, of the School of Medicine of Georgetown University, contributed a paper entitled "Teaching Anatomy," which was discussed by Dr. B. D. Myers.

Dr. Frank E. Bunts, of the Medical Department of Western Reserve University, read the concluding paper of the program, entitled "When Shall Students Begin to Attend Clinics?" The paper was discussed by Drs. R. Winslow, D. C. Bryant, D. Streett, B. D. Myers, and W. F. R. Phillips. (See page 92.)

BUSINESS SESSION.

The roll call was taken, and the following colleges (32) were represented by delegates:

Cooper Medical College—W. F. Cheney.

George Washington University Department of Medicine—W. F. R. Phillips.

Georgetown University School of Medicine—George M. Kober.

Howard University Medical Department—Robert Reyburn.

American Medical Missionary College—R. H. Harris.

College of Medicine, University of Illinois—F. B. Earle.

Indiana University School of Medicine—B. D. Myers.

College of Medicine, University of Iowa—J. R. Guthrie.

Kansas Medical College—W. S. Lindsay.

School of Medicine, University of Kansas—C. E. McClung.

Hospital College of Medicine—P. R. Taylor.

Louisville Medical College—P. R. Taylor (proxy).

Kentucky University Medical Department—T. C. Evans.

Kentucky School of Medicine—W. H. Wathen.

Baltimore Medical College—D. Street.

Vanderbilt University Medical Department—L. E. Burch.

College of Physicians and Surgeons (Baltimore)—C. F. Bevan.

Johns Hopkins University Medical Department—W. S. Thayer.

University of Maryland School of Medicine—R. D. Coale.

University of Michigan, Department of Medicine and Surgery—V. C. Vaughan.

University Medical College—J. N. Jackson.

Creighton Medical College—D. C. Bryant.

University of Nebraska College of Medicine—H. B. Ward.

University of Buffalo Medical Department—E. H. Long.

University of North Carolina Medical Department—W. H. Manning.
Miami Medical College—J. C. Oliver.
Cleveland College of Physicians and Surgeons—A. R. Baker.
Western Reserve University Medical College—F. C. Waite.
Ohio Medical University—W. J. Means.
University College of Richmond—W. R. Miller.
University of West Virginia Medical Department—J. N. Simpson.
Marquette University Medical Department—W. H. Earles.

The following were also present: Dr. Egbert Le Fevre, University and Bellevue Hospital Medical College; Dr. L. S. McMurtry, Hospital College of Medicine; Dr. Randolph Winslow, University of Maryland, Faculty of Medicine; Dr. Murray Galt Motter, National Confederation of State Examining and Licensing Boards; Dr. Frank Wesbrook, University of Minnesota, Department of Medicine and Surgery; Dr. J. C. Wise, Navy Medical School; Dr. Valery Havard, Army Medical School; Dr. A. D. Bevan, Council on Medical Education, A. M. A.; Drs. Torald Sollmann and Frank E. Bunts, Western Reserve University Medical Department; Dr. Frank Baker, Georgetown University School of Medicine; Dr. R. H. Reeve, Ex-President, British Medical Association; Dr. H. W. Albert, University of Iowa Medical Department; Dr. J. H. T. Main, President Iowa College; Dr. Herbert E. Smith, Yale Medical School; Dr. Christopher Tompkins, Southern Medical College Association; Dr. Lyman F. Kebler, U. S. Dept. of Agriculture; Dr. T. M. Taylor, New York City, and the Secretary.

Approval of Minutes.

On motion, the minutes of the 1906 meeting, held at Pittsburg, were accepted as printed in the Transactions, a copy of which was sent to all the colleges holding membership in the Association.

The chair at this juncture appointed the following Nominating Committee: Drs. Randolph Winslow, F. B. Earle, and F. C. Waite.

Action on Amendments.

In accordance with the motion previously made, the discussion of the amendments proposed was taken up at this time (4 p. m.).

AMENDMENT No. 1, proposed by Dr. J. R. Guthrie, having reference to the abolition of time credits to be granted holders of the baccalaureate degree was read, and after much discussion was adopted, as follows:

> ART. III., Section 6.—No time credit shall be given to holders of a Bachelor's Degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of doctor of medicine.

AMENDMENT No 2, proposed by the Committee on Conference with the American Confederation of Reciprocating, Examining and Licensing Medical Boards, was also discussed

at length in conjunction with Dr. Guthrie's amendment, and finally was referred back to the Committee for further consideration, in view of the fact that the Confederation had appointed a committee of three, consisting of Drs. B. D. Harison (Michigan); W. T. Gott (Indiana), and Geo. H. Matson (Ohio), to confer with the Secretary of the Association in the matter of preliminary entrance requirements to medical colleges.

The amendment read as follows:

> Graduates holding the degrees of A. B., B. S., or equivalent qualifications, from a recognized college or university, may be given credits not exceeding one year, provided the applicant for such credits shall produce evidence which shall satisfy the State Board of Medical Examiners in the state in which credit is asked, that the holder of such degree has taken within 10 per cent. of the work embraced in the minimum standard of requirements of the American Confederation of Reciprocating, Examining and Licensing Medical Boards, in the following subjects: Bacteriology, histology, embryology, osteology, anatomy, physiology, chemistry and toxicology; and provided that any literary college which shall undertake this work shall in its catalogue announce that it will give this first year of a medical course.

On motion of Dr. Wathen, this Conference Committee was continued, and Drs. W. J. Means and J. R. Guthrie were added to the committee, which now consists of Drs. Zapffe, Means and Guthrie.

AMENDMENT No. 3, proposed by Dr. H. B. Ward of the University of Nebraska, was adopted as read, as follows:

> ART. III., Section 1, (a), A., by substituting, "Latin, 4 points" for "Language, 4 points (2 must be in Latin)."

(A motion to table this amendment was lost.)

AMENDMENT No. 4, also proposed by Dr. Ward, was adopted as read, as follows:

> A89. V., Section 2—Each medical college in membership in this Association shall print in every annual catalogue or announcement a table of the total number of hours work given in said college, arranged both by subjects and years.

Report of Committee on President's Address.

The committee appointed to consider the suggestions made in the President's Address reported as follows:

Recognizing the many timely criticisms and valuable suggestions made in the able address of President Geo. M. Kober, and our inability to properly consider them at this time, we respectfully and earnestly recommend that on account of its importance, this address be printed in full in the official minutes, so that each member can have the privilege of reading and profiting by its many wise suggestions.

We further recommend that the suggestion that he makes that "a joint committee from this body, the Council on Medi-

cal Education, and the American Confederation of Reciprocating Examining and Licensing Medical Boards, for the formulation of uniform minimum entrance and graduation requirements," be adopted by this Association and a committee appointed to act in conjunction with committees appointed by the other named bodies.

(Signed) W. J. MEANS,
D. C. BRYANT.
T. C. EVANS.

The report was accepted and the chair appointed as a committee to confer with the Council on Medical Education of the American Medical Association, Drs. Fred. C. Zapffe, W. J. Means, and Wm. H. Welch.

Mr. Wm. R. Miller, of the University College of Medicine, moved that the recommendations contained in the paper read by Dr. Means be referred for consideration to the Committee on Conference with the American Confederation of Reciprocating Examining and Licensing Medical Boards. The motion was carried.

Dr. H. B. Ward moved that the Secretary be ordered when republishing the constitution and by-laws of the Association to express the statements of the value of work done in counts instead of in points. This motion was also carried.

(NOTE.—Inasmuch as a change from the point to the count system at this time would have created some confusion, and, further, in view of the fact that the secretary of the Association will confer with a committee from the American Confederation of R. E. and L. M. Bds, during the year on the matter of uniform preliminary requirements, the officials of the Association considered it advisable and to the best interests of all concerned not to make the change at this time, particularly as the motion made by Dr. Ward did not change the requirements in any way, merely the denomination. Again, many state examining boards have adopted these requirements verbatim, and as a change in the requirements is imminent—not in value, but in arrangement and subjects and time of study devoted to each—it is well to allow the present system to remain for another year when a definite standard will be presented for adoption by all concerned, the examining boards and the colleges.)

Dr. Ward also moved that the Secretary be instructed to print in full in the transactions all the papers read at this meeting. Carried.

The Secretary then read a letter received from Mr. Howard J. Rogers, First Assistant Commissioner of Education of the Board of Regents of the State of New York, expressing his regrets at his inability to be present at the meeting.

Report of Committee on Conference With A. C. R. M. E. and L. Boards.

The committee (Zapffe) reported as follows:

Mr. President and Delegates:—Your Committee attended the meeting of the Confederation held at Columbus, Ohio, April 25, 1906, pursuant to instructions received at the last meeting of the Association:

As the result of a conference held the day before, between representatives of the New York State Board of Regents, the New York State Medical Examining Board, the Indiana State

Board of Medical Registration, the Michigan Board of Registration in Medicine, and your representatives, the Confederation adopted the following requirements for entrance to and graduation from medical colleges:

> After July 1, 1906, the minimum requirement for registration in a medical college shall be a recognized diploma from a four-year high-school, college, academy or university, or a recognized equivalent certificate, such diploma or certificate having the following minimum standard: Academic work and examinations, 60 counts (a count represents one recitation a week for the school year). Required, 30 counts (after 1906, 35 counts), as follows. English, 10 counts; mathematics, 10 counts; Latin, 5 counts (10 counts after 1906); physics, 5 counts. Elective, 30 counts (after 1906, 25 counts), to be chosen from the following: English, 10 counts); French, 10 counts; German, 10 counts; Spanish, 10 counts; Greek, 10 counts; drawing, 3 counts; history, including civics, 10 counts; botany, 5 counts; zoology, 5 counts; biology, 5 counts; chemistry, 5 counts; trigonometry, 2 counts; physical geography, 5 counts; physiology and hygenie, 5 counts. Conditions may be allowed not to exceed a total of 15 counts.

The Confederation, after a very full discussion of the question as to whether any time credit shall be given for baccalaureate degrees, amended its regulations as to the granting of advanced standing by adopting the following:

> Graduates holding degrees of A.B., B.S., or equivalent qualifications from a reputable college or university may be given credits not exceeding one year. Provided that the applicant for such credit shall produce evidence which will satisfy the state board of medical examiners of the state in which such credit is asked that he has done within 10 per cent. of all the work embraced in the minimum standard of requirements of the Confederation in the following subjects: Histology, embryology, osteology, anatomy, physiology, chemistry and toxicology and bacteriology; and provided that any literary college which shall undertake this work shall in its catalogue announce the fact that it will give this first year of the medical course.

While the work of the Confederation is purely educational, and its resulting standards, qualifications and regulations are merely suggestive, and intended as a guide for the various officials of State Examining Boards, the influence of any resolutions adopted by the Confederation is far-reaching and therefore deserves the most careful thought and consideration by every other organization that is attempting to deal with educational problems. It ought to be a matter of gratification to this Association that the Confederation has extended a helping hand by adopting at its 1905 meeting the uniform curriculum adopted by this Association, and again, at its 1906 meeting, by adopting resolutions that are in line with the

sentiments expressed by this Association. It is greatly to be desired that these pleasant relations continue in the future, and your committee suggests that the Secretary be instructed to extend to the Confederation the thanks of this Association for assistance given.

At a subsequent meeting of the Confederation held in Chicago, April 30, 1907, a committee of three was appointed, consisting of the following secretaries: Dr. B. D. Harison (Michigan), Dr. W. T. Gott (Indiana), and Dr. Geo. H. Matson (Ohio), to confer with the Secretary of this Association in regard to uniform preliminary entrance requirements. In view of this action all reference to advanced standing was ordered expunged from the minutes of the 1906 (Columbus) meeting.

A committee was also appointed to investigate the standing of medical colleges.

(Signed FRED. C. ZAPFFE.

The report was accepted.

Report of Secretary-Treasurer.

The Secretary-Treasurer, on call, reported as follows:

Mr. President and Delegates:—The affairs of the Association have been progressing satisfactorily during the past year. One fact has impressed itself very strongly on your secretary, and that is the necessity for greater publicity of the work done by this Association. Your secretary has attempted to do all he could by distributing widely the transactions of the meetings and the bulletins which are issued from time to time. The requests from interested persons for copies of these publications have been more numerous than usual, so much so that the supply has long since been exhausted. The distribution of this matter is only one way to direct attention to what we are doing. Another way, and a very effective one, is representation at the meetings of the Associations of State Board officials and of educational bodies. This is very essential and a provision should be made to meet this contingency.

Good work can also be done by the members of this Association at the meetings of medical societies. During the year the various State Medical Associations have appointed Committees on Education, with which this Association should cooperate. Such co-operation will do much to bring about the much-desired uniformity of standards, because unless the standards of various organizations become public property, little can be accomplished. Frequent reference has been made by writers in all parts of the country to the Association standards, but a thorough knowledge of the familiarity with these standards can result only by bringing these standards before medical educators in every possible way. Reference to the results that have accrued from representation at the meetings of the American Confederation of Reciprocating Medical Examining and Licensing Boards will convince the most skeptical of the value of such work. The expense connected with this work is not great, and the time needed is willingly spent.

Another very vital question is representation at the meetings

of the Association. There has been a tendency displayed by some colleges to criticise the Association for what was done and also for what was not done, and these colleges were not even represented at the meetings. Every college holding membership in the Association ought to be represented at the annual meetings so that its interests can be subserved properly and that it may aid others as well. The opinions and advice of all, and not a few, must guide the destinies of every organization if it shall continue to thrive and do good to its members as well as to others. It must be borne in mind that we are legislating not for ourselves alone, but for others who are guided by our rules and regulations. These are weighty questions and if the Association is to continue to merit the high regard in which it is held at present we must act wisely and well on these matters.

If colleges can not send a representative to the meeting, it would be well for them to advise the Secretary of their opinions on these matters.

The time and place of meeting of the Association ought to be given careful consideration. Of course, it is impossible to arrive at a decision in this matter that will be satisfactory to all concerned, but if the third Monday in March, the time of meeting provided for by the constitution, is not the best time for meeting, some other date should be chosen. It is not advisable to meet just before or during the time of meeting of other organizations which tend to detract the members, but at the same time it might be well to give this some consideration if by meeting at such a time the attendance at our meetings will be greater. It might also be well to choose a central place of meeting, one which is easy of access from all parts of the country. It is not advisable to change the time and place of meeting, as was done this year, after the matter has been decided on, because of the difficulty of advising interested parties in due time.

It will be remembered that at the last meeting, the Association was favored with some very valuable suggestions from members of several State Boards of Examiners; Dr. B. D. Harison, of Michigan; Dr. B. F. Bailey, of Nebraska, and Dr. Charles F. Wheelock, of New York. The Secretary was instructed to confer with these gentlemen on the suggestions made, and this was done at a meeting held in Columbus in April, 1906. At this meeting there were also present Dr. M. J. Lewi, Secretary of the Regular Board of Examiners of the State of New York, Dr. W. A. Spurgeon, of the Indiana State Board of Registration in Medicine, and Dr. W. J. Means. These gentlemen emphasized the recommendations made at the previous meeting of this Association, and urged that every possible assistance be given to State Examining Boards by acting in an advisory capacity to these Boards, and giving them such information as would enable the Boards to derive profit from the work that is being done by the Association.

It was deemed of extreme importance to adopt a uniform credit system. The count system of the New York Board of Regents was considered to be the most desirable; first, because the count represents one study hour per week; second,

because the count system is the oldest system in vogue, and, third, because of the widespread publicity which has been given to this system of accrediting by the frequent and numerous publications put forth by the Board of Regents. The action taken by the American Confederation of R. M. E. and L. Boards in regard to specific entrance requirements is evidence that the Confederation endorses the count system. This has been referred to in detail in the report made by your committee that attended the meeting of the Confederation.

The representatives of the Examining Boards agreed that the work of the Boards can be furthered very materially if this Association will give to the Boards access to its inspection reports, and to the matriculation record blanks. The argument was advanced that this work should be made public, and this cannot be done to greater advantage than by furnishing the records to Examining Boards. These records show what the colleges are doing in the way of enforcing the rules and regulations of the Association, and needless to say it is in the interest of higher medical education to show the Boards what the individual colleges are doing.

Oftentimes there is some doubt as to whether a college is conforming to the prescribed entrance requirements. An examination of the matriculation record of such a college would soon dispel any doubt that might exist in this regard.

Another matter considered at this conference was the admission to membership in the Association of sectarian schools of medicine. The examining boards are anxious to have the Association represent the American Medical Colleges, as its name implies, so that uniform standards for admission and courses of study would obtain throughout the country. This would do much to harmonize and unify medical education. There are many things in favor of the admission to membership of sectarian colleges, and there is nothing in the constitution that prohibits such admission. The representaatives of these schools are perfectly willing to abide by a decision, arrived at after careful inspection, as to their eligibility to membership. Unquestionably, there are sectarian colleges that have requirements equal to those of the Association ,and therefore there can be no valid reason for refusing them membership.

It is with some hesitation that your Secretary calls attention to a matter which is often brought up by outside parties, and that is, Are the colleges holding membership in this Association enforcing the requirements of the Association? On several occasions your Secretary has been told that this is not being done, but the lack of personal knowledge thus far has prohibited any action in the matter. Few colleges possess what they consider the temerity to report any infraction of the rules, and therefore charges are not filed against the offender and the matter is never made public. This is wrong, because if the charges made are well-founded, an investigation will be productive of much good, whereas if the charges are based on a misunderstanding, an investigation will confirm that the requirements are being adhered to.

For instance, it has been said that some colleges will

matriculate a student whose credentials have been found insufficient by some other college. If this is true, an investigation should be made, so as to confirm or refute the charges made. Any statements to this effect that may be made in confidence to any official of the Association cannot, of course, be used as a basis for investigation. Some doubt is entertained by outside parties as to the efficiency of the Association because of such supposed irregularities, although its requirements are held to be sufficiently high and of value to the cause of medical education. Many colleges not holding membership in the Association exact its requirements, but refuse to come into membership because of rumors such as those just cited.

It must be evident that it is in the interest of all concerned to enforce the requirements of the Association. It is useless to assume that there is no need for an Association of this kind, because the medical colleges of the country must have some standard of requirements, and if they can formulate such a standard, and enforce it, they will gain the respect and earnest co-operation of every State Examining Board and of every educational institution. There always will be a college association, and why not let it be this one? There ought to be no hesitation on the part of any college to bring to the attention of the officials of this Association any infraction of its rules and requirement. Every investigation that has ever been undertaken, irrespective of its outcome, has been productive of much good. It must not be understood by this, however, that the future of the Association is dependent on the making an investigation of charges, but it must be shown that the colleges are in earnest when they lay down a requirement.

In the January issue of the BULLETIN there was published a copy of a letter sent to all the Deans by the Chairman of the Judicial Council. This letter called attention to Article III., Section 4, of the Constitution and By-Laws of the Association. This particular section prohibits members of the Association from admitting a student to advanced standing without first communicating with the college from which such student desires to withdraw, and receiving from the Dean of such college a direct written communication certifying to the applicant's professional and moral qualifications, and to the exact work he has done in said college. The Chairman of the Judicial Council received quite a number of complaints that this rule was being disregarded by members of the Association, but inasmuch as these complaints were not filed in the nature of charges, nothing further was done in the matter than to send out the letter referred to. This is a very important matter, and yet no steps can be taken until formal charges are filed, or until your officers are put in possession of facts which will warrant an investigation. Only a few days ago an instance of this kind was cited to your Secretary, but the failure to mention names precluded any action.

It would seem that there must be some remedy either to substantiate or to silence such statements as these. It has been suggested to your Secretary by Dr. Ward that the appointment of district committees might help to bring about

many needed reforms. Such committees could take charge of Association matters in their particular district, and the committees could also confer with or act in an advisory capacity to the Educational Committees of State Societies and State Examining Boards. The stamp of approval of this Association would help matters considerably. The best thing to do, if it were possible, would be to have the entrance credentials of every medical student passed on by a committee consisting of representatives of State Examining Boards, and of this and other associations. In lieu of this, the next best thing undoubtedly is our matriculation record blank. Perhaps, it might be feasible to appoint a representative in each state, who would have charge of the colleges in his state, and who would be responsible either to the Association, to the State Examining Board, or to committee, as suggested above.

The day has passed when matters can be conducted in the happy-go-lucky way of ten or more years ago. It is now a case of either being forced to follow or of taking the lead. Surely it is better to lead than to follow.

That the Association is being held in high esteem for what it has done is well shown by the references to its work which are made frequently by writers in all parts of the country. The sentiments of the State Examining Boards are well known to you all. Those of you who are familiar with what is being done by State Medical Societies know that this Association is looked to by medical educators everywhere to solve current problems in medical education. Surely we cannot afford to abuse such a trust. In a paper on Uniform Educational Basis Solution of Reciprocity by Dr. William Warren Potter, of Buffalo, which was published in the New York Medical Journal last year as a prize essay, the following paragraph appears:

> "The Association of American Medical Colleges can be depended upon to establish the first two propositions, namely, the uniformity of entrance requirements and the length of collegiate terms and methods of teaching. It will then be 'up to' the examining boards and state authorities, to use a trite expression of the day, to see that their methods become of uniform standard and that reciprocity is established with promptitude."

It is such citations as these that show that the influence of the Association is making itself felt in many directions. Possibly this widespread dissemination is the result of the very free distribution of the Transactions of this Association during the past few years. They have been sent to all medical colleges, to prominent medical educators, to the officials of State Examining Boards, to many medical libraries, and to all persons interested in medical education. The mailing list of the Assocation contains about four hundred names, and all our publications are sent to these addresses. Frequent requests reach your Secretary for copies of the Transactions and of the Bulletin, so that the supply is soon exhausted.

During the year many applications for membership have

been received on which the Judicial Council will report, and many colleges have requested application blanks and other information necessary to making application. This is very encouraging. Two colleges have withdrawn from membership,—the Medical College of Ohio and the Yale Medical School. The following colleges suspended themselves from membership for nonpayment of dues, as provided for in Article II, Section 4:—Michigan College of Medicine and Surgery; Starling Medical College; Toledo Medical College; Keokuk Medical College; Western Pennsylvania Medical College and St. Louis College of Physicians and Surgeons. The Boston College of Physicians and Surgeons was suspended from membership by the Judicial Council on the basis of charges preferred by the Secretary,—and on this the Council will report later.

The Treasurer reported a cash balance of $199.58 on hand, April 1, 1907.

(Signed) FRED. C. ZAPFFE.

The report was accepted.

Report of Committee on Medical Education.

The report of the Committee on Medical Education being called for, the committee (Zapffe) presented its report, and on motion the report was ordered spread on the minutes.

Mr. President and Delegates:—The subject of medical education has occupied more than its usual share of attention during the past year. Associations of every kind have discussed medical education more or less; in fact, it has become a burning question. But in spite of all this, a definite conclusion as to what should be done has not been arrived at. Thus far, this Association is the only one that has adopted a definite standard, and so far as it is possible for us to judge, it has the only standard that has given any satisfaction. This must be ascribed to the fact that our standards, although definite, are exceedingly flexible, meeting all conditions and all the requirements. Of course, it must be admitted that compulsory requirements can be laid down only by State Examining Boards, inasmuch as these bodies are appointed by process of law to pass on the product of the medical college. It must be evident, however, that the product of every medical college is the standard by which the college is judged, and therefore it behooves the college to have such requirements as will make it impossible to produce anything but the best.

The State Examining Boards have continued to honor this Association in various ways as in the past. The State Board of Health of Kentucky, at its meeting in July, 1906, adopted the specific entrance requirements of this Association, and it is needless to say that the Board will enforce them. The American Confederation of Reciprocating Medical Examining and Licensing Boards saw fit several years ago to adopt our curriculum, and at its last meeting, held in Columbus, Ohio, April, 1906, as the result of a conference at which the Association was represented by your Secretary, adopted specific

entrance requirements which vary but slightly from those which we are now trying to enforce.

The Association has reached a stage in its existence where earnest co-operation is not only desirable, but necessary. Each college holding membership in the Association ought to appreciate the necessity of doing all it can to enforce the Association requirements, so that it will receive proper recognition at the hands of the officials of examining boards. The influence of the Association has made itself felt, and this state of affairs must continue if the Association is to live. No one can gainsay that there is need for an Association of this kind, but its labors must stand for something and any dictum issued by the Association must have the stamp of approval of all its members.

There are so many standards in existence at the present time that the need for a uniform standard is more evident than ever before. This multiplicity of standards undoubtedly has deterred State officials from expressing a definite opinion as to which one is the best, but it would seem that after two years' trial the standard of this Association has come nearer perfection than any other standard. The Council on Medical Education of the American Medical Association originally adopted a high school entrance requirement, but when it was ascertained that some colleges took advantage of this indefinite requirement, and accepted students who had only a three year high school education, the Council found it necessary to specify "four year high school diploma or its equivalent." The attention of your Secretary was called to this matter on several occasions, and the Council promptly remedied this matter, as stated. It would seem that there are still some colleges that are unwilling to accept more than the minimum requirement, but the continued advances made toward a uniform requirement will soon eliminate such schools or force them to come into line. There can be no doubt that the State Examining Boards will welcome a uniform requirement, not only the entrance requirement, but a course or curriculum requirement, and that they will give their support, so far as they are able to do by law, to any organization that is worthy of it. Therefore, this Association should lead and not follow. No college should permit itself to be forced into line, but should willingly come forward and subscribe to that which is best for all concerned. The day has long since passed when students look for cheap colleges and for colleges whose doors are always wide open and unguarded. They want the best and they are willing to pay for it. Every college that has come forward and arrayed itself with decision in the ranks of the better schools found in the course of a very short time that the step taken was a profitable one in every way.

A little has been said with reference to lengthening the course from four to five years. As is known, several colleges in this country have had an optional fifth year. The faculty of McGill College, of Montreal, Canada, voted to adopt a required five year course, to become effective in the fall of 1907. It would seem that it is better to concentrate our

efforts on the regulation of what we have rather than to adopt something new. Unquestionably more time could be spent with profit on the study of medicine, but, on the other hand, if students come to us better prepared to take up the study of medicine, more good can be done in four years than is possible to do in five years with poorer material.

In line with this thought the National Confederation of State Licensing and Examining Boards, at its meeting in Boston, June, 1906, adopted as the minimum requirement for the beginning of the study of medicine proper a four-year high school education plus one year of chemistry, physics, biology and languages, this requirement to apply to all students beginning the study of medicine after January 1, 1910. No attempt was made to specify, as this Association has done, the work that is to be done during the four years spent in the high school. This would seem to be necessary because under the present ruling the prospective student of medicine may have spent his time in the high school in the pursuit of any subject, either in the arts, science or business department. The entrance requirements of this Association are very specific on this point, requiring four points each (two years) in mathematics, English, language (two points must be in Latin), science (physics, chemistry, botany and zoology), and two points in history, with twelve optional points in fourteen stated subjects, making a total of thirty points or sixty counts, or fifteen units or credits. In order to have uniformity in these matters it is necessary to have specific standards which will serve as a basis on which these requirements may be made to apply to all educational methods in vogue. While the standard under which this Association is working may not be an ideal one, yet it has served its purpose well, and in the course of time such changes may be incorporated as will make the standard entirely satisfactory to every one.

It is stated that quite a number of colleges have signified their willingness to adopt this requirement. This Association made a somewhat similar provision when in 1905 it undertook to specify what a high school diploma shall represent. The high school diploma may represent anything from a business or commercial course to a scientific course, but any deficiency that may exist is remedied by requiring a definite amount of work in chemistry, physics, biology and languages. The question arises whether it is not better for the student to apply himself to the pursuit of the proper studies in the high school and then be prepared to enter the medical college, or whether he should be allowed to follow the dictates of his own sweet will during the time spent in the high school, and then crowd four years of work into one afterward. So far as experienced educators are concerned, the answer to this question is obvious.

The matter of giving credit for a baccalaureate degree is still under discussion. Your Secretary has been informed that this Association is being looked to by others interested in this question to take action in the matter. An amendment is now before this Association proposing to refuse time credit to the holder of a baccalaureate degree. The New York

Board of Regents is contemplating to regulate the medical work done in literary colleges so that it will be the equivalent of the first year of the medical course. The American Confederation of Reciprocating Medical Examining and Licensing Boards adopted a resolution which empowers a State Board, if it so desires, to give credits not exceeding one year to graduates from a recognized college or university, provided the applicant has taken within ten per cent. of the work embraced in the minimum standard of requirements of the Confederation in bacteriology, histology, embryology, osteology, anatomy, physiology, chemistry and toxicology; but it is made obligatory on the part of the literary college which undertakes this work to announce in its catalogue that it offers the first year of the medical course. This virtually means that the literary college has a medical department in which only the first year of the medical course is offered. A further safeguard is thrown around the enforcement of this requirement, in that the State Examining Board must pass on this course.

This would appear to be a very satisfactory disposition of the entire matter, because it gives credit to him to whom credit is due. The holder of a baccalaureate degree cannot receive credit for his degree only. It must represent a definite amount of work in certain prescribed subjects. It has been said that this would be an inducement for every college, no matter what its standing, to introduce a medical department. That is true, but so long as the State Examining Board must pass on the course, and say whether or not it is meeting the requirements, the effectiveness of the resolution cannot be questioned.

At a meeting of the North Central Conference of Secondary Schools and Colleges, this question was discussed quite fully. Your Secretary had the honor to address the meeting, and was appointed one of a committee of three to take up the matter and report later. All phases of this question were gone into, the side of the literary college being ably presented by President J. H. T. Main, of Iowa College.

In a recent case of appeal in California the Supreme Court held that the Legislature has the right to delegate its appointing power and that it was constitutional for the Legislature to instruct the State Medical organizations to appoint or elect the persons who would serve on the Board of Medical Examiners and carry out the police provisions of the law. In the same decision the court also held that the Legislature could not intelligently fix the standards of requirement, as these were subject to natural change from time to time; the Association of American Medical Colleges, on the other hand, would be ever in touch with advances in medical science and could the more satisfactorily fix these standards of requirement. These two points are the fundamental points of the medical practice act—and they have already been declared constitutional by the Supreme Court. This is an extremely important decision, one which will be of incalculable value to all State Examining Boards that have adopted the Association requirements.

(Signed) FRED. C. ZAPFFE.

Report of Judicial Council.

The Judicial Council, through its Chairman, Dr. Means, reported as follows:

Mr. President and Delegates:—The work of the Judicial Council during the last year has been mainly confined to correspondence of the Chairman with colleges members of the Association and State Licensing and Examining Boards in which the legal requirements for medical education are based on those of the Association, and dealing largely with questions on the construction of the regulations and by-laws. There are some matters, however, of considerable interest that were taken up by the members of the Council as a body, both by correspondence and in executive session that should come before the delegates for final disposition.

Through various channels information came to the Secretary and the Chairman of the Council that the College of Physicians and Surgeons of Boston was not doing good work, and was bringing the Association into disrepute. In June, 1906, Secretary Zapffe, in company with Dr. Spurgeon of the Indiana Examining and Licensing Board, and Mr. Wheelock of the Board of Regents of New York, made a personal inspection of the college properties and found them lacking both in buildings and equipment. The Secretary made the following report:

"On June 4th the undersigned visited the College of Physicians and Surgeons, Boston, and as a result of this visitation recommends a suspension of the college from membership in the Association.

"In the first place, the matriculation record filled out by the college shows that it is admitting students who do not possess the requisite entrance credentials. Hence they are violating one of the fundamental laws of the Association.

"Second, it is evident that the college does not possess the necessary facilities for imparting adequate instruction to its students. The laboratory equipment is wholly insufficient, and the clinical facilities are conspicuous by their absence. There are no facilities for clinical work of any kind, except a very meager dispensary; no provision for amphitheater clinics or hospital facilities of any kind. The college does not have a lecture card so that it is impossible to determine exactly what work is being done in the institution, but from inquiry it is apparent they do not live up to the requirements of Article V of the constitution.

"Therefore, I recommend the suspension of this college from membership."

On receipt of this communication, the Chairman forwarded a copy to the Dean of the college with a notification that the college would stand suspended until such time as evidence could be produced that the charges were unfounded or that the college could comply fully with the standard required by the Association. The members of the Council were apprised of the suspension and sustained the Chairman. Considerable correspondence passed between the Chairman and officers during the following months. We investigated the college through different channels, and also had a personal interview with two representatives. The evidence presented by the college was

carefully considered by the Council in session, and the following resolution was unanimously adopted:

"That the suspension of the College of Physicians and Surgeons of Boston be confirmed and continued until such time as the college can fully demonstrate to a duly authorized representative of this Association that its equipments, facilities for clinical teaching and standard of entrance are up to the requirements of the Association."

We wish to say that there seems to be an honest effort on the part of the officials to comply in every particular with the requirements of the Association, and to bring their school up to a high standard.

Complaint was made by the Dean of the Baltimore University School of Medicine that the college had not been dealt with fairly in that the Council made no report at the annual meeting held in Pittsburg March, 1906, as it should have done, according to a resolution passed at the Chicago meeting, 1905, and asked for a reconsideration of the suspension placed upon the college at Atlantic City, 1904, and laid over from the Chicago meeting in 1905. The Chairman gave the officers the privilege of submitting a written brief setting forth the reasons for their contention. Copies of this were submitted to members of the Council by mail. It was agreed unanimously that the suspension was warranted by the testimony, and that the same should stand until the college could establish a reputation for doing honest and reputable work, and also that she had facilities and equipments necessary to maintain a school of high standard. On receipt of the reports from the several members of the Council the Chairman submitted the following copy of the notification sent to the Dean of the college:

"George A. Finch, Attorney, Baltimore University School of Medicine.

My Dear Sir:—The members of the Council are unanimous in sustaining the action of the Association in suspending the Baltimore University School of Medicine on the evidence as presented by the Baltimore Medical College.

Second: The question of reinstatement will depend entirely upon evidence that the University College is now properly equipped to give a medical course in accordance with the requirements of the Association, and that the college is now doing so.

Third: In the absence of any evidence that said college is equipped as above mentioned, and that she is giving regular college work according to the rules of the Association, there is no ruling empowering the Judicial Council to reinstate this college.

Fourth: The Judicial Council will, however, recommend to the Association that the Baltimore University School of Medicine be given every assurance that she will have equal consideration with other colleges just as soon as her equipment and course of instruction accord with the requirements of the Association.

Very truly,

(Signed.) W. J. MEANS, M. D.
Chairman Judicial Council."

Charges were preferred against the St. Louis College of

Physicians and Surgeons claiming that the college was admitting students without sufficient entrance qualifications. Some correspondence passed between the Chairman of the Council and the Dean of the college. The evidence, so far as it was presented to us, was against the college. For some reason the college withdrew its membership from the Association.

Applications of Colleges for Membership.

The State College of Physicians and Surgeons of Indianapolis, Indiana, is recommended for membership. It is the medical department of the University of Indiana. The college was examined by Dr. Zapffe, and his report was very favorable.

The medical department of Vanderbilt University of Nashville, Tenn., is recommended for membership. This college was also examined by Dr. Zapffe who reports that the college is conducted on a high standard.

Cooper Medical College, of San Francisco, Cal., is recommended for membership. The standard of this college has been known for years and we have no hesitancy in recommending it. The college was examined by Dr. D'Ancona.

The medical department of the University of North Dakota is recommended for membership, including the first and second years of a medical course only. The university was visited and inspected by Professor Ward.

Applications were made by Bucknell University, Lewisburg, Pa., and the Ohio University, Athens, Ohio, for membership covering only one year of a medical course. These colleges were inspected and found to be giving work in the baccalaureate courses that is in every way equal to that given in medical colleges in the first year. Human anatomy, including dissections, is being taught in a very satisfactory manner. The laboratories are well equipped for teaching physiologic chemistry, histology, embryology and chemistry, and the teaching is conducted by men well qualified to do the work. The Judicial Council hesitates, however, to recommend these universities as medical colleges, although the members are unanimous in their belief that medical education would not suffer in any way by such recognition. This raises the question of the valuation of a baccalaureate degree in a medical course, a subject we do not care to discuss in this report. We recommend, therefore, that the applications of these universities asking membership covering one year of a medical course be laid over for one year. In the meantime, this matter should receive careful and serious consideration.

The Council recommends that the application of the College of Physicians and Surgeons, of Los Angeles, Cal., presented one year ago and held over until this meeting, be again laid over until the next annual meeting. The officers and faculty seem to be striving to bring the college up to a high standard, but, owing to limited facilities, are not yet able to meet the requirements of the Association.

The application of Ensworth-Central Medical College, of St. Joseph, Mo., made one year ago and deferred for further examination, is now rejected. The school was carefully examined by a member of our Council, and also by the

Educational Council of the American Medical Association. The college has facilities for building up a high grade, modern school of medicine, but there does not seem to be sufficient attention paid to the teaching of the subjects of the first and second years.

The application of the American College of Medicine and Surgery of Chicago, Ill., laid over one year ago, has been withdrawn.

The application of the Medical Department of the University of Tennessee, Nashville, for membership was rejected by the Council.

The Council asks that the following resolution be added to the by-laws:

SEC. 12, 8. That the Judicial Council may at its discretion ask any member of the Association to furnish documentary evidence of the standing accorded to students as entered on the matriculation record of the college as provided for in Art. IV, Sec. 1 of the constitution.

The Council wishes to express its appreciation to the delegates for their kindly consideration in various ways.

(Signed.) W. J. MEANS,
H. B. WARD,
R. WINSLOW,
ELI. H. LONG,
B. D. MYERS,

Addenda by Dr. Means.

This is the seventh annual report of the Judicial Council in which I have joined as a member, and the sixth as Chairman. The advance in medical education in these years has been phenomenal. The record speaks for itself. From three annual courses of six months each, the time requirement has been advanced to four annual courses of not less than 30 teaching weeks each, and, I might add, a large majority of the colleges have voluntarily adopted an eight months' course of 32 to 33 teaching weeks each. The entrance requirements have been advanced to graduation from a first class high school with a definite valuation. This led to considerable criticism and to the withdrawal of several colleges that did not care to meet this standard. Only a few years ago time credit was given for baccalaureate degrees without valuation. The degree of pharmacy, the degree of veterinary surgery and dental surgery were recognized as equivalent to the first year of a medical course, and even some colleges were giving time credit to graduates of osteopathy. These credits are things of the past and are only of interest in making history and marking the progress of medical education.

I have had the opportunity and pleasure of meeting with other bodies interested in higher standards for medical education, and I have no hesitancy in saying that they are exercising a good influence and have materially aided in the good work, but none as yet have wielded the influence wielded by the colleges of this Association.

It is said that the most potent factor in popularizing laws

and thereby helping their execution is that of a loyal and determined citizenship. So it is in the Association. There has been an honest effort manifested among the colleges toward higher standards, and efforts have been made to adjust their conditions just as fast as circumstances would permit, and to adhere strictly to those advertised and adopted. This has created a sentiment that has affected legislation in the various states that will in the course of a few years place the medical colleges of the United States on a parity with any in the world. There is no question in my mind that a practical correlation of the different forces at work will bring about reform earlier than by individual efforts. The State Examining and Licensing Boards are the legal entities, but it is only by a full understanding of the needs and methods in medical education, as worked out by the different bodies, that unanimity in the laws can be brought about. The education of the members of these State Boards must come, necessarily, very largely through the educational institutions. The Council on Education of the American Medical Association has also its field of work. The College Association is limited necessarily to the better classes of colleges, perhaps not over one-third of the colleges in the United States. The Educational Council of the A. M. A. spreads over the United States, and thus is supposed to take cognizance of medical education in all its ramifications, and thus reaches colleges with which the Association has nothing in common. The Council has also back of it an organization of the profession, thus giving it a force that if wielded judiciously and intelligently cannot help being a potent factor in the elevation of the standard of medicine in this country. This Council, however, will make a very grave mistake if it does not recognize the personal equation of the colleges forced and placing themselves in direct working relation with the Association.

The report was accepted, and the recommendations made were adopted.

Committee on Syllabus.

On motion of Dr. F. C. Waite, the Chair was authorized to appoint a committee of 5 to co-operate with Dr. Egbert Le Fevre in the preparation of a syllabus of the subjects taught in the first year of the medical course, the committee to report at the next meeting of the Association. The Chair appointed on this committee Drs. F. C. Waite, Western Reserve University; Wm. H. Howell, Johns Hopkins University; C. N. Jackson, University of Missouri; R. D. Coale, University of Maryland, and F. G. Novy, University of Michigan; Dr. Le Fevre to be considered a member, ex-officio, of this committee. The Chairman of the committee was empowered to fill any vacancies in the committee that might occur.

Report of Nominating Committee.

The Nominating Committee reported as follows: President, H. B. Ward, University of Nebraska; vice-presidents, W. F. R. Phillips, George Washington University, and George E. Hoxie,

University of Kansas; secretary-treasurer, Fred C. Zapffe, Unversity of Illinois. Judicial Council: W. J. Means, Chairman, Ohio Medical University (term expires 1910); A. A. D'Ancona, University of California (term expires 1910), and A. W. MacAlester, University of Missouri (term expires 1909).

(Signed.) R. WINSLOW,
F. C. WAITE,
F. B. EARLE.

On motion, the report was accepted, and the Secretary was instructed to cast the ballot of the Association for the election to office of those named in the report, as provided for.

On motion, a vote of thanks was tendered the officers of the Association for their untiring efforts in behalf of the Association, and to Dr. Kober for making the necessary arrangements for the meeting, and for the courtesies extended to the Association.

A vote of thanks was also extended to Dr. Egbert Le Fevre for the very excellent paper read by him, and for the many valuable suggestions contained therein.

On motion, Cleveland, Ohio, was selected as the next place of meeting. This meeting, in accordance with the Constitution, will be held March 16, 1908.

The Association then adjourned.

(Signed.) GEORGE M. KOBER,
President.

FRED C. ZAPFFE.
Secretary.

On Tuesday, May 7th, the delegates to the meeting attended a luncheon given by Dr. Kober, and at 2:30 P. M. of the same day the delegates, visitors and their friends had the great pleasure of meeting the President of the United States, the Hon. Theodore Roosevelt, at the White House.

THE PAST AND PRESENT STATUS OF MEDICAL EDUCATION IN THIS COUNTRY.

By Geo. M. Kober, M. D., Washington, D. C.

Gentlemen of the Association:—It affords me great pleasure to extend to you a hearty welcome to the National Capital, and I extend to you my sincere thanks for the honor conferred by electing me President of this body. It is an honor which I do not deserve and yet greatly appreciate.

History and Progress of the Association.

Our Association was organized in May, 1890, "for the consideration of medical education and for its improvement," and looking back on its work and that of its immediate predecessor, the American Medical College Association, which was organized in 1876, and continued in existence until 1889, we find much to commend and little to condemn. Indeed it may fairly be claimed that much of the real progress in medical education in this country has been achieved by the well directed efforts of these bodies.

When we compare medical education in the United States with that of foreign countries, it seems almost incredible that thirty years ago it was possible for a young man without special preliminary education to receive the degree of Doctor of Medicine after attending two short sessions of about six months each, together with such clinical experience as was possible for him to secure under the guidance of his preceptor and the limited hospital facilities. Indeed, up to about 1875, the majority of medical schools had no entrance requirements beyond the applicant's ability to read, write and cipher, and to pay his dues. The medical courses were not even graded, and the second year was merely a repetition of the first year's work, and, strangely enough, covered the entire field of anatomy, physiology, chemistry, toxicology, medical jurisprudence, practice of medicine, surgery, obstetrics and diseases of women and children. There was no laboratory work, although considerable attention was given to practical anatomy.

Lengthening of Courses.

With the introduction of the three years' course in

1907

medicine (1876-1878) the courses were graded and attention was given to laboratory work in chemistry, histology and pathology, while the laboratory courses in bacteriology, physiology and pharmacology were added only after the introduction of a four-year course (1890-1892). Indeed, it is doubtful whether even the best and oldest medical schools in this country had laboratory facilities for bacteriology and pharmacology prior to 1890.

With the lengthening of courses and actual increase of the college work, there also came improved methods and increased facilities for clinical teaching.

In spite of a very general and marked improvement in the qualifications of graduates, the painful fact confronted us, that of 4,510 applicants examined in 1902, 792, or about 16 per cent, failed before the state medical examining boards, and the conviction gained ground that medical schools had failed to turn out a uniformly satisfactory product, largely on account of faulty methods and low entrance and graduation requirements.

Present Standard.

The first thing to be done was the adoption of higher standards and their strict enforcement. An ideal plan and course of medical teaching has not yet been devised, and while it is quite true, as observed by Dr. Dodson, "that we cannot drive a number of men through the same channels and get a uniform result," there are some things which every graduate in medicine should know. Every educator realizes that the average student needs a certain number of lectures, recitations, laboratory and clinical work, and sufficient time for preparation or home study, to acquire reasonable proficiency in the various branches. To give him more in some subjects at the expense of others leads to unilateral development of the undergraduate, and is not fair to the student or the state.

The standards of state boards are the same for the graduates from all schools. There is no objection to giving advanced students more work in the way of elective branches, but they ought not to have less in order to satisfy the requirements of the examining boards. It seems reasonable to assume, that with a fixed minimum standard of preliminary education and a definite

course of medical studies, we may hope for a better product, and if this product should reach the requirements of our best state examining boards, the way to reciprocity between the different states will be open.

Acting on these premises, this Association and others interested in higher medical education have labored for years to bring about the establishment of uniform minimum entrance and graduation requirements. These standards were adopted by the Association and also by the American Confederation of Reciprocating, Examining and Licensing Medical Boards in April, 1905. The minimum requirements for the degree of M. D. conferred by any member of this association are as follows:

1. The course shall consist of four terms in four separate calendar years.

2. Each term shall consist of at least thirty weeks of work, exclusive of holidays, and not less than thirty hours of college work in each week.

3. The entire course of four years shall consist of at least 4,000 hours, divided into the subjects as shown in Table No. 1, and no college shall be recognized that falls below this standard over 20 per cent in any one branch or over 10 per cent in the total.

SCHEDULE OF MEDICAL COURSE—TABLE NO. 1.

SUBJECTS.	H'rs of Lect'es.	H'rs of Lab't'y.	H'rs of Clinics.	Total.
Histology	30	60	...	90
Embryology	30	60	...	90
Osteology	30	...	...	30
Anatomy	190	230	...	420
Physiology	180	120	...	300
Chemistry and Toxicology	100	200	...	300
Materia Medica	40	20	...	60
Pharmacology	40	20	...	60
Therapeutics	90	...	...	90
Bacteriology	40	100	...	140
Pathology	100	140	...	240
Medical Zoology, Post-Mortem work and Clinical Microscopy.	30	60	...	90
Physical Diagnosis	20	...	80	100
Practice of Medicine	180	...	360	540
Surgery	180	...	360	540
Obstetrics	100	...	60	160
Gynecology	50	...	110	160
Pediatrics	40	...	60	100
Eye and Ear	30	...	30	60
Nose and Throat	30	...	30	60
Mental and Nervous Diseases	60	...	60	120
Electro-Therapeutics	20	...	40	60
Genito-Urinary Diseases	30	...	30	60
Dermatology and Syphilis	20	...	20	40
Hygiene and Public Health	30	...	...	30
Dietetics	30	...	...	30
Medical Jurisprudence	30	...	...	30
	1,750	1,010	1,240	4,000

This table shows that 1,750 hours are devoted to lectures and recitations, 1,010 hours to laboratory work, and 1,240 hours to clinical instruction. The number of hours devoted to each subject can be decreased 20 per cent, provided the sum total of hours is not diminished more than 10 per cent, and clinic and laboratory hours can be substituted for didactic hours, all of which indicates that there is no disposition to adhere to a rigid, uniform curriculum. So, for example, schools which would agree with Dr. F. C. Waite that there should be more elasticity, will have no difficulty in adjusting the number of hours devoted to toxicology, materia medica and pharmacology to suit the conception of the teacher as to where materia medica stops and pharmacology begins, by merely adding or deducting a certain percentage of hours.

Dr. Dodson objects to a four thousand hour standard, because, as he wisely states, the average student must have certain hours a day outside of the class room to prepare for lectures, recitations, laboratory and clinical work and which cannot be crowded into a seven months' course. Recommendations have been made by Drs. Councilman and Frazier, which have in view about 1,250 hours of college work a year instead of 1,000 hours. Such a curriculum, from Dr. Dodson's viewpoint, would, of course, be still more impracticable. As a matter of fact, no student should be expected to devote over 10 hours a day to work both in and outside of the class room. This was clearly pointed out by a Committee on Syllabus of our Association in 1896, under the Chairmanship of Professor Osler.

With our minimum requirement of 900 hours a year, divided into thirty weeks, or 180 working days, the student is required to spend five hours in college or hospital each day, which will enable him to make the necessary preparation at home. No one can claim that this is excessive, and colleges which devote 1,000 hours a year to each class have simply to increase their session from 180 to 200 working days. There is sufficient flexibility in our curriculum to meet all the adverse criticisms so far advanced. This body, however, will gladly welcome any suggestions looking to the improvement of the curriculum. While we recognize that quantitative standards are considered by many educational evils, yet the desirability of adopting some stand-

ard which applies to the average rather than the individual student is generally conceded, and we venture to predict that any tabulation hereafter made will not reveal such a deplorable lack of uniformity as found by Dr. George W. Webster in his analysis of the 124 medical schools in 1904.

His very exhaustive report (N. Y. Med., Phila. Med. Jour., July 23rd and 30th, 1904) shows that the total hours varied from 10,244 in one school to 958 in another school. The time devoted to clinical instruction varied from 2,000 to a little over 200 hours; anatomy from 1,284 as a maximum to 126 as a minimum. One school devoted 756 hours to chemistry, while another had less than 80 hours. General medicine had 1,900 hours in one, and less than 100 hours in another school. In some schools such important subjects as physical diagnosis, pharmacology, etiology and hygiene were not taught at all, while one school devoted 780 hours to orthopedic surgery. Indeed, a careful review of Dr. Webster's work reveals a lamentable lack of uniformity in regard to the relative importance of each of the 23 studies tabulated by him.

Higher Entrance Requirements.

In regard to the preliminary requirements for admission to the medical course it must be conceded that our present standard is a decided advance in the right direction, and as pointed out by Prof. Victor C. Vaughan, of the University of Michigan, is far ahead of the requirements of the Council on Medical Education of the American Medical Association. It may be said that this body could afford to wait several years before attempting to raise the preliminary requirements, but the facts are that already two medical schools in this country require a degree from a College of Liberal Arts; one school requires three years of work in a literary college; four two years' work, and (Journal Am. Med. Assn., May 4th, 1907) over 40 schools require now or will after January 1, 1910, in addition to a four-year high school course, one year of college work devoted especially to physics, chemistry, biology and language. The National Confederation of State Licensing and Examining Boards, in June, 1906, adopted this as the minimum standard to apply to all students beginning the study of medicine after January 1, 1910. One

State Board (Minnesota) already requires evidence of the completion of the sophomore year in an approved college. Such a compulsory step is to be regretted, for it means that one state, when it goes beyond established standards, practically legislates for all other states, as no school can afford to have its graduates rejected by any state board, however high its standards may be. On the other hand, it must be conceded that if the University of Minnesota adopts a two years' college course as a minimum requirement for admission to its medical department the state cannot open its doors for licensure to outside men of lower attainments. All of which suggests the necessity of a closer co-operation between education and legislative bodies.

A Careful Adjustment Advisable.

The only practicable way to solve the difficulty would appear to be the appointment of a Joint Committee from this body, the Council on Medical Education, and the American Confederation of Reciprocating, Examining and Licensing Medical Boards, for the formulation of uniform entrance and graduation requirements, which, after ratification, should be the official standards and enforced as such.

At present there are too many organizations tinkering with these standards, and as a result there is lack of concerted action and force. In this movement for higher medical education, state and college pride and personal difference of opinion should give way to the best interests of the community. When we recall the fact that the schools which now have the highest entrance requirements have also the fewest failures before state boards, it would seem that the best interests of all concerned will be subserved by raising the entrance requirements to one year of college work in 1910, and to the completion of the sophomore year in 1915.

Whatever standards are recommended, there should be uniformity as to minimum requirements, and it should be the duty of the American medical profession, through the state boards and associations, to secure legislation that shall bring the requirements of the state up to, but not beyond, the standard recommended by such a Joint Committee. At present there is altogether too much disposition on the part of some states

to adopt advanced standards and no sooner have we adopted ourselves to the requirements of one state, when we are confronted with the demands of another state, and failure to do so means the refusal of recognition of the school and the holder of our diploma is not even permitted to appear for examination.

Advanced Standing to Graduates of Colleges of Liberal Arts.

The opponents to giving advanced standing to graduates of Colleges of Liberal Arts have always conceded that such men are infinitely better fitted for the study of medicine than high school graduates, but they maintained that few, if any, of the Colleges of Liberal Arts are in a position to give anything like the equivalent of the first year medical course, and as a result these men, in spite of their cultural training, found themselves handicapped in their effort to condense four medical terms into three. Another class of opponents held that even such subjects in pure science as physics chemistry, bacteriology, comparative anatomy and physiology should be taught in the medical school, and that the colleges should yield something and select for their third year students such medical schools as are sufficiently equipped to warrant the acceptance of that work as fulfilling the requirements towards the Bachelor degree. And last, but not least, the fact was emphasized that a number of states positively refused to recognize schools which would give credit for work done outside of a medical school.

The Association of American Medical Colleges, in 1904, pointed the way to a solution of the problem by resolving to give advanced standing to holders of a Baccalaureate degree, provided they had received the full equivalent of the first year's medical course.

As a direct outcome of the general discussion and the action of this Association at Atlantic City, the Regents of the University of the state of New York, at the convocation in 1904, appointed a committee composed of leading representatives of medical and literary colleges, which committee recently outlined a course which it believes will be a positive advantage to medical education, and yet will permit a man so trained to come up for his M. D. degree in three years.

SUMMARY OF HOURS.

	Didactic. Hours.	Laboratory. Hours.
Anatomy	150	50
Biology	75	40
Histology, Botany, Zoology and Bacteriology.	75	40
Chemistry	150	50
Physics	100	40
Physiology	100	40
	650	260

Dr. B. D. Myers, of the Indiana University School of Medicine, has also presented a carefully thought out pre-medical course of studies.

The American Confederation of Reciprocating, Examining and Licensing Medical Boards, after a conference with a committee appointed by this Association, amended its requirements April 25, 1906, and I understand that our committee proposes to conform to this change, by striking out all of Section 6, Article III, of our Constitution, and substituting the following:

"Graduates holding the degrees of A. B., B. S. or equivalent qualifications from a recognized college or university, may be given credits not exceeding one year, provided the applicant for such credits shall produce evidence which shall satisfy the State Board of Medical Examiners in the state in which credit is asked that the holder of such degree has taken within 10 per cent of the work embraced in the minimum standard of requirements of the American Confederation of Reciprocating, Examining and Licensing Boards in the following subjects: Bacteriology, histology, embryology, osteology, anatomy, physiology, chemistry and toxicology, and provided that any literary college which shall undertake this work shall in its catalogue announce that it will give this first year of a medical course."

In view of the fact that this Association has practically told the Colleges of Liberal Arts that it could not give time credits, except for medical subjects, it would seem but just and reasonable that if a man comes to us with credentials which, in addition to cultural training, also represent a certain amount of medical training, and satisfies the state examining boards as to his proficiency in the subjects usually taught in

the first year of the medical course, time credits not exceeding one year should be given.

The Association, in order to be fair to this class of matriculates, should either give time credits for work actually done, or lengthen the medical course for high school graduates one year, or adopt the four-year college requirement for admission.

On the whole, it may be said that the argument is in favor of advancing the entrance requirements for admission. The schools abroad have uniform entrance requirements, and as a result the product of the smaller schools is fully up to the standard of the large schools, and the most celebrated teachers in Berlin and Vienna have been recruited from the smaller medical universities.

The time will come when all schools in this country will be great, if not in numbers, certainly in the quality of the product. We have nothing to do with the economic aspect of the question which concerns alone the future student. It is our duty to see that the product of every medical school is on a par with the very best. There is no reason why we should not all survive in the face of an ever growing and powerful nation, provided the schools that do not live up to the standards are weeded out, and this, with a united profession determined to do its full duty, can be accomplished.

Admission to Membership of Sectarian Schools.

The state examining boards, which pass on the qualifications of all candidates regardless of the sectarian character of the schools, according to our Secretary, "are very anxious to have this Association represent the American Medical Colleges, as its name implies, so that uniform standards for admission and courses of study would obtain throughout the country." There can be no valid reason for refusing membership to sectarian schools of equal requirements; indeed, Section 1, Article II, provides for the admission of any medical college conforming to the requirements of the Association. It would do much to harmonize and unify medical education, and contribute to the solution of the vexed question as to what constitutes the practice of medicine, when, after all, our main object should be to see that every man who exercises medical knowledge

in the care and treatment of the sick and injured possesses the necessary qualifications.

With uniform legalized standards for all practitioners and a rigid enforcement of the laws, humanity will be the gainer.

Standards of the Association Now in Force in Many States.

The Secretary reports the gratifying fact that the standards of the Association of American Medical Colleges have been recognized by the legislators of eight states and one territory, viz.: California, Kentucky, Maryland, Michigan, Nevada, North Dakota, Virginia, Alaska, Utah and New Mexico, and it is to be hoped that influences will be brought to bear, so that any standard which may hereafter be formulated by the Joint Committee already referred to, and adopted by this Association, may also become the standard in the remainder of the states. This can be accomplished, as in the states mentioned, by amending the medical practice acts so that the preliminary and graduation requirements shall be those which from time to time may be adopted by the Association of American Medical Colleges.

In conclusion, we venture to express the hope that the time is not far distant when the greater portion of our meetings can be devoted to purely pedagogic questions, and in order to make a beginning in this direction, a few subjects have been selected for discussion for this meeting.

We may, however, find some consolation in the fact that the time heretofore devoted to standards has not been wasted, as shown by the fact that the mortality in the registration area in the states has been reduced since 1890, the year of our organization, from 19.6 to 16.2 per 1,000 in 1905. I will leave to more competent minds to compute the sum total of human happiness contained in these figures, but taking the United States Census figures of a population of 33,757,811 in the registration area as a basis, the number of deaths in 1905 was 544,533; whereas, at a rate prevalent in 1890, they would have been 662,654; a reduction of 17.8 per cent and saving in one year of 118,121 lives; if the same ratio is applied to the entire estimated population in the United States of 82,574,195 the saving

of human lives during 1905 alone would be over 290,000. All of which indicates that the status of medical education in this country, in spite of its short-comings, has given us reason to be proud of our achievements.

I desire to reiterate my recommendations for the appointment of a Joint Committee composed of members of this Association, the Council on Medical Education, and the American Confederation of Reciprocating, Examining and Licensing Boards for the purpose of formulating minimum requirements for entrance and graduation and such rules for time credits as may seem practicable.

The elevation of standards should be gradual, and, when ratified, every effort should be made to have them adopted as the official standards in the different states.

It should be the duty of the Council on Medical Education to exercise a supervisory control over all medical schools by a system of reports and inspections, and to publish the results of such inspections.

It should be the duty of this Association, the Council on Medical Education and of the American Confederation of Reciprocating, Examining and Licensing Medical Boards to weed out undesirable medical schools by refusing to recognize all schools which do not live up to the minimum official requirements after the expiration of a fixed time.

GIVING CREDIT FOR WORK DONE IN LITERARY COLLEGES—THE COMBINED COURSE.

By Dr. Egbert Le Fevre, Dean University and Bellevue Hospital Medical College, New York City.

When, early in the year, your Secretary, Dr. Zapffe, extended to me a very cordial invitation to present the subject of "Giving credit for work done in the literary colleges," in a moment of rashness I consented. If I had realized how thoroughly this same subject has been gone over in the past before your Association, I would not have had the temerity to again introduce it.

As the state of New York has taken rather definite

action toward giving time credit in the medical course for work done in the literary colleges, I will give the present status of the question in our state. As the final report has not been made, the presentation must be considered rather a personal one.

The medical practice act of the state of New York made four years' residence in the medical college compulsory. In 1904 an amendment to the law was passed permitting the Board of Regents to formulate a course of study which should lead to a combined baccalaureate and medical degree.

The feasibility of giving time credit in the medical schools for science courses taken in the literary colleges had been frequently discussed in convocations, with widely divergent views. At a meeting held at the Department of Education, at which representatives of the different medical schools and state medical societies were present, a resolution was passed requesting the Department of Education to appoint a committee to consider the subject and to outline a course for which time credit of not more than one year could be given by the Department.

This committee was appointed on January 10, 1906, and consisted of Dr. Egbert Le Fevre, Dean of the University and Bellevue Hospital Medical College. Chairman; Dr. J. H. Raymond, Secretary of the Long Island College Hospital; Dr. W. H. King, Dean of the New York Homeopathic Medical College; President Rush Rhees, of the University of Rochester; President George E. Merrill, of Colgate University; Dr. Albert Vander Veer, member of the Board of Regents, state of New York, and Dr. Howard J. Rogers, First Assistant Commissioner of the Department of Education.

The committee has studied the subject from both the standpoint of the medical college and the literary college. From the medical college standpoint the committee felt that such a course should meet not only the conditions as they existed in New York, but should be in harmony with those of other states, should not raise extra obstacles to reciprocal relations between the state examining boards, nor debar graduates from New York medical schools from being admitted to the licensing examinations of other states. That the course arranged for giving time credit should be such as to meet the requirements of the very best medical colleges

in New York and other states and not compel the college graduate who has taken such a course to take up his professional education in schools of lower grade.

The first question considered was—What shall be the standard of the first year medical course as regards

1. Total hours of instruction.
2. Subjects to be included in the first year curriculum.
3. Content of course in these subjects.
4. Number of hours of instruction to be assigned to each subject and subdivision of the subject.
5. Are any of the subjects ordinarily contained in the second year of the medical curriculum such as may be taught efficiently in the literary college so that the student entering the second year of the medical course might be given subject credit for these second year subjects, although deficient to a certain degree in some of the first year subjects?
6. Does the method of teaching the science subjects in the medical school differ from that in the literary colleges?

In the medical colleges of the state of New York the average total number of hours of instruction in the first year is 930. Dr. Geo. W. Webster, in his report on the curricula of American Medical Colleges, read before the National Confederation of State Medical Examining Boards, in Atlantic City, June, 1904. gave the average total number of hours in 43 representative colleges in different states as 973.

Your committee on Uniformity of Curricula at the meeting held in Chicago, April 10, 1905, gave in the proposed standard 4,000 hours' medical course that 900 hours should be given in the first year. The subjects of the first year and the average hours of instruction in the New York medical schools were as follows:

First Year.	N. Y. Medical Colleges.	Proposed Standard.
Anatomy—		
Lectures, Recitations	136	130
Dissection (Human), Demonstrations	252	230
	388	360
Physiology—		
Lectures, Recitations, Demonstrations	88	90
Laboratory	85	60
	173	150

First Year.	N. Y. Medical Colleges.	Proposed Standard.
Chemistry—		
Lectures, Recitations, Demonstrations..	*123	† 50
Laboratory	98	100
	221	150
Histology and Embryology—		
Lectures and Recitations.....	60	60
Laboratory	154	120
	214	180
Materia Medica—Given in first year by only a few colleges—		
Lectures .....40—	60	40
Laboratory .....20—	40	20
	60—100	60

*Including physics.
†Chem. only.

Of the subjects of the second year the following are included as they might be taught in the undergraduate college in order to permit the student who is admitted to the second year of the medical school to remove technical conditions in subjects of the first year:

	N. Y. Medical Colleges.	Proposed Standard.
Chemistry—(Physiologic and Toxicology)—		
Lectures and Recitations.....	75	50
Laboratory	75	100
	150	150
Bacteriology—		
Lectures and Recitations.....	30	40
Laboratory	50	100
	80	140

A review of the curricula of the colleges of New York and other states to determine what should be the content of the courses of the first year showed that in a majority of instances the catalogues gave but very meagre information on this point, and it was impossible to determine what was the amount of time assigned to the subdivisions of any given subject. It also showed that there were great variations in the character of the course and the method of instruction in the different colleges according as the teachers of the subjects were (1) physicians without special training and in general practice; (2) physicians with special training in the subject and who were not in actual practice; (3) and

those not physicians, but with special training in the subject.

From the literary college standpoint the examination of the courses in science subjects followed the lines laid down by your committee in their report on "Evaluation of College Work" (1906), and included (1) their content, (2) time devoted to them, (3) the instructors, (4) the equipment. Examined in this way the colleges fell into three classes:

1 Literary colleges of universities with medical schools in more or less close affiliation. In these institutions the first year of the medical course may be elected in the senior year and count toward both the literary and medical degree, or by the point system of electives, where the necessary number of points to obtain the degree are obtained in part from the liberal arts (required) and medical course (elective). Under these plans students are able to complete both courses in seven years. New York state does not sanction the obtaining of two degrees in six years as allowed in some states. In literary colleges of this class there is no attempt made to teach the undergraduate department courses that meet the requirements of the medical schools. The subjects are taught as pure science and as culture subjects or to meet the requirements of the other professional schools. The accepting of the first year of the medical course as equivalent to the senior year of the literary course, removes the need of establishing separate courses.

2. Literary colleges without affiliation with professional schools but provided with well equipped laboratories and trained teachers and in which the chemical and biological courses are given more or less according to the methods used in teaching these sciences in the technical schools. Later, the nature of the courses given in these schools will be considered further, as they constitute those which must chiefly be considered in this matter.

3. Literary colleges pure and simple which include in their curriculum science courses which are given only as pure science courses or culture subjects and are not taught in an intensive manner. The courses in these colleges, as a rule, are not available for time credit, although for some of them a certain amount of subject credit could be given.

A careful study was made of the courses given in various subjects in the medical schools and the literary colleges to determine to what extent they were approximately equivalent, and if not equivalent, if it was possible or feasible for the literary colleges to extend them. Theoretically, the evaluation of work done in these subjects seems a very easy task, but practically, it is a very difficult one on account of the indefiniteness of the outline in the catalogues. Communications were sent to the heads of the different colleges, both medical and literary, for a more detailed outline of the course, but even with the additional information furnished, it was very difficult to decide upon the content of the course and the time devoted to it.

CHEMISTRY.—Comparison of the courses in chemistry showed that in the first year of the standard of your Association 150 hours was assigned to this subject, and in the medical schools of New York 221 hours in which physics was included; the average course in the literary colleges ranged from 300 to 450 hours. In the undergraduate schools theoretical and inorganic chemistry is taught by trained chemists and teachers and the course, both in content and method of presentation, was much better than in the average medical school.

Objections have been made to including inorganic chemistry and physics in the subjects under consideration as they should find no place in the medical curriculum. A study of the course in chemistry given in the first year shows that they constitute a major part of the course in ninety per cent of the medical colleges. I trust the time will come when they can be excluded, but with the present entrance requirements they must reecive consideration.

ORGANIC CHEMISTRY.—In the medical schools the instruction in this portion of the study varied widely. In some the course was very meagre, mostly a lecture course with but few hours of laboratory instruction. In some of the best schools, however, a great amount of time was devoted to the subject and it was taught in a thoroughly efficient manner. In the literary colleges this course varied in the three classes of colleges mentioned above. In the literary colleges of Classes I and III but little time was devoted to the subject and the equipment was only sufficient for the immediate

needs of the course. In the literary colleges of Class II much more attention was given to the subject, and in a number of them is equalled the courses given in the best medical colleges, while it was much superior to those of the average medical college.

PHYSIOLOGIC CHEMISTRY.—This is a second year subject in the medical schools and is in all respects a technical subject. In Class II of literary colleges it was found that in some this subject was well presented from the chemical side. Any defect in the course was due to the fact that sufficient emphasis was not laid on its relation to pathology. While, as a rule, the course in physiological chemistry could not be accepted as entirely equivalent for the second year course in the medical schools, enough subject credit could be given to allow the student to devote extra time to subjects of the first year which might be necessary for him to review in the medical school.

PHYSIOLOGY.—Physiology is given in the medical colleges in two distinct ways: first, the so-called circular course in which the subject extends over two years, the first and second year classes attending these lectures together. This course takes up the subject in detail in both years, and a student entering the second year class would miss one-half of the course. By the other method the first year course embraces an elementary outline of the entire subject and the second year course a more detailed treatment of the subject. When given according to the second method it is possible to consider the physiological courses of the literary colleges in relation to that of the first year of the medical course. In the literary colleges of Classes I and III the physiology that is given is very elementary, and is generally taught indefinitely and without any practical relation to human physiology, except in very minor parts. In the literary colleges of the second class, the subject is taught much more efficiently. Laboratory courses, including nerve and muscle work, is done in a way that is comparable to that of the best of the medical schools. In a few colleges advanced experimental work is also carried on. It can safely be stated that in the majority of these schools the course in physiology is taught efficiently. There is the necessary equipment and the teachers are trained in methods of physiologic investigation.

From the medical school standpoint, its weak point may be that the relation of physiological laws to the homo is not emphasized sufficiently. If guided by a definite outline of the course as given in the medical school this course could meet all the requirements demanded by the first year of the medical school.

HISTOLOGY.—The combined course of embryology and histology, including histology of the nervous system, in the standard course proposed for medical schools is 180 hours. In the course as given in the New York medical schools the average is 214 hours. Most of this work in the medical schools is devoted to normal histology and histology of the nervous system and but a small amount of time is given to embryology. In the literary colleges the course is more largely embryology than histology. This is especially true in the colleges of Classes I and III. In the colleges of Class II this is true to a less degree, although even here the embryology is assigned the greater amount of time because it lends itself more readily to laboratory teaching in an undergraduate school.

The committee considered the courses of histology and embryology as given in certain of the colleges of Class II in relation to the first year of the college curriculum. Graduates of the colleges have been given subject credit for these courses, and in some colleges have become student assistants in the first year of the medical course. These men have shown that it is possible for the literary colleges to give a course that is not only equivalent, but to exceed in breadth and in specific knowledge of details, the course as given in the medical schools.

The slight defect in practical application is readily remedied. With a detailed outline of the course as given in the medical schools, and the use of human tistue, which can be very readily obtained from the medical colleges by teaching institutions, an entirely satisfactory course could be given.

The criticism has been made that these courses touch but slightly an organogenesis. This defect is of minor importance as it is generally made up in anatomy during the second year. Criticism has also been made of the course in literary schools that sufficient emphasis is not made of its relation to pathologic histology. A study of courses in the medical schools demonstrates

that where this subject is taught by men with the greatest amount of training, the courses consist of theory and practice of technic, the study of cells and tissues, including the blood, the histologic structures of the organs, including the central nervous system and organs of special sense, and but little emphasis is laid during the first year to its application to pathology. The chief criticism against the course as given in the literary colleges is that it is badly balanced. This, as I said before, could be remedied easily by a syllabus of the course.

BACTERIOLOGY.—In considering bacteriology in the medical course it must be very distinctly kept in mind what is actually given in the first year curriculum. In the proposed standard of your Association, 140 hours were assigned to bacteriology. The average amount of time given in New York medical colleges was 80 hours, but later in the course, especially in the third and fourth years, more hours were assigned to applied bacteriology than is given to the whole subject in the standard course. As given in a majority of the medical schools, even when included in the second year, the course is largely one of bacteriologic technic. It includes bacteriologic and chemical problems involved in the life history of bacteria; their multiplication and reproduction, the requirements for growth, chemical products, the rôle of bacteria in nature causing fermentation and putrefaction, the classification of various bacterial forms, the method of isolation and culture and composition and preparation of culture media employed. While in the medical schools pathogenic bacteria are used, in the undergraduate schools the non-pathogenic bacteria can be used. In literary colleges of Classes I and III, bacteriology is taught more for general information or culture, and but very little laboratory work is done. There are demonstrations of the bacteria, but as part of the regular course the students are not trained in bacteriologic technic. In colleges of Class I having a department of applied science special bacteriologic work applicable to the agricultural or other economic questions is taken up in a very thorough manner.

In colleges of Class II the course has been uniformly found to be satisfactory. They are well supplied with equipment, the teachers are trained in the general sci-

ence of bacteriology, although they may not be concerned particularly with the medical problems. Very frequently they are botanists. More and more attention is being paid to bacteriology as a culture course and the instruction is becoming more definite and applied.

ANATOMY.—This subject has been left to the last as it presents the greatest obstacles in co-ordinating the courses in medical schools and literary colleges. As has been emphasized before our Association in previous meetings, in the medical schools the demand is for "exact, specific and detailed knowledge of the subject." But slight attention is paid in the majority of the medical colleges to anything beyond that which pertains directly to human anatomy. Even embryology is considered from the standpoint of histology and physiology rather than that of anatomy. The value of comparative anatomy to the medical student is variously estimated. In discussing the subject with many teachers in medical colleges they have been very emphatic in the statement that they did not bother themselves with comparative anatomy; that heir problems were entirely with that of human anatomy and its application to surgery and medicine. This has caused the teachers in literary colleges to consider the teaching of anatomy in the medical schools as narrow, and this has been one of the reasons for refusing to accept the first year of the medical schools as equivalent to the senior year of the literary course.

The course in anatomy as given in the undergraduate college concerns itself chiefly with comparative anatomy. In colleges of Classes I and III it is very improbable that this course would ever be extended beyond this. In colleges of Class II most of the courses in comparative anatomy are excellent. Osteology, syndesmology, myology, angiology, the peripheral nervous system and a preliminary study of the central nervous system could be studied from the standpoint of comparative anatomy. Equipment for teaching human osteology is not difficult to obtain, nor is it objectionable in its nature. Prepared dissection specimens of the soft parts can easily be obtained from medical colleges for demonstration purposes.

To what extent dissection of the vertebrates can take the place of human dissection is a matter of opinion.

In practice it has been found that students who have been thoroughly trained in dissection methods, who have become thoroughly familiar with the tissues, especialy when they have been under a well trained teacher, can readily complete in one year the dissection that is ordinarily done in the two years of the medical school; that at the end of one year's dissection their knowledge is as definite as that of the other members of the class taking two years. For this result to be obtained it is necessary that their instructor in comparative anatomy be a medical graduate or one who is thoroughly familiar with human anatomy. Where an efficient course in comparative anatomy on the lines indicated is given in the literary college, it is possible for a man to be admitted to the second year of the medical school with a technical condition in human dissection and descriptive anatomy. Some of the literary colleges are considering the feasibility in the senior year of allowing a student who has completed his course in comparative anatomy to go to a medical college for a course in human dissection and credit him with this course in his senior year.

Criticism has also been made that splanchnology is not considered sufficiently in the comparative anatomy course. This can readily be overcome and it does not present very great difficulties.

Conclusions drawn from the study of the subject are:

1. The baccalaureate degree as such, even though science courses in the subjects contained in the first year medical course were included in the curriculum, does not necessarily entitle the holder to time credit, as our examination has shown that the courses as now given in the literary colleges of Classes I and III are not efficient from the medical school standpoint. In other words, culture courses in the sciences and even a pure science course is not sufficient.

2. Examination of the courses as given in literary colleges of Class II has shown that in the individual subjects many of the schools have courses that are equivalent and often more than equivalent to the courses given in the medical school and are available for time credit.

3. It also has been shown that there are very few schools at the present time that give *all* the courses of the first year curriculum in a manner that entitles

them to time credit equivalent to one year of the medical course, but that a majority of the colleges in Class II are able to give such courses when the medical curriculum of the first year *is co-ordinated and defined, and they can be assured that if they meet the requirements laid down, their students will be entitled to admission to advanced standing.*

As has been said by Prof. Herrick, "it is manifestly unfair to measure the ability of the literary colleges to carry out the courses of the first year of the medical curriculum satisfactorily by an examination of their present courses, for very few of them have attempted to do this work." The question has been prejudiced by losing sight of the fact that it is not the entire course in these subjects that is under discussion, but only the question whether or not with the training that is given in the literary colleges in the science courses of the first year it is possible for a man to enter the second year of the medical school and at the end of that year complete his work in a satisfactory manner, equivalent to the average man of his class.

If the graduates from the literary colleges can present the qualifications they should be given time credit. Unless such courses are recognized, we are discriminating against the liberally educated man and are practically offering inducements for men to enter the medical school direct from the high schools. At the present time the first year curriculum is arranged for the high school men. If we are not willing to recognize knowledge in a subject merely because it is not obtained in a medical college, then let us cease clamoring for higher educational entrance requirements. We want college trained men in medicine, but while the number of graduates from literary colleges has increased rapidly in the past fifteen years, the number of college men going into medicine has not kept pace, as the following statistics from the Department of Education of the state of New York show:

Years.	Number of Medical Institutions.	Undergraduate Students in Medicine.	Holding Other Degrees than M. D.	Per Cent.
1893	12	2317	407	17.5
1894	12	2455	499	18
1895	12	2650	499	18.6
1896	12	2671	529	18.8
1897	12	2937	514	17.5
1898	12	2517	549	21.8

Years.	Number of Medical Institutions.	Undergraduate Students in Medicine.	Holding Other Degrees than M. D.	Per Cent.
1899	11	2310	546	23.5
1900	10	2106	483	22.9
1901	10	2177	501	23
1902	10	2370	507	21.3
1903	10	2410	467	19.3
1904	10	2330	530	27.7
1905	10	2323	524	22.5
1906	11	2188	468	21.3

The higher entrance requirements have cut down the total number of students, giving a relatively higher percentage of college men, but there has been no increase. Dr. McIntire's tables showed, in 1879, of 9,522 medical students 18.2 per cent having degrees in Arts and Science; in 1880, of 9,876, 15.7 per cent with degrees.

I desire to consider briefly a few objections urged against the combined course. From the literary colleges objection is raised against introducing technical subjects, as they may replace culture subjects. This objection fails to recognize the culture value of the science subjects, and that these studies are of no less cultural or disciplinary value because taught intensively and with a practical application. If our college graduates had this applied knowledge they would be better able to judge between the true and the false in medical practice. There is need of a more intensive method of teaching the sciences in the so-called culture course in the literary colleges.

Teachers in literary colleges cry out against specializing too early and advise men to elect away from his profession to be. Yet the curricula of most of the literary colleges a few years ago were arranged for those who intended to enter the theological schools. Latin, Greek, rhetoric, philosophy, sociology and like subjects dominated the curriculum and there was opposition to the introduction of the science courses on this account.

If the literary colleges do not wish to give these courses, they are under no compulsion to do so, but if they wish their courses to receive recognition they must meet the requirements.

Teachers in medical schools often complain that graduates from the literary colleges who have taken the liberal arts course make such a poor showing in

comparison with the high school boy. I am thoroughly convinced that such a course, while making him a broader minded man, tends to educate him away from the necessary habit of thought which can best be obtained by a study of the chemical and biological sciences.

From the medical side the statement is made that there is danger in the literary colleges giving first the year of medical course; that soon they will want to teach the theoretical branches of the later years. The literary colleges have no desire to teach these branches, but if they have the facilities for giving the subjects of the first year of the medical course and the medical colleges refuse to recognize them, they are perfectly justified in extending their course and applying for recognition for two courses in medicine. The medical schools are not consistent in this matter; they refuse to recognize the courses of the literary colleges and yet complain because the literary college refuses to accept the first year of the medical course as equivalent to the senior year of the literary course.

That certain states have passed laws against allowing time credit, is urged against this plan. The action of these states is justified under the present conditions and has done much to simplify the question; it prepares the way for allowing time credit, *when a proper basis for evaluation has been found.*

And this is the crux of the whole matter: (1) By what standard are these courses to be judged? As mentioned before, it is impossible to do it by a study of the catalogues of the medical colleges. It is impossible for the literary colleges to inaugurate any definite course looking toward having their students obtain time credit unless the course of the first year of the medical curriculum is co-ordinated and defined. This can only be done by the preparation of syllabi. On what basis are these to be prepared and by whom? If prepared by the medical teachers exclusively, the needs of th literary colleges and the possibility of co-ordinating the courses as given in the literary colleges with those of the medical schools will not be sufficiently considered, and it would result in compelling the literary colleges to duplicate in their course the first year of the medical curriculum. It is very essential that the requirements be such as are applicable to the

country at large. It would be best for these syllabi to be prepared by represntatives of all the interests involved. It is for this reason that the committee that was appointed in the state of New York to prepare syllabi has not made its final report to the Department of Education.

The second important question: By whom are the courses to be judged? Certainly not by the faculties of the individual medical college, but by an independent body. In New York state this question is readily answered, as the Departmnet of Education under the Regents determines all questions of requirements. Whether or not state licensing examining boards or other departments of state would be competent is still a matter of discussion.

To pass on the course, with justice to all parties, it is necessary that the necessary data be available for properly judging the standard of the educational institution, otherwise there is danger of abuse.

DISCUSSION.

DR. H. B. WARD, University of Nebraska, Lincoln: I find myself, instead of being called on to close the discussion, suddenly thrust into a position of prominence in connection with it. It is certainly a great misfortune for us that we could not have heard a discussion from the standpoint of the New York State Board, by Dr. Rogers, of Albany, the head of this department of education. It is also a misfortune that we have not had presented before us the opinions of the literary colleges as voiced by one of their best representatives, Dr. Main, President of Grinnell College. You will pardon me, under these circumstances, if I deviate from the regular plan and, instead of presenting to you a prepared paper, call your attention to a few points which seemed to me to have particular importance for us in view of the paper that has been presented.

The attitude of the medical colleges the country over is unfortunately not so far advanced as that of the New York State Board, due largely, no doubt, to the fact that the other states do not possess that co-ordinating and controlling element that New York does with regard to education. One has but to compare the great differences between it and colleges in other states, differences which pass from the limits lower in the scale in some cases to the limits equal to the best colleges of the country to show that the mere statement of a college degree or a college course has no significance whatever. But that, I presume, is firmly fixed in the minds of all members of this Association, because it was referred to **in extenso** by the report made before this body a year ago.

In the next place, our standpoint must necessarily be slightly

different from that which was outlined in the paper. However much individual men may appreciate college work; however much they may honor and value a college degree; however much they may desire that they should be related to colleges, yet the plain question for this Association to discuss is the evolution or consideration of the problem from the standpoint of medical education. Perhaps, I should say that Dr. Le Fevre called prominent attention to this when he said that a baccalaureate degree as such did not entitle its holder to any consideration whatever. There are certain colleges that do not, cannot, and will not attempt to provide facilities which will be satisfactory to the Association, and, I take it, that this Association must discuss the question not from the standpoint of the combination of a literary college with a medical school, a standpoint which the State Board or department of education may and must take, but that it will consider it from the standpoint of what schools shall be entitled to be rated as medical schools, to some extent at least. With the mention of that point, I will leave that phase of the subject until the discussion on the amendment offered.

It seems to me, in view of the attitude of state boards, that no colleges, which are not subject to the control of medical association and the control of examining boards, and which do not specifically offer certain advantages. can be taken into consideration at the present time. The State of New York has done the country, as a whole, a service that cannot be overestimated. Not only has that state sent from year to year prominent men of their department to participate in our discussions and to give us their viewpoint, but they have organized this committee of which Dr. Le Fevre is chairman. The general principles on which that movement was founded appealed to me so much that I want to emphasize it again, using, if possible, the precise language of the paper. You will notice that Dr. Le Fevre put, first of all, harmony, not within New York state, but with the general interests of the country, and it seems to me that is a subject which, in our individual discussions, we sometimes forget. We are inclined to view the matter from a local standpoint; we are inclined to forget that the particular city or town in which we are located and with which we are particularly concerned, is not the only point, nor indeed always the chief point in the country, and that a system to be adopted by this Association must be reasonably applicable to the whole country at large. It seems that the New York Committee has outlined a broad and catholic attitude in laying down a fundamental proposition which is to be sought in their work.

In the next place, the New York Committee has done us an honor in considering among the elements for the measure of work done in colleges the curriculum established by this Association—a curriculum which, while not perfect, probably furnishes a satisfactory basis for the inauguration of discussion. If we can feel that the work of that curriculum will be reasonably attained; that the work of inspection by state boards or by this Association will be carried out in such a way that we will know the work has actually been done, then the numerous minor difficulties which have been discussed from year to

year will disappear. The question not only does not appear impossible of achievement, but with every year that passes agencies come into the field and measures are introduced which embody more and more the different elements suggested until we are building up a system which will guarantee those two points. To my mind, individually, the whole question rests upon these two points—a satisfactory curriculum, and a reasonable and honest fulfillment of the conditions as set forth in that curriculum. It is certainly true that the efforts of our literary colleges in the past have been badly balanced; that their relation, co-ordination and scope of subjects have not been such, in all cases, or in the majority of cases, as to call for our support. The work in detail, which has been carried on by the New York Board, and which has been carefully presented with these statistics, shows that the arguments which have been advanced on this basis are not final; that the objections which have been raised do not really hold.

It is a matter of adjustment rather than of rejection because of insufficiency. An adjustment on either side will necessarily be made, in my opinion, by the combined verdict of the best medical opinion with regard to the curriculum of the first year. In other words, the function of this Association in this question is not to consider whether the introduction of certain subjects modifies the value of the college degree, nor that the introduction of these subjects has any relation to the shortening or lengthening of the course for a given degree, but whether, when such subjects are introduced, they are introduced in proper order, and achieving the result that students will be properly prepared for further medical work. If these ends can be reached, then the Association will be justified in stamping that as the equal of the first year of the medical curriculum, passing on it as a proper first year medical curriculum, and if the colleges can meet these conditions, and at the same time meet the ideals for which they stand, the possibility of introducing a one year medical course in the fourth year of the college course is evident. We certainly need college men; we need better educated students in medicine, and the whole tenor of the papers which have been presented before this and before other associations within the past few years is that we need men with a better, a broader, a stronger preparation. If we refuse entirely to consider correlation with the colleges, we shut off our best avenue for securing better trained men. For that reason, the subject under discussion is of the utmost importance for the future of medical education.

Some of you may ask: what is the function of this Association in this matter? Its function is to safeguard the curriculum and the application of that curriculum, so that the results of the training will be commensurate with what we feel must be one year of the medical course. In the preparation of the syllabus, in the discussion of detail, and in the instruction of the colleges, as to why and how and to what extent they are to engage in this work, in that field this Association, in my opinion, finds its best and great work, and if it can be done, we will get for the medical college more college trained men and better students, who will be better fitted to carry out their professional duties.

In closing, I want to emphasize most strongly the wish which was expressed in one of the conclusions of the paper that has been read, that the Association should co-operate in the formation of a committee to consider such a syllabus and its relation to the work of the medical school, while other authorities are considering the relation of that to the literary college, in this way seeking to achieve the result I have outlined.

DR. F. C. WAITE, Western Reserve University, Cleveland, Ohio: I believe one of the difficulties that the undergraduate college has in meeting the wants and ideas of medical colleges, as a whole, is that it fails to understand what is wanted. I have talked with a good many undergraduate men, and that is the general idea, and I think Dr. Le Fevre's suggestion of the preparation of syllabi, which shall be elastic, to be sure, but which shall be definite in a certain degree, is the solution of the whole thing. These syllabi should be prepared by men who are familiar with the different interests, and I hope this afternoon, when we come to transact the business of the Association, that there will be a committee appointed large enough, so that one man representing each of the subjects, and a man who is familiar with the teaching of each of the subjects, such as chemistry, physiology, anatomy, bacteriology, etc., shall be appointed, and that such a committee shall have the power of inviting to co-operate with them men who are teaching the same subjects in undergraduate colleges. Such a committee can instruct the colleges as to the medical point of view, can point out the difficulties, and by dividing up the subjects can take hold of the matter and make some definite report.

As I have said, the syllabi may be made very elastic. For instance, take one of the subjects I teach—histology. Each of us who has to teach that branch must have definite ideas as to how much time shall be given to technic, how much to the organs, except the central nervous system, and how much to the central nervous system; let us say, 25 per cent of one thing, for instance, and so on. There should be a definite percentage of the amount of time in that course up to 75 per cent, 25 per cent of the course being left out, but to be distributed as the local conditions may demand. In that way we shall be sure of certain things being done; we shall allow the man who is teaching to exercise his individual opportunities and capabilities, and we shall get a course which is well-balanced and at the same time efficient.

There are several minor points on which I differ with Dr. Le Fevre, but as these are likely to come up in connection with other papers, it is not necessary to discuss them now. But the essential thing for this Association to do is to help in this preparation of syllabi.

SHOULD LICENSURE EXAMINATIONS BE IN TWO PARTS, AND HOW SHALL THEY BE CONDUCTED?

By Dr. Wm. J. Means, Chairman Judicial Council of the Association of American Medical Colleges, Columbus, Ohio.

Medical education in the United States is in a transitional stage, and there has never been a time when more activity has been manifested than at the present. The last decade has been made an epoch of phenomenal progress toward higher standards of professional requirements. The methods of teaching are being studied carefully with the view of securing the best results. This educational movement has been brought about primarily by conscientious educators and broad-minded, progressive, unselfish men of the profession, individually and collectively. Collectively, much credit must be given to the leaders of the American Medical Association for their thorough and admirable organization of the profession. Also to the colleges holding membership in the Association of American Medical Colleges, and to universities. Through these great scientific and pedagogic bodies a sentiment has been created for higher professional standards which has been far reaching. Through this activity and sentiment the legislators of the various states of the Union have been aroused to the necessity of protecting the public against ignorance and quackery under the guise of legalized practice; hence the enactment of laws governing medical education and medical practice. We need not contrast generations to see evidences of the great work accomplished and in progression. The student of a decade ago knows that the methods of teaching and of practice have changed radically since he received his license to practice the healing art.

It is not my purpose to mention the laws of the various states governing medical education and practice. They differ more or less, but none have reached the ideal as yet. It will be sufficient for my purpose now to consider, in a general way, the relation of the existing examining and licensing boards to medical education. It may be said that in most of the states medical laws take full control of medical education in that they prescribe minimum preliminary educational

requirements to begin the study of medicine, the number and length of annual courses, and, finally, the licensure examination to practice. The laws in some cases prescribe the number of teaching weeks and even the subjects that must be taught, the equipment of laboratories and clinical facilities, and then a diploma from a college that complies with these requirements, before an examination for licensure will be granted. The law, therefore, in a measure, makes a medical student a ward of the state. It leaves to the colleges the privilege alone of instruction. The interval from the time permission to study medicine is given until the finished product presents himself for a license to practice is quite a segment in an educational cycle. It seems to me that it is out of the question for an examining board by a few questions to determine very accurately the proficiency of the applicant, and, in particular, the character of the work done during the college years.

I assume that we are all agreed as to the value of the basic subjects as a foundation for a medical education, and, I believe, we are all agreed that these subjects should be taught not only theoretically but by actual laboratory experience. Anatomy should be taught not alone from charts but from the natural body. Chemistry, to make it worth while, should be taught in the chemical laboratory. Histology, bacteriology, pathology and physiology cannot be taught theoretically alone if they are to be of any practical value in the prosecution of clinical diagnosis and for preparing students for the practice of medicine and surgery. Therefore, I believe, examining boards should look in on the young men to whom they have granted permission to study medicine during their college course, and determine whether they are receiving proper instruction at a time when it will be of the most value in laying the foundation for future practice.

I am satisfied that anyone who will take the pains to study the grades given by the different examining boards of the states cannot help being impressed with the lack of preparation of students in the subjects taught in the first and second years. To ascertain, if possible, the average grades in the subjects of anatomy, physiology, pathology, bacteriology and chemistry given by the various examining boards, I corresponded

with the secretaries from some twenty-five states. My inquiry met with generous response. From the data collected I have made a summary that emphasizes this deficiency. The summary includes the results of all examinations in some fifteen states in 1905.

The average grade of those who passed in anatomy was 74. The average grade of those who failed was 58.5. The average passing grade in pathology was 78. The average failing grade was 69. The average passing grade in chemistry was 84.5. The average failing grade was 58. The average passing grade in physiology was 80 and the average failing grade was 58. Of the failures, 75 per cent were re-examined and 50 per cent of these were passed. I did not consider the grades given in the clinical subjects.

These grades are sufficient to emphasize the fact that the average man licensed to practice medicine is deficient in knowledge in anatomy, physiology, pathology and chemistry, and when we consider the elementary character of the examinations the deficiency is more apparent. How many could have passed if they had been required to make practical tests in the laboratory? How many would have been able to make a microscopic examination of the urine? How many would have been able to make a bacteriologic examination for gonococci or tubercle bacili? How many of them would have been able to prepare a pathologic specimen for microscopic examination? How many would have been able to make Widal's agglutination test for typhoid fever?

Again, note the average grades of those who failed, and further note the percentage passed at a subsequent examination. It is a pertinent question to ask where the knowledge was obtained that made it possible for them to pass a second examination. Certainly not in the laboratories of some college, and not under competent teachers, but more than likely from conning quizz compends. The query arises then: what is the remedy?

Evidently the examining boards must look after their proteges during the intervening years to see that the foundation is properly laid. It is my contention, therefore, that the undergraduate should be given an opportunity to present himself for examination at the end of his second year's work to ascertain whether he has

attained a proficiency in the basic medical sciences, and, if so, to receive credit for the same. At the completion of the second year, according to the curricula of our colleges, a student is supposed to have completed his class and laboratory work of the subjects that are classed as basic medical studies, such as anatomy, histology, embryology, physiology, physiologic chemistry and bacteriology. If the student satisfies his teachers of his proficiency he will not be required to do any further class work in these subjects, and is privileged to take up the study of the third and fourth years. This is in line with the scheme of education from the grammar department through the high school and colleges, and is based on graded work from term to term and year to year. Each term and each year is supposed to complete a part or the whole of a study.

In most states the law prescribes four annual graded courses. By this I understand that the schedules must be so arranged that students pass from one year to the next and so on through the course. Medical colleges in compliance with this arrange their curricula, beginning with the subjects of anatomy, physiology and chemistry in the first year, completing them in the second year along with histology, embryology and bacteriology. Then follow the clinical studies in the third and fourth years. The Association of American Medical Colleges prescribes that time credit cannot be given a student until all conditions that may have been imposed in a former year are passed off. If this scheme in literary and professional education is good, the state should not only grant the same privilege of intermediary examinations, but should make them obligatory, giving credit on the final licensing examination.

An examination by the examining board at the completion of the second year can be made more comprehensive than at the end of four years. It should not be theoretical alone, but practical tests should be given in the laboratories. Such an examination would be an incentive, in the first place, to more thorough teaching in the laboratories, and, in the second place, would be an incentive to the student to closer application and a higher proficiency. Under the present regime of the state examining and licensing boards there is not much stress placed on laboratory proficiency.

To prove my contention let me call your attention

to the method of examining. We grant the questions are fair and comprehensive so far as theory goes, but by what mental process can the examiners determine whether the students have ever looked through a microscope or whether they have ever seen the inside of a laboratory? Again, teachers will testify how difficult it is to get students to understand and appreciate the necessity of a thorough grounding in the basic studies, and also that they often pass them knowing their inefficiency. If students understood that they would be examined at the close of the second year not only by their teachers but by the state examiners, and that a passing grade would be credited on licensure examinations, they would have a purpose in doing good work. If a student fails in his examination, it gives him an opportunity to go back over the work at a time when it will benefit him most and when he will be forced to do it. If a student, after having complied with the legal time requirement, fails, it is a most difficult thing for him to go back to the study of his first and second year's work. He spends a few months in conning quizz compends, as suggested before, and then rarely fails on a second trial. I might ask: what is the practical value of such knowledge? The failure of a student to pass an examination at the end of his second year not only forces him to go over the subject again in a proper way, but is a notification to his college to look more closely after the teaching of the studies of the first and second years. Colleges are too prone to pass undergraduates. This is considered true of schools that depend on the tuition of students for maintenance. If a student has passed his first and second year, and knows that he will get credit for the same, he will no longer have it on his mind that he must prepare for a technical examination in these studies, and will, therefore, continue his practical work up to the end of the course.

There is also something to be said in favor of the student. Two years and more is a long period between the study of the subjects of the first and second years and his licensure examination. He may forget, and does forget, many of the technical things that he learned during his early years, and these may be the very questions asked in a final examination. This fact is recognized by the colleges, and has led to review

work of the fundamental studies to prepare their students for examination. It takes the time that should be devoted to clinical subjects of the fourth year. In fact, it becomes, in a measure, a process of cramming for the state boards.

In Great Britain a medical student has to register with what is known as the General Medical Council, and he can not obtain a license to practice medicine until five full academic years after registering, during which time he must produce evidence of having passed all the prescribed examinations. These have to be taken through the course with certain time intervals betwen the succeeding examinations.

Some of my remarks might be interpreted as a reflection on American medical colleges. I am frank to say that the average grades given above indicate that the majority of American colleges are not giving good practical work in anatomy, physiology, pathology and histology, and this would be more in evidence if practical tests were made. If any teacher or official doubts this statement, I would like to ask what percentage of his graduates can make a diagnosis of typhoid fever by laboratory methods. How many of his graduates can make a practical microscopic examination of the blood? How many can make a microscopic examination of the urine that would be of considerable value? How many can make a bacteriologic examination for tubercle bacilli and gonococci? If the majority cannot, then the college has failed to give the proper instruction.

To summarize my contention for two licensure examinations, one to be held at the end of the second year, the other when the student makes application for a license, I submit:

First:—That it is only fair to the student that he is given an opportunity to pass an examination in the studies that he has completed in the class and laboratory, and thus be relieved of further anxiety during the two years spent in the study of clinical subjects.

Second:—That if he fails to pass the licensing examination in these studies, it gives him an opportunity to go over them again at a time when he is compelled to do it, and under the direction of competent teachers.

Third:—With an examination at the end of two years the examining boards will be better able to deter-

mine whether the applicant is sufficiently grounded in the fundamental studies and laboratory work for further progress in a medical course.

Fourth:—That such an examination would be an incentive to students to do better work and a suggestion to the colleges to provide proper facilities and qualified teachers.

Fifth:—That the state examining and licensing boards having prescribed minimum requirement, both as to entrance qualifications and time limits for a medical course and also equipments and facilities, should, in the interest of medical education, take note of the work being done in the first two years of a medical course to see and know that students are properly equipped for the third and fourth years.

Sixth:—That the examinations, both at the end of two years and for licensure, should be made more comprehensive and practical.

Seventh:—Examinations made under the conditions herein mentioned would do more toward elevating the standard of medical education in the United States than legislation in any other direction.

Eighth:—That a re-examination by a licensing board should be permitted only on evidence that the applicant has pursued the study of medicine, and particularly the subjects in which he failed, with competent teachers and under conditions affording proper facilities for practical teaching.

This procedure is not entirely new. It is already in vogue in four states: Virginia, Maryland, Michigan and New York. Oregon some years ago conducted two examinations, but I am informed no longer does so. The boards of several other states contemplate asking for a modification of their laws, giving them privilege to examine undergraduates.

To put in practice examinations of undergraduates would require: (1) A change in many of the laws now in operation. (2) It would entail extra work on the members of the examining boards. These are, however, matters of little consideration, providing the qualifications of the men licensed to practice medicine are assured.

The inspection of medical colleges as to their laboratory equipments, facilities for teaching clinical medicine, methods and personnel of teachers would almost

be unnecessary. The colleges would be forced to give instruction that would qualify their students to pass examinations made at the proper time and in a practical way.

DISCUSSION.

DR. ELI H. LONG, University Buffalo, N. Y.: I wish to add a word of testimony as to the efficient working of the law in New York State. It has been in operation for three or four years, and from the institution which I represent a large number of students have taken advantage of the privilege of passing examinations in anatomy, chemistry, physiology, and hygiene in the second or third year. My word of testimony is this: that they obtain better marks by passing at that time than were formerly obtained by passing them at the end of the completed course. So far as the reports have been available, I may say that no student who has taken this partial examination in these three or four subjects at the end of the second or third year has failed, and that is a result which we were never able to obtain in these branches when they were examined at the end of four years. The law works well in New York State.

DR. D. C. BRYANT, Creighton Medical College, Omaha: I believe Dr. Means has struck the keynote, but I think that if these examinations were made at the end of the second year, a higher percentage should be required of students than if they are made at the end of four years. According to the testimony concerning the New York State law just given, students pass more satisfactory examinations if required to do so soon after taking these branches.

There is one point I would like to mention which perhaps does not obtain in the East; but I do not believe the average State Board in the West is competent to make that thorough examination that should be made when it comes to laboratory work. I may be mistaken in that regard, but nevertheless I believe that that is true.

DR. TORALD SOLLMANN, Western Reserve University, Cleveland: I have been much impressed with Dr. Means' paper. The practical part is the quality of the examinations, which can be improved. It is evidently a poor way to examine a man at the end of the fourth year for what he has missed in the second year, as he never will be able to make it up. State Board examinations should be made, as the essayist has said, and the standard of medical education should be raised. Dividing examinations into two parts is undoubtedly commendable, as I believe a better grade of examinations can be given.

DR. B. D. MYERS, University of Indiana, Bloomington: I think Dr. Means has given us several valuable reasons why an examination may be given at the end of the first two years in the medical course. One of the most valuable points he mentioned, however, is that it makes it possible to give a more practical examination.

It seems to me very unfortunate that we talk so much about laboratory methods during the first two years of the medical course, and then permit an examination that places no pre-

mium on laboratory methods, but rather on purely didactic or quiz compend teaching. I am in favor of anything that will bring about more practical examinations. I do not believe that we appreciate laboratory methods in our medical schools enough to bring them up to what they ought to be, and we never will until the State Boards say to the medical colleges and to the students: You must come before us prepared to take a practical examination. Now, this would involve the giving of an examination to a considerably smaller class, and I believe that if the State Boards appreciate the fact that they are going to have to deal with men only in physiology and subjects of the first year—anatomy, histology, embryology, pharmacology, bacteriology, and let us say, possibly some pathology, we will stand a better chance of getting them to improve the examination, the giving of which, I believe, is so vital.

DR. F. C. WAITE, Western Reserve University, Cleveland: There is one point that has not been brought out which is most important, and that is the value of an examination is not in taking it, but in getting ready for it, in going over the subject and getting it unified. The first two years may be said to constitute a preparation for the clinical years, and if an examination is had at the end of two years, we compel the student to review all the work of the two years in order to get solidarity and grasp of the things he has studied and to have them together, which will aid him materially in the work of his last two years. He gets anatomy, physiology, pharmacology, and pathology altogether at the time, and he is brought into a frame of mind whereby he can appreciate the work he is to do in the third and fourth years. This division examination is an excellent thing, and one of its important features is in the improved capability that the student will have for receiving the work of the last two years.

DR. A. R. BAKER, Cleveland College of Physicians and Surgeons: In many respects this mid-course examination has great advantages. We have noticed, particularly in our school, that the men who are not creditable to us, who go out and fail in the State Board examination, are the ones who received their preliminary training somewhere else. They travel from one school to another. We have no method of weeding these men out, and I think what Dr. Means has suggested will enable us to do that. The student should be as familiar with anatomy, physiology and chemistry as a watchmaker is with a watch, so that if, when he begins to practice, he is called in the middle of the night and is quizzed on anatomy, he will be able to pass a very satisfactory examination. That is the kind of anatomy we want. We cannot get it from a textbook or lecture; we must get it in the laboratory, and this knowledge can be best determined by a practical examination.

DR. T. C. EVANS, University of Louisville: I wish to commend what Dr. Evans has suggested. I believe the Association is almost unanimously in accord with the suggestion offered, and as to the importance of it these immediate examinations are more important than a prelimnary examination about which so much has been said. If a man is found incompetent because of the first two years, and then appears before a State

Board and is found to be deficient in preliminary education, they will send him back to finish up his preliminary education and his first two years of work.

I agree with what Dr. Bryant said in regard to the competency of our State Boards, and while I have no fault to find either with the members of my own State Board or that of any other, I believe it will be necessary to have men members of State Boards who are more thoroughly familiar with laboratory methods and laboratory examinations in order to conduct these examinations properly. If some suggestion should go out from this Association in regard to immediate examinations, I believe it would have a very happy effect.

DR. H. B. WARD, University of Nebraska, Lincoln: There is one point which seems not to have been mentioned, and while it may be in the mind of everyone, it should be put on record in connection with this discussion. I feel very strongly that Dr. Means has struck twelve in the proposition which he has placed before us. It is the plan that is followed out in Germany, where, on an average, we get the best trained medical men of the world. It is a plan which appeals to us with some disadvantages, but with one very great advantage as differentiating between schools of the higher grade and schools of lower grade

The schools in the membership of this Association are maintaining laboratories and giving laboratory instruction in the first two years at great cost, and are trying to prepare students fairly well in these subjects. Other schools, not members of this Association or of any association, are from time to time sending students to State Boards, as I know in individual cases, to pass examinations in histology without ever having done more than to see finished specimens which the lecturer put on his table to demonstrate to those present who wished to look at them. The comparison cannot be drawn too highly. If we are preparing men well, and persons can cram up by means of quiz compends and meet the examination, there is something wrong about that examination, and yet that is what is being done with regard to these preliminary subjects by a single examination. A double examination would meet that, and no man who had that type of histology would be able to pass.

The same thing applies to other subjects. I know of a medical school that had over twenty students, but with only one body to dissect, and that was dissected by the prosecutor.

DR. EGBERT LE FEVRE, University and Bellevue Hospital College, New York: I would like to say a word to bear out the value of the method in New York. I also wish to say that for the present we are examining first year men. If we were to take students before the State Board, as the examination is now conducted, we would get better averages for men if we cut out absolutely laboratory work and quizzed them. I made a study of this a few years ago. We found that the laboratory course in college work was most inefficient, but where the whole function of the college seemed to have been to prepare men for State Board examination, by quizzing them in laboratory methods, these men ranked higher than the well-trained laboratory men. Now, there is something radically

wrong in our method of examination, as now conducted. It is true, it is a great advantage over that of the past, but if we are not getting well-trained laboratory men, it must be due to faulty methods or examinations.

I think Dr. Means' paper is extremely valuable in that it has directed our attention not only to the advantages of a mid-course examination, but also to the advantage of the method.

DR. RANDOLPH WINSLOW, University of Maryland, Baltimore: With reference to the last remark made by Dr. Le Fevre, I know of certain institutions that have not the proper clinical or laboratory facilities, or facilities of any kind, yet 100 per cent of their students pass, and they pass such high averages that they are put in the first class of colleges in this country. To my positive knowledge of cases I have seen, some of these institutions have not the first thing to commend them as institutions. That is absolutely wrong. These colleges adopt practically the quiz and quiz compend methods.

The law of Maryland gives the privilege of an examination at the end of the second year, in the primary branches. This is not absolutely compulsory, as, perhaps, it should be, and the examining board is not particularly pleased that men should have that privilege. The board makes it rather hard for them, unjustly hard for men to pass that examination at the end of the second year, and are inclined to think that they should not stand an examination at that time. However, a large number of them do stand an examination at that time, although it is not a matter of pleasure on the part of the examining board, but a matter of carrying out the law of Maryland which they cannot prevent.

DR. MURRAY GALT MOTTER, of Washington: With regard to the question of a divided examination, I would like to ask whether the arguments which have been advanced in favor of it are not based on a misconception of the function of the State Medical Examining Board? I was particularly struck in reading that most luminous address on professional education, particularly with reference to medicine, by Professor T. Clifford Allbutt, with the fact that he draws a careful distinction between the function of the university examiner and the function of the State Board examiner. The examiner of a college or university bears in mind throughout his examination the individual factor, the personal factors of the people who have been to a greater or less extent under his observation. The State examiner, on the other hand, has to make a test of the technical ability of the candidate for licensure, and it results, as Professor Allbutt so aptly puts it, in a mere memory test rather than a test of knowledge.

DR. ARTHUR DEAN BEVAN, of Chicago: I want to say a word on what has been presented with reference to the importance of having examinations practical. This year the Council on Education of the American Medical Association examined 160 schools in the United States, and one of the things that impressed the Committee very much was the possibility of preparing a student for a State Board examination within a limited time by the quiz compend method. I could cite a

number of examples, but will only mention one that impressed me very forcibly.

A certain night school, open from 7 to 10 o'clock at night, without anything like laboratory facilities; with a mere pretense at dispensary facilities; with a mere pretense at hospital facilities; with a mere pretense at demanding anything like a satisfactory preliminary examination from its students, was quite successful in having its graduates pass examinations before State Boards. In inspecting that school we found a mere shell, as far as a medical school is concerned. We found, I believe, the explanation of the passing of their graduates. In one room I found a very clever, bright young medical man of about thirty, drilling a class of men. It was a fair-sized room, with a long board; eight or ten men stood alongside of this blackboard with a piece of chalk in their hands. This young man said, "I want to show you how we prepare our men to pass the State Board examination." It was not how we teach our young men medicine, but how we prepare them to pass the State Board examination. I told him I should be very much interested in it. He stood off, and the men along the wall were attentive. He yelled, "Spat!" Each man put down the word spat, one letter after the other. "What does that stand for?" "They said in chorus, "The articulations of the occipital bone." "Write them." Each man wrote down sphenoid, parietal, atlas, and temporal. Then another series, one after the other. I watched these methods with a great deal of interest, and then I had a long talk with some of these men afterward. I said, "Is this the way you prepare your medical men for State Board examinations?" "Yes, we prepared a hundred and twenty men this year, and I have yet to hear of any of them failing." I said to the teacher, "Do you prepare them on anatomy?" He replied, "No, I prepare them on every subject." He said they had no difficulty in having their men come up to the final year of preparation for the State Board examination.

That school, Mr. President, as I have said, was absolutely a shell. It was a mere diploma mill from the standpoint of really teaching men medicine to make them efficient practitioners; and yet it was successful in teaching them how to pass State Board examinations. It taught us that any man of fair intellect in a few hours in the evening could be taught by methods of that kind to pass almost any State Board examination in the United States.

Now, the cure for this must be some such scheme as has been suggested by Dr. Means, possibly dividing the examination when presenting the work of the first two years in such shape that the students must pass a laboratory examination, a practical examination, and arranging the examination in the clinical years in such a way that it will bring out the fact as to whether or not these men are capable of practicing medicine. You would be surprised to find out of 160 medical schools in this country how many of them are absolutely defficient; not deficient to a critic, not deficient to a man with high ideals, but deficient in possessing absolutely anything that could recommend them to any progressive medical man as being fit to teach modern medicine. In marking these schools we did so

in a liberal way. We marked them as you would mark a candidate in coming up for an examination; yet out of the 160 medical schools in the United States, there were 81 marked above 70; 47 were marked between 50 and 70, showing very marked deficiencies, and we marked 32 below 50.

Mr. President and gentlemen of the Association of American Medical Colleges, I think all of those who are interested in American medicine should know the actual condition of things as it exists to-day. Personally, I am very hopeful, because I believe by proper State control, by recognizing the conditions as they are and by such suggestions as Dr. Means has offered, within a few years we shall see a great change—yes, a decided improvement in the conditions.

DR. J. C. WISE, Navy Medical School, Washington, D. C.: I am very much interested in this subject, and I rise to speak before this audience of gentlemen who are versed in teaching medicine with a great deal of diffidence, for my professional life in the past has been connected with the Navy, and it is only in recent years that I have been called upon to do much medical teaching. I graduated from the University of Virginia, where I think scholarship is as highly prized as any other department of medicine, and the most deplorable aspect of our professional life to-day is the fact that this quality seemingly has disappeared. No longer, it seems to me, can we consider medical men the learned members of a profession that they were in the past.

Some time ago, in reading the "Economic History of Virginia," I became interested in the libraries of the Colonial men of that day. In the libraries of those men were to be found every classic of any value.

I have come here, at the suggestion of the Surgeon-General of the Navy, to see if you have discovered any remedy for the position in which we find ourselves in the Navy service. We have in the Medical Corps of the Navy at the end of the year something like twenty graduates, and in view of the fact that the Navy is rapidly augmenting its forces, Congress has allowed an increase of twenty-five men per year, giving us practically forty vacancies to fill.

As the Board of Medical Examiners has its office in the same building which we occupy for teaching purposes, the question has come closer to us than to others, perhaps, as to what is to be done in this matter. The reports of the Surgeon-General of the Navy for years have stated the fact that we cannot get enough competent medical officers from the fact that the pay was not large enough; that the rank was not high enough; that there were certain discriminations against the medical officer. I have taken issue with men who have taken that position. Congress has remedied every single one of those troubles. The pay is now liberal: the position is now a most honorable one.

I have reluctantly come to the conclusion, after listening to this discussion this morning, that medicine is not taught honestly in this country. Some years ago I went to the University of Virginia to enroll my son as a student there. I had a talk with a professor of the medical department on educational matters, and he said to me, "Doctor, we do not

give a man his diploma unless he earns it." And there is the crux of this whole subject of medical teaching in the United States. Is it honest? I don't think it is.

While I do not feel able to discuss many of the technical details that have been gone into so elaborately this morning, as to what proportion the literary side should have to the purely medical side; how much should be done in the literary school, and how much in the medical school examination, I believe that the medical profession of the United States will stand in the deplorable condition it is until we do one thing, until we take the power of giving a diploma from the college and give it to an endowed university which is absolutely independent of any commercial consideration.

As I sat here this morning and listened to this discussion, I was impressed with the great difficulty we labor under from the fact of the enormous number of legislative bodies that have to be considered. It was just this question that the founders of our government had to deal with in 1778, in adopting a Constitution, because there were legal difficulties they had to contend with. But until the medical profession gets together and comes to a clear and unmistakable understanding in regard to this matter, the colleges will continue to turn out disqualified men, so that eventually the people and the law will take up the matter and that will be the final solution. As I have said before, I do not believe there is any other solution of this question for the medical profession than to take the power out of the hands of the medical college and put it into the hands of an endowed university. If a thousand graduates should be turned out of different schools in a year, however bad may be their reputation, I do not hesitate to say that our State Boards would pass half of them. If we will take this matter and put it on the same basis as it is in London and Paris, where the teaching is honest, where men are qualified, where the men know what a thermometer is, and have some idea of physical principles and philosophy; who know how to spell correctly, then we will eventually get a solution of this question. I must confess I have been simply horrified within the last few years to submit a list of books of the most ordinary character to medical candidates and find that they are absolutely ignorant of the literature. In the Naval service we require that a man must have some knowledge of physics; he must know the laws on which our vitality depends, and it is just as essential for the physician to share in these principles as it is for the Naval officer or surgeon.

DR. F. E. BUNTS, Western Reserve University, Cleveland, Ohio: I hesitate to speak at this time, yet I would feel that I had not fulfilled my mission as a member of a college faculty if I did not take some exception to the remarks of the last speaker. The Doctor cast a slur on the medical colleges of the United States when he made the statement, without any qualification whatever, that medical teaching in the United States was not honest. I want to say that if this spirit maintains in the Navy, it is not astonishing they have so much trouble in getting positions filled. If students are going to take the Naval examination held by an Examining Board and

meet with such criticism, ridicule, and antagonism, they will soon learn they had better stay away from it.

I had the honor myself for some time to be in the Naval service, not as a medical man, but as a midshipman, and I know that some of the objections to the medical service which held then still hold, and I know that one of the greatest obstacles to a man entering the Naval medical service is the old-time feeling that they are not going to be put on a par with other officers. In my position as a teacher, I have had occasion to advise the students of our school, after finishing the junior course and were reasonably prepared in a literary way before entering on our final courses, to enter the Naval service, and I have never succeeded in getting one of them to go in. Some of them have said they did not like it because they would be at sea for a long time; yet the majority of them constantly brought up the old question of not being on the same footing as the other line officers. I was glad to hear Dr. Wise say that all this had been remedied, largely by advancement in rank, etc., which ought to have been done long ago. This ought to be emphasized, so that students, if they go into the Military or Naval service, will be received on an equal footing with other officers, and there should be nothing to interfere with their position as gentlemen and as men. But I simply got up to see if Dr. Wise would not modify his statement a little, and at least say that some of the colleges try to teach medicine honestly.

DR. JOHN C. WISE: I must say a word or two in answer to the remarks made by the last speaker. I can establish what I have previously said, that medical teaching is not honest in the United States; in other words, the men who come from our colleges are not qualified to practice what they profess, and I will leave that question entirely to the gentlemen assembled here.

So far as the standing of medical men who come into the Navy of the United States is concerned, there is no corps more respected than the Medical Corps of the Navy. We have a large number of men coming before the Medical Board of the Navy annually; we have a hundred a year. There is no trouble apparently on that score. We find men who are willing to enter the Naval Corps. The trouble comes when we require of these gentlemen scholastic ability, such as would come from a good high school course. Many of them have not had such a preliminary education, and therefore only about twenty per cent of those who come up for examination are able to pass. I do maintain, however, that the teaching of medicine in the United States is not honest in the sense in which I stated.

DR. J. R. GUTHRIE, University of Iowa: I apprehend that the use of the term honest in this discussion has application more to the methods of examination and the passing of candidates than it does with any other feature of the work.

I rise to emphasize the value of the paper read by Dr. Means, and to say that in my humble judgment Dr. Means has hit hard. One of the central errors in State Board examinations is that these examinations the country over make of a man a mere parrot, and emphasize the faculty of memory,

leaving out entirely all the other features that constitute a properly equipped medical man. This paper goes further than to criticise the State Board in its attitude toward examinations; it goes directly to the seat of the whole matter, and if I mistake not, it criticises faculties in their examinations, for I think it is true of at least 75 per cent of the faculty examinations conducted by the 160 medical colleges of America, that these faculties emphasize too much the power of memory to the exclusion of that power of judgment and of reasoning which alone fits a man to be a physician. And the paper which Dr. Means has read here and at Chicago not only criticises severely the method of State Board examinations, but to an equal degree it criticises the methods that are employed in nearly all the medical colleges of this country. It calls for a reform in line with not only State Boards, but with the individual medical colleges as well.

DR. JOHN C. OLIVER, Miami Medical College, Cincinnati: The discussion seems to have struck a pessimistic tone this morning. It seems to me it takes the Association of American Medical Colleges a long time to realize the fact that it is improving, and very often it happens, when improvement is beginning to become more manifest, there is a feeling which borders on pessimism. It cannot be said that the American medical colleges to-day are worse than they were when we graduated. I think we can put that down as a safe proposition. I think it is unfortunate for a set of medical men to get together and advertise the fact that not over six or seven per cent of the physicians are competent to practice medicine. Of course, we belong to that six or seven per cent. It is also unfortunate for an Association, such as this, to unsparingly condemn a method of teaching which has produced, I must say, fairly good physicians. Now, I do not believe there is much accomplished by such wholesale condemnation. I do not believe that Dr. Means' suggestions will have a material influence on the character of the practitioners of medicine. While I believe it is a step in the right direction, still there are many questions connected with this subject which will, in all probability, utterly annul the value of the suggestions. Unless the members of State Boards of Examiners belong to this six or seven per cent, how are they going to examine these students? How are they going to know what points to take up in laboratory work? How are they going to know what subjects to take up in anatomical work? This thing bears upon the question of the ability of the examiner, to a certain extent.

I do not believe for a minute that the average American medical college is a corrupt, dishonest institution. I do not believe there are very many medical colleges in the United States to-day that are dishonest in their methods of teaching. I do think, however, that this method of cramming for examinations is not only confined to the first two years of medical college work, but that it is prevalent all over the United States and elsewhere, and where a competitive examination is held, if such a method is adopted by the students universally for preparation, I am perfectly free to confess it is a wrong method. I will say, further, it is a method that should be

abolished; but if there is any city in the United States where students, who are candidates for competitive positions, for hospital positions, do not put themselves under a coach, I do not know where that city is, and I have inquired industriously for such a city.

What is the method of examination in the undergraduate schools? It is exactly the same thing. In every college in the land some of the students play football, some baseball, and put themselves under the care of a coach for final examinations. That is a custom that is prevalent all over the United States. It is a bad custom. It is not ideal, and we are not going to get ideal conditions in this country by making statements to the effect that medical teaching in the United States is not only poor but dishonest.

This brings us to a comparison with other countries. When we compare our institutions with those of other countries, we lack one thing, which may be a good or a bad thing, but I do not feel we are in a position to judge of that, and that is the regulation and control of our medical institutions by the government. Are we in a position in the United States to-day to ask the State as a State to regulate and control our medical colleges? If so, then we are in a position to make a step which is either an advance or a retrogression—I don't know which, and ask the State to do all the medical teaching. That seems to me to be the tendency of modern times, namely, for the State as a State to control absolutely in matters of education. My impression is that that method in this country will lead to backward progress. I believe the medical colleges of the country will be better without State control (I mean absolute control) than they will with it.

Several of the gentlemen spoke of higher averages; that students in being examined at the end of the second year would present higher averages. Of course they will. If they are examined at the end of the third, or in the third year, on certain subjects, they will present higher averages; but the danger of such an examination as has been suggested is that after it the students will pay no further attention to the subjects of the first and second years. All of them will quiz themselves and cram for the examination at the end of the fourth year, so that in its actual results, so far as the individual student is concerned, I doubt whether there would be any greater difference in the student after two examinations than there would be after one.

DR. MEANS (closing the discussion): I did not enter into all the phases of this question that has been discussed. I want to say in reply to Dr. Oliver that nowhere in my paper did I use the word dishonest teaching in American medical colleges; nowhere in my paper did I say that there were only six or seven per cent of well educated men. It was some other man who made that statement.

Dr. Oliver brought out in his forcible criticism the points that I want to make before this body, that practical examinations should be made by our State Medical Examining Boards rather than the theoretical examinations which are made at the present time. Secondly, the examination at the end of the second year is not for the purpose of getting higher points

for the student; it is not for the purpose of determining whether he has been given the advantage of theoretical proof of knowledge of these subjects, but to know whether he is prepared to take up the clinical work of the third and fourth years. That is the point I want to impress. Unless a student is prepared to do clinical work, as modern medical education requires, he should be stopped at the end of the second year and should be made to go back and take up the subjects and study them properly.

Now, gentlemen, let us be honest with ourselves. I am not pessimistic; I am naturally optimistic. I have seen the medical colleges of the United States pass through a period of transition that is simply astonishing. In the short period I have been connected with this Association, I have had reason to determine that, and I am certainly optimistic. But there are many reforms yet to be brought about; there are many things that are not ideal yet, and we shall have to reach those ideals, if possible, in the future, and in order to reach them we have got to start the matter going. We have got to keep the ball rolling, and not rest upon our oars in the position that we now occupy.

Again, I wish to emphasize the one thought that we must make these examinations more practical to be of value. Take your colleges, gentlemen, and how many students have you rejected at the end of the first year? How many have you turned down at the end of the second year, and told them to go, that they were unfitted to go on? Not very many. I will answer for you. You know you have not. You have passed them on to the senior year, and told the senior teachers to determine whether they are qualified to pass or not. That is when you commence to weed out. You do not weed out in the first year. You do not weed them out in the second year. But you wait. You let them go on, hoping they will become more proficient, and at the senior year you reject them if they are not proficient, possibly. Make your examinations at the end of the second year honestly, and require those men who cannot pass their examinations to go back or get out.

SOME FURTHER STEPS IN THE ADVANCEMENT OF MEDICAL EDUCATION.

By Murray Galt Motter, A. M., M. D., Washington, D. C.

These steps, it would seem, may be taken along at least four different lines: I.—Preliminary Training. II.—The Medical Curriculum. III.—Supervision of Medical Schools. IV.—State Board Unity.

If we hold, with Spencer, "that every science is evolved out of its corresponding art," we must admit, I fancy, that, in the case of medicine, the process of

evolution is not yet fully rounded out. And if, with Ruskin, we believe that "in science you must not talk before you know, in art you must not talk before you do," we must recognize that, in the very nature of things, medicine must ever remain as much an art as a science. For, what doth it profit a man if he know all diseases "from Ague to Zoster," and can cure none?

Unquestionably, the fundamental principles of medicine are more firmly than ever established upon the sciences of anatomy, chemistry and physiology. Without a knowledge of structure, composition and function, there can be no intelligent effort to combat defect, disease and deterioration. From these basal sciences we proceed to the study of pathology, diagnosis and treatment, and, in so doing, we pass from the realm of science into that of art. It must be obvious, therefore, that a profession which thus demands that we both know and do, demands as well that our training be full, thorough and complete. For science does not stop with the acquisition of knowledge, it is "knowledge co-ordinated, arranged and systematized." It is a matter of common knowledge, indeed, that mind holds mastery over matter; but is the so-called christian-science "knowledge gained by systematic observation, experiment *and* reasoning"?

Is it not a fact that the greatest bar to present day progress is that raised by ignorance, superstitition and prejudice? Is it a fact that this prejudice, superstition and ignorance characterize the laity only and not the medical profession? Does not the large proportion of prescriptions for remedies of unknown ingredients and unproved effects, now on file in our pharmacies, mark an equal proportion of prescribers as beings devoid of knowledge, wanting in the power of observation and lacking in the faculty of reasoning? Is not the time out of joint when each Spring pours upon a long suffering public a horde of medica, crammed with facts which they have had no time to digest, no training to use? Is it fair to upbraid the candidate for licensure for his many and miserable failures before the State Boards? Is it not possible that there is something radically wrong with our methods of teaching; and is it not extremely probable that, by force of long habit, we have been treating symptoms only and have not

yet found and sought to eliminate the cause of the trouble?

We spend large fortunes in elaborating and perfecting the machinery of medical education, but we give lamentably little thought to the raw material which we put into, and through, these machines. Is it not written that you can't make a silken receptable for the coin of the realm out of the aural appendage of *Sus Scrofa domestica?* Recall, for a moment, the portraits of the physicians whom we have admired in literature: Holmes' Drs. Kittredge and Hurlbutt, Mitchell's Dr. North, Ohnet's Dr. Rameau, Maclaren's Weelum MacLure and even Deland's Willy King. Picture to yourselves your own highest ideal in our profession, a type specimen of all that is most admirable in the genus, and then tell me whether we begin early enough the process of producing such an one.

I. Preliminary Training.

The preliminary, or premedical, training is that which is to furnish the foundation upon which the superstructure of medical education is to be built, and it must needs to be both broad and deep. Whether it be laid in the common or the high school, in the college or the university, or by the lonely and toilsome effort of the individual and impecunious student, its product should be character, not a caricature; knowledge, not mere information; power, not a dilletante proficiency. Then we shall have students who will not cut lectures and cheat in examinations; candidates for state licensure who will not need to be photographed and measured, a la Bertillon, to prevent fradulent impersonation.

It may seem a far cry from the consideration of the technical education of the twentieth century physician to that of the very beginnings of intelluctual training in the kindergarten, yet in both may be found todzy much the same methods, with perhaps this difference: The kindergarten has been described as an institution in which education is obtained under false pretense; while, in the commercial medical school of the day, it is the fees which are obtained under false pretense, but in both there is the same disposition to arrive without due process of effort.

The physician of this day and generation should use his influence in and upon the school boards of the coun-

try, for the present product of our public school system, so-called, is but a parody on education. To quote from an editorial in *The Independent* ("Our Ten Year Old Babies," Nov. 22, 1906):

"The idea that a 'normal' child should commit to memory anything that he does not understand, savors of dark ages and peoples. * * * That five times one makes five is what no child is expected to grasp; he must patiently be led along the path of knowledge until without intellectual exhaustion he is brought to see that one, and one, and one, and one, and one are five. * * * For the mental concentration once demanded in earlier days of children that were being taught the elements of knowledge, we are substituting prattle, chatter, smatter and drivel. The American nation needs many reforms but none more than the revival of plain elementary schooling."

I know a pupil, bright, diligent and exemplary, who is just about to graduate from a high school in one of the suburbs of Boston, who can talk most interestingly of the birds of the air, the beasts of the field and the flowers that bloom in the Spring, but this same pupil cannot write a respectable letter, cannot spell the few words that come to mind nor arrange them in correct gramatical form and logical order, cannot think consecutively and independently. This is by no means an isolated instance. We are all, no doubt, familiar with the wail which has gone up from all over the country. Boston and Harvard are no exceptions. Nor is the evil confined to this country. Says Prof. Allbutt ("On Professional Education," 1906):

If he [the Englishman] is to be equal to the conflict of modern life, he must be able to reason both on man and on nature, to measure his own capacities, to read the hearts of men and to forsee the trend of natural laws. For these ends, besides energy and will, he must have a curiosity for knowledge, some intellectual seriousness and flexibility, some endurance of attention, some self possession, and some ideas, qualities eminently in defect in the average products of our public schools."

The fact of the matter is that so many frills and furbelows have been tacked on to our common school courses that they have become most uncommonly inadequate and farcical. There are subjects without number and books without end. The chief results seem to be headaches, spectacles and neurasthenia.

The Council on Medical Education has recently received the report of its Committee to consider details as to the requirement, in addition to a four-year high school education, of a year to be devoted to physics, chemistry, biology and one language, as a prerequisite

to the study of medicine. The point I would make is that this brings us little, if any, nearer to an uniform standard of requirement. There are high schools at "The Hub," high schools along the spokes and high schools around the felloe, and then, again, in some parts of the South, there are no high schools. A high school education, *per se*, is no criterion, and, we have all of us found that certificates may mean much or little, they generally mean less than they purport to be. Why should we not do away with this shibboleth, and all its meretricious accompaniments? A medical diploma no longer admits a man to practice, why should a high school diploma admit him to a medical college?

Is it not time to come out fairly and frankly with a definite and specific statement of the prerequisites to the study of medicine, so much English, so much History, so much Mathematics, so much Languages, so much Biology, Chemistry and Physics, and then *make every candidate pass an examination in each subject specified?* I greatly deplore the movement which would carry the possessor of a baccalaureate degree, *ipso facto,* beyond his less favored fellow matriculant. Not so much because he may, or may not, have acquired with his academic honors a quasi equivalent of the first year medical studies, though this question is still debatable, but even more because in effecting this hermaphroditic compromise he has dropped from his academic course just the studies which from an educational —if not an instructional—point of view are of the utmost importance to him. There has been as much fog raised over the question of what we shall do with our college graduates as there has been as to what we shall do with out ex-presidents. In the name of freedom and independence let them "do" for themselves. They have already enjoyed an advantage over their fellows, why should they be coddled? "It is freely said of the abler men in our laboratories that those who enter them with minds already expanded on other kinds of study, such as language and literature, bring to the sphere of scientific studies a riper understanding, and draw from them larger immediate powers and a richer endowment for later life." (Allbutt) "Verily, I say unto you, they have their reward." If any sort of preliminary training whatsoever be sought merely for the name of the thing and not for its content and product, for its demonstrable

effect upon the development of the individual, it can only become more and more perfunctory and empty. What we are really seeking is an equipment, not an accomplishment; and, after all, it is not so much *what* is taught as *how* it is taught that will give us the result.

Unquestionably, there are a number of facts with which he who would pursue the study of medicine intelligently and effectively should be familiar; but, in our examinations we should never lose sight of the fact that "it is not so much the number of facts he knows, as how much of a fact he is himself that proves the man"; or, as it is so tersely put by Prof. Allbutt: "Until it is built into theory or idea, a fact is of no more use than a brick—to be wasted on any passing stranger." As stated by Prof. Horne ("The Psychological Principles of Education," 1906), "The two primary aims of intellectual education are to develope the mind's power to know, and in some measure to acquaint it with the truth."

It seems to me that in our schools, both preliminary and professional, we have inverted this order and emphasis, greatly to the detriment of our students. In view of his great opportunities and manifold functions in the family and in the state, the physician of today cannot be a mere dispenser of pills and potions, or a sawyer of bones, he must be a man of broad horizon, deep penetration and comprehensive grasp, one who knows things in concrete as well as in the abstract. To this end I would plead that the prospective medical student be encouraged by every means in our power, to procure the fullest preliminary education that his means will permit. The sciences he must have, for the development of his sense perception; the humanities he needs, none the less, for the development of that inner perception which shall make him a power among his fellow men. Mentally, morally and spiritually, as well as physically, he should measure up to the stature of the fullness of the Perfect Man.

II. The Medical Curriculum.

With regard to the medical curriculum, I beg to submit that, here too, the process of evolution is halting. The 4,000-hour course, while it has done much to crystalize our ideas as to definite needs, is, as has been

pointed out, by no means free from objections, not the least of which is the apparent emphasis which such a scheme, of necessity, places upon quantity rather than quality. Certain it is that the medical curriculum is overloaded; equally certain, it appears to me, that it is poorly administered. Surely, if there be any one faculty which the physician, above all others, should cultivate, it is the faculty of sound judgment. Prof. Horne has enumerated as five causes of false judgments, lack of observation, lack of reflection, mental dependence on others, prejudice, and lack of experience in the field of judgment; to these I would add lack of imagination.

It is true that in these days of laboratories and so-called "practical" courses our students are having greater opportunity for observation, but, by the same token, they are having less time for reflection. In the frantic rush of competition, the effort is, not so much to master a subject as to pass an examniation, and the text books most in vogue with the students are mere cramming machines. This is only in part the fault of the students, many of whom have been admitted to the school with wholly inadequate preparation and have been led on by false methods. Given a smattering of this, that and the other, without a sound and usable knowledge of any one thing, adorned with a degree from some school or college, their sense of proportion and relative values is dislocated and only too late, if at all, do they realize that they have been started awry.

Aside from questions of material equipment, the courses, as given in many medical schools today, seem lacking in co-ordination, proportion and continuity. The several departments are conducted with little or no regard to what is going on in the others, and there is great apprehension lest someone intrude within the alleged metes and bounds of the other's territory. Hedged in by the narrow lines of a limited specialty, some men seem to forget that it is the human organism as a whole that must be studied. It is only as it is intimately connected on either side with normal and pathologic anatomy and interpreted by physics and chemistry that physiology is of vital import to the practicing physician.

There are, it seems to me, two striking signs which mark our failure to teach the fundamentals of medical

science so that they may become permanent fixtures in the equipment of the practitioner: The arguments, on the one hand, of the older men who seek registration in another state, and, on the other, of those who seek to divide the licensure examinations into two parts. It is sad enough when a man who has been in active practice for ten, fifteen or twenty years admits that he does not know enough anatomy, chemistry and physiology to be able to pass an examination; but when we come to the point of proclaiming to the recent graduate that he is not expected to retain an examinable knowledge of these subjects even to the end of his fourth year, is it not time to call a halt? Is this the kind of "practical, familiar, finger-end knowledge" for which Huxley made such an earnest plea in his Rectorial Address at Aberdeen? His words will bear repetition:

"It is a kind of knowledge which is to be acquired, not in the lecture-room, nor in the library, but in the dissecting-room and the laboratory. It is to be had not by sharing your attention between these and sundry other objects, but by concentrating your minds, week after week, and month after month, six or seven hours a day, upon all the complexities of organ and function, until each of the greater truths of anatomy and physiology has become an organic part of your minds—until you would know them if you were roused and questioned in the middle of the night, as a man knows the geography of his native place and the daily life of his home. That is the sort of knowledge which, once obtained, is a life-long possession. Other occupations may fill your minds—it may grow dim, and seem forgotten—but there it is, like the inscription on a battered and defaced coin, which comes out when you warm it."

Instead of dismissing the subjects of anatomy, chemistry and physiology at the end of the first or second year of the course, they should continue to be taught throughout, at the bedside, at the operating table and in the postmortem room, by internist, surgeon and pathologist, in season and out of season, for they are the very bone and sinew of our art.

One of the greatest needs of the day is a fuller recognition of the growing importance of pharmacology, this, one of the most recent developments of the medical and biological sciences, is the science which is evolving out of the art of therapeutics. Room may be made for it by giving it the time and attention hitherto devoted to materia medica and therapeutics; the former subject may well be left to the pharmacist, while the latter, what there is left of it, may be fully discussed at the bedside

by the professor of medicine. When therapeutics, as a subject for didactic discussion in the lecture room, and as a qualification for state licensure, shall have been abolished much will have been accomplished toward the elimination of sectarianism in medicine.

Another subject, well worth the immediate attention of medical teachers, is the somewhat disproportionate value placed upon laboratory methods and laboratory diagnoses. As stated by one recent writer: "The laboratory is luring too many from the bedside"; and by another: "The undue attention which the medical curriculum gives laboratory study and microscipic investigation, impresses the student with an exaggerated sense of the importance of the evidence they afford. The result has been a dangerous neglect of the study of the clinical history by our young men, and a great loss in the wisdom as opposed to the knowledge of the resulting doctor. The patient is and always will be worthy of more study than the disease, and his recovery and not the diagnosis is his need and the duty of the doctor." (Holmes, Jour. A. M. A. 20, IV. 07, p. 1349).

Finally, a title announced for the forthcoming meeting of the National Confederation of State Boards by a veteran in the service, is highly significant; I lay it before you as a suggestion without venturing further comment: "A Plea for Medical Teachers to have Special Training for Teaching." 1907

III. Supervision of Medical Schools.

Before such an audience as this, the question of the supervision of medical schools is one to be approached with some diffidence. When this topic was chosen, I was not aware that the work had actually been undertaken by the Council on Medical Education, and, unfortunately, I was unable to attend the Conference at Chicago last week, when the results were reported and discussed. In view of this fact, and, further, of the recommendation just made by your President, I shall not undertake to discuss the question at any length.

To be fully effective, this supervision should include all schools, sectarian as well as non-sectarian; it is questionable, therefore, whether it may be undertaken alone by the American Medical Association.

It must include not only plant and equipment, but personnel and methods as well—a supervision of the

school examinations as they are in process and a review of the ratings accorded each student. Only in this way may the teacher be safeguarded against prepossession or slackness of method.

The results of this supervision must be published fully and freely.

IV. State Board Unity.

It is scarcely possible, even if it were desirable, that the purposes and work of the several State Boards should be absolutely uniform, that is, without variation. It is, however, wholly possible that they may be in substantial concord or agreement. That they are not is evidenced by the existence of two national organizations, and by such unfortunate altercations as, for instance, that which we are now witnessing between representatives of the Illinois and of the Kentucky Boards. The last word has not yet been spoken upon the subject of interstate reciprocity, nor will it be until the profession, backed by the public, shall have settled the problem of education and this, in turn, must include the question of preliminary training. All honor to the men of the State Boards who, many of them at great personal sacrifice, have wrought so nobly for the profession and for the public. They should receive the hearty support of a united profession which, again, through the exercise of its large and growing influence may, to a great extent, control the Boards in personnel and in practice.

Whether or not we shall ultimately attain a national standard, is, I fancy, largely a question of development, political, social and economic. Mr. Secretary Root has pointed out that the passage of the Federal Anti-Trust Law, the Anti-Rebate Law, the Railroad Rate Law, the Meat Inspection Law, the Oleomargarine Law and the Pure Food Law, are evidences of a strong centralizing tendency in the National Government; and he cites as causes the growth of national sentiment, due to conflicts within and without, the operation of free trade among the states and the marvelous development of travel and communication. On the other hand, there is the doctrine of states' rights and the conviction that when the individual citizen shall have been aroused to a full sense of his duty and power, the several units of our Nation will more certainly and surely care for

themselves without leaning too heavily upon the arm of "Uncle Sam."

In conclusion:

I. The qualifications of the medical matriculant should be a matter of actual test, not of mere certification, whether by diploma or otherwise.

II. The medical curriculum should be shorn of its encumbrances, consistent throughout and so administered as to become a permanent acquisition on the part of those who encompass it.

III. Supervision of schools to be effective must be thorough and searching, honest and unbiased, and the results published frankly and without reserve.

IV. For the State Boards, as for the profession at large, there can be but one motto—"United we stand; divided we fall."

DISCUSSION.

DR. H. B. WARD, University of Nebraska, Lincoln: Mr. President: Permit me to say just a word along the line of thought suggested by this paper. It seems to me unfortunate that the paper should have taken such a pessimistic tone. I hardly think that the criticisms that have been made on our common school work by the recent writers who have been making a study of that subject in detail will justify the inference which seems to have been presented in the paper, that the product of these schools is decreasing in its quality. I am firmly of the opinion that our common schools have never been so effective, and educational authorities are agreed that the work of these schools was never so thoroughly done and has never been open to so few objections as it is to-day; not that there are no corrections; not that there are no advances to be made, but to intimate that the common schools are failing to do what the common schools of a century ago did, is to intimate that the men who have been devoting their lives to education have not produced any results. It is unfortunate that the paper should leave in our minds the impression that has been created by it with regard to the product of our common schools. If we are to look at the results of modern experimentation, if you please, we shall see, in one respect, that one of the foremost educational bodies in the United States dissents from the position taken by the reader of the paper.

Up to within a limited period the literary colleges have provided for entrance examinations, and within still more recent times entranec has been provided for by means of a certificate. Bodies like the New England Association of Preparatory Schools have taken the position steadily and firmly that the head master of the school is better able to pass upon the qualifications of young men to enter colleges than we can by any examination which may be set for the colleges. If the quality of the student can be distinctly thrown back on the

shoulders of the preparatory school, then the school cannot afford to certify to the preparation of inefficient individuals, and more and more is the responsibility being thrown by the New England colleges on those schools by publishing such percentage as fail to meet the standard of the most important schools, and producing a better product.

I am clearly of the opinion that any effort at the present time to carry out what was proposed in the paper in the form of adopting definite entrance requirement by all colleges will fail, because it lays the weight on the memory, and because the examination deals with the facts which have been set forth, without considering the reasoning power of the student. If there has been progress made in the past, it is equally true, as indicated in the paper, that there is yet room for further advance; but it serves to show how distinctly the lines of advancement have been urged upon the medical profession if we take certain instances which the gentleman emphasized so strongly.

In the course of very recent times it has been my duty to study a certain portion of medical history connected with the life of that great Swedish physician, who laid in one sense the foundation for modern science, not only in botany and zoology, but in medicine also. I refer to Linnaeus, who was the foremost medical teacher in his day. He insisted on, and emphasized the importance of, a thorough knowledge of pharmacology and of laboratory study rather than of the opinions and theories of schools. Born two centuries ago, he pointed out that when those studies should have been taken up scientifically and carefully as the study of science was being taken up at that time, schools of medicine would disappear, and then there would be a firmer basis for medical advance. It is true, there are lines of advance which have been pointed out to us by students of the subject in previous ages. It is true, educators in special lines have been deaf to the suggestions that have been made to them; they have neglected opportunities; but it is none the less true that to-day we stand on the shoulders of the past, and if because looking down on them they feel small, it is distinctly degrading to the memory of the great man, who built up this and other sciences, to say that their progress, that their influence was ineffective, and that progress in this direction amounted to nothing, leaving us in a worse condition than we were a hundred years ago.

DR. MOTTER (closing the discussion): Dr. Ward overlooked the fact that I stated specifically the examination should be of a character not merely of memory tests, but tests of power, of genuine ability. As to the opinion of the present product of our public schools, the information I gave in my paper was taken from recent writers on the subject, and not from those of a hundred years ago.

THE TEACHING OF MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS.

By Dr. Torald Sollman,
Medical Department Western Reserve University,
Cleveland, Ohio.

The teaching of the subjects named in the title of the paper, which has been assigned to me, is in a state of transition. The older methods are changing into those more modern methods which have proved so useful, indeed necessary, in the teaching of other medical subjects. This requires a pretty radical readjustment, not only within our subjects, but also in their relation to the entire medical curriculum. The need for this change is acknowledged by almost everyone who has given it some thought. It seems to me also that the broad principles which should direct these changes should command universal agreement, although the methods and results may differ in detail, according to men and conditions. Such minor differences are, in my opinion, desirable rather than otherwise. A perfectly uniform medical curriculum is not only impractical, but undesirable under the conditions pertaining in this country. It is in this spirit that I shall discuss the subject. When I introduce details, I would have it understood that they are intended merely for concrete illustration of the principles involved.

The study of drugs, as carried on in medical schools, comprises a number of different subjects: The natural history and other miscellaneous data generally grouped under the heading of Materia Medica; the preparations of medicines, Pharmacy; their actions, Pharmacodynamics or Pharmacology; the relation of these actions to poisoning, Toxicology; and the application of drugs to the treatment of disease, Therapeutics. These various subjects differ greatly, not only in their relative importance, but also in the most suitable method of instruction. With all these differences, however, these are but divisions of the same subject, and have, at least, as much in common as they have apart. Their association into a common department is therefore desirable; indeed, this is absolutely necessary to insure the proper proportion between the subjects, the proper allotment of time and their proper relation. As I shall endeavor to show, some of these divisions are best taught, not

only in the same department, but in the same course. I should, therefore, consider as the first essential step in the successful teaching of these subjects, that they be organized under one department; at least, that they be planned together, and not separately.

The most obvious and most urgent duty of a medical school toward the main body of its students is, undoubtedly, to qualify them, in the broadest sense, for the general practice of medicine. I need scarecly say that this requires a sound foundation of the basic sciences of anatomy and physiology, as well as the more evidently practical superstructure of clinical instruction.

Throughout, this primary object of medical teaching must be kept in mind, not only in determining the instruction in any one subject, but also in its relations to other subjects. In other words, in discussing a course of, say, materia medica, we must consider its relations to the entire medical curriculum; remembering that it is but a fraction of the knowledge which the student need acquire before he is qualified to practice. Everyone knows that medical science, at least in its details, is growing out of all proportion to the time which the student can devote to its study, especially during his residence in medical schools. The problem of the medical teacher is, therefore, not merely how to give a sound knowledge of this subject but, rather, how to teach the essentials efficiently in the shortest time. This requires, on the one hand, that he should avail himself of every device, of every method of instruction and of arrangement which will facilitate the thorough acquisition of the principal facts; and, on the other hand, that he should give less time to facts of lesser importance or omit them altogether. This involves some arbitrary judgment, and different men will differ as to details; but the essential thing is that the principle be adopted.

We must aim at a thorough and sound knowledge of a relatively few essential parts, and a more superficial acquaintance with the balance of the subject. The attempt to cover every portion of the subject equally can have but one result, namely, that the student knows nothing thoroughly. To begrudge time to the important facts is a most unwise policy. A saving of time in the wrong place is really the greatest waste of time.

A student can cover a much greater field in an hour spent at the text book than in an hour spent at the laboratory. But in that hour at the laboratory, he learns what he could not learn in years from the text book. To secure the time necessary for the thorough study of the important subjects, it is necessary to avoid needless duplication. I am not opposed to the repeated consideration of the same subject in different courses, or in different portions of the same course, if the repetition has a definite object, as the presentation of different aspects. But I believe that it is not only less time consuming, but more profitable to study a subject once, and thoroughly, rather than to study it twice in a slipshod way.

A great deal of time can be saved for better uses by judicious omissions; especially in pharmacy and materia medica. What does the average medical practitioner need to know about pharmacy? Surely a general knowledge of the different classes of preparations and of the principles of their manufacture is sufficient; he has no need to know the details. Even dispensing and the filling of prescriptions can be passed over quickly. I do not consider these matters useless; on the contrary, I am convinced that every student would be a better practitioner if he took a regular course in pharmacy, in addition to his medical studies; but he would be a worse physician if he took the pharmacy course at the expense of his medical course. I am, therefore, in favor of a very small amount of compulsory, and of a fairly liberal amount of optional work, in pharmacy; the latter to be given outside of regular class hours.

In Materia Medica, again, it must be acknowledged, that a fair number of crude drugs, and a very considerable number of the different preparations of the same drug, can be omitted entirely, without serious detriment to the student. Many of these are retained in the pharmacopæia in deference to local or individual preferences; but when there is no good reason for the preference, they should not be allowed to burden the student's time and memory. Should he ever want to know about them, he can find them in text-books. I confess, however, that every reform in this direction, however desirable, is stopped, in some states, by the state examiners. Questions involving some obsolete drug, or

asking for "all the official preparations of iron," or insisting literally on the U. S. P. average doses—such questions are a serious barrier to the progress of medical teaching. They do not test the effective knowledge of the candidate, but they prove, in my opinion, the incompetence of the examiners.

Such drugs and preparations as the student is required to study, he should be made to study thoroughly, not only from books, but by examining the actual specimens. This, indeed, requires some time, but it results in knowledge of practical value.

This brings us to the vexing question as to the time in the medical curriculum when materia medica should be introduced. It appears to me evident, in the first place, that a subject can only be studied with profit when the student is prepared for its reception, when he is sufficiently advanced in the preliminary studies which lead up to it. Materia Medica cannot be understood without a knowledge of chemistry, inorganic and organic and analytical. Without this, the student can obtain only very distorted and untrue notions of the subject.

It also seems to me that the physical properties of drugs, their preparations, doses, etc., are studied most profitably in connection with their action. It is only through the actions that the interest of the student in the drug can be aroused, because they individualize the drug. Drugs, apart from their actions, can mean little or nothing to medical students. They can, indeed, be memorized mechanically, but they will be forgotten at once, and must be learned over again when the actions are studied. It is evident that these actions cannot be understood until the student is well advanced in anatomy, physiology and pathology.

The real study of Materia Medica should, therefore, be joined with that of Pharmacodynamics. It has been argued by those who advocate a seaprate course of materia medica that it is not sufficient to go over the subject once in this manner, but that two separate courses are needed to make the student familiar with the subject. This, of course, depends entirely on the instruction and the student. No doubt, most students would learn more if they went through the entire medical course twice, but we do not require it of them. Why should it be necessary with materia medica? I believe

that the thirty to ninety hours in the first year, devoted in some schools to drilling unprepared students in a meaningless materia medica, could be more profitably devoted to anatomy or physiology, leaving more time in the second or third year for a really intelligent study of our subject.

Pharmacodynamics, the study of the actions of drugs, has developed into an experimental science, based on laboratory and clinical studies, and must be taught by experimental methods. Purely didactic instruction is as inadequate as it would be in chemistry or physiology. It is, of course, out of the question to have the student verify every fact; a considerable amount of didactic teaching is indispensable. Whether the experimental and didactic study should go hand in hand, or whether they should be separated, is largely a question of local conditions and personal preference. My own practice is, to separate them sharply, using the laboratory course as an introduction to the didactic course, according to the principles of the inductive method.

This systematic didactic course in pharmacology is a development of the old systematic course of therapeutics. I believe it expedient, however, to call it by this new name, to emphasize the fact that greater stress is laid on experimental evidence than on empirical observation; and that it deals with the actions rather than with the uses of drugs. These should be explained and discussed; but their main consideration should be postponed until the student has had some clinical experience, and they should then be taken up from the clinical standpoint.

Since the therapeutic actions of drugs cannot be understood without studying, at the same time, their poisonous actions, and vice versa, a separate course in toxicology would be a mere duplication of the course in pharmacology, for which I can see no reason.

The ordinary course of therapeutics is fully covered by what I have called the systematic course of didactic pharmacology; but neither the older nor the more modern course suffices to give the student a sufficient knowledge of the subject. They teach in what condition or diseases a given drug is useful, and why; but they do not teach what drugs to use in a given condition or disease. It is true that these are merely different as-

pects of the same facts: but experience in teaching has proven that, from a practical standpoint, the difference of aspect is of the greatest importance. The systematic didactic course in pharmacology or therapeutics from the standpoint of drugs, must, therefore, be supplemented by another course from the standpoint of disease, a course which must be didactic and clinical; and which I shall call Applied Therapeutics. This course also offers opportunity for practice in prescription writing; but drills in this should be scattered through the whole course.

With the object of illustrating these general ideas by a concrete example, I venture to submit the following schedule for the teaching of the entire subject:

COURSE I: *Elementary Pharmacy, General Toxicology and Principles of Prescription Writing:*—This deals with introductory matter, and could be given in the first year, but belongs more properly in the first part of the second year (1 hour of didactic and 2 hours of laboratory work per week for 19 weeks). This should cover (a) The principles of pharmacognoscy, pharmacy and dispensing (8 hours didactic and 10 hours of laboratory). (b) The general symptoms and treatment of poisoning and toxicologic analysis, including the chemic tests for drugs (3 hours didactic and 14 hours laboratory). (c) Principles of prescription writing, incompatibility, use and materia medica of flavors (4 hours didactic, 3 hours laboratory, 10 hours practice in prescription writing.) This course should be supplemented by optional work in pharmacy (24 hours) or in toxicologic analysis.

COURSE II: *Experimental Pharmacodynamics:*—Laboratory work on animals, supplemented by reading and conferences; designed to give a first-hand elementary knowledge of the principle facts of pharmacology. This work is best suited to the latter part of the second year, when the student is well advanced in anatomy, physiology and pathology, but is still in contact with these subjects (60 hours of laboratory and 24 hours of conference, distributed over 12 weeks).

COURSE III: *Systematic Pharmacology:*—This course takes up the individual drugs, their actions, toxicology, materia medica and therapeutic uses. The instruction is by lectures and recitations. The materia medica is studied from the specimens. This course

requires about 75 to 80 hours for the didactic work and about 25 hours for the compilation of notebooks on materia medica. The locally acting drugs (covering about one-fifth of the entire time) can be given toward the end of the second year; but the greater part of the subject should be reserved for the third year, when the student can appreciate the therapeutic bearings.

COURSE IV: *Applied and Physical Therapeutics:*—Lectures, etc., on the treatment of disease by drugs and other means, supplemented by clinical demonstration, etc., and drills in prescription writing. This course, of about 60 to 90 hours, should begin in the third year and continue through the fourth. It should be under the charge of an experienced clinician. It should deal largely with general principles. The details of therapeutics can only be studied, in connection with the clinical work, in the wards and dispensaries.

DISCUSSION.

DR. ELI H. LONG, University of Buffalo, N. Y.: Mr. President: The essayist has given us such an excellent dissertation on the teaching of materia medica and pharmacology, that I feel what I have to say will rather supplement what has been said in the direction of the more practical teaching of therapeutics.

I have seen the transition that is occurring in the teaching of this subject, and I welcome it most heartily. I think we have reason to rejoice that pharmacology is at last being placed on a pretty firm scientific foundation, particularly with reference to a study of the action and the number of drugs, as demonstrated by experiments on animals. But we must not forget that science will carry us only to a certain point in the development of this subject, and that is just about to the end of the second year, and including what Dr. Sollmann has so nicely elaborated, the study of the facts of materia medica, of pharmacology, and of pharmacy. Then, at the end of the second year, with our regulated colleges, there will be a marked transition from the fundamental sciences to their practical application. Here we come to assume the primary art of therapeutics, and those practitioners of medicine who are present know very well what is meant by the art of therapeutics, without a development and knowledge of which any practitioner goes out into the world very poorly equipped.

In the line of teaching of pharmacy in the laboratory, I would suggest that there is an excellent place for the development of incompatibility for the student in the pharmacy course to be made to produce the common instances of incompatibility in their preparation.

I want to say a word or two about the third and fourth years of work. Permit me to say here, that we can rejoice

also in the fact that we have textbooks for teaching pharmacology that are more scientific and more definite and less dogmatic than formerly. I am not sure, however, that we have as yet a sufficient supply of the right kind of teachers for the third and fourth years. What we need in the teaching of practical therapeutics is a man whose ambition is limited by his desire to teach this branch well, and not a man who uses it as a stepping-stone to the chair of medicine, or who is teaching it as a side issue. If we can conceive of the suggestion of Dr. Thayer being carried out, then the men who devote their time to teaching these practical medical branches should be given financial aid outside of their practice. They should give the larger part of their time to teaching, to hospital attendance, and to clinical work, and if this could be done, it would be a decided advantage.

If you will permit me, I will make a brief reference to Dr. Motter's paper, in which he rather disposes of therapeutics in a very few words. While his remarks concerning the training of the reasoning power and judgment were most excellent, as being superior to the simple acquisition of facts, yet when he seemingly subordinates therapeutics, it seems to me he is throwing away the best of what we have for that kind of training. I mean this: The students come to the beginning of their third year with facts. They have been crammed full of these things in the first and second years. They are supposed to have taken anatomy, chemistry, physiology, some pathology, and a limited part of pharmacology, as Dr. Sollmann has said. What is the student going to do? Now is the time to take him and develop his reasoning powers and judgment by a practical training of his mind in the direction of medicine. I feel that this can be done best by following out the suggestion of Dr. Sollmann, namely, he must take up the study of applied pharmacology, not from the standpoint of the drug, but from the standpoint of the disease.

A suggestion was made in the other paper that the practical application of drugs could best be taught by the department of medicine. Very well; but it is not taught there. When it is left to the bedside, usually the clinical cases are so interesting to the teacher that in the average clinical medical lecture the subject of treatment of disease is dismissed with a few remarks at the end of the lecture, such as, "Just give so-and-so," and that is so frequently the case, and the real training in therapeutics amounts to very little under that kind of instruction. I am of the opinion that the third year is probably the most important year in training the student to study in therapeutics, that is, by enabling him to take the facts as we have them, and this I believe can be best done by the quiz or conference method, not strictly a quiz, but a conference method, where a student develops the subject under discussion, probably having not more than half a dozen students to take part in the exercises in the presence of the class. We should help them to think out and reason out the application of remedies to the disease we are discussing, but from the standpoint of the disease always.

I think we have been made to realize to-day more than ever before the weakness of the medical profession in one particular

direction, and that is in the readiness with which physicians resort to the use of or prescribe proprietary remedies. That is an abnormal condition. We all agree as to that. But where does the fault lie? I believe the fault lies largely with the medical college in not properly training young men in the use of the well-known and well-tried drugs, and particularly in training them in their application. I have come in my own work to regard very highly (and students like the course very well indeed) the devotion of a large part of the senior work in therapeutics to actual prescription work at the board, where hypothetical cases are proposed and students are required to write prescriptions to meet certain conditions. They are criticised by a committee of the class, and then by the teacher; and at the same time, the prescriptions of certain members of the class placed on the board are criticised by certain members of the class. By devoting twenty or thirty hours to that kind of work we are enabled to give the student a training that some of us got only during the two or three years of our first years in practice, and sometimes by making mistakes and having very uncomfortable experiences.

It seems to me it should be impressed particularly on the teachers of therapeutics that we have in this branch the greatest possible opportunity for developmental teaching, developing the reasoning power of the student, developing the art of treatment of disease.

DR. B. D. MYERS, University of Indiana, Bloomington: I wish to express my thanks to Dr. Sollmann for this paper. I know of no subject that has undergone such a tremendous revolution in the last six or eight years in its teaching as has pharmacology. We need to go back only a few years, when the teaching of pharmacology was not as good as it is to-day, although there is still great room for improvement. In taking up a textbook like that of White and Wilcox or Butler, the student was taught that there were twenty-eight preparations of iron, and the dose of each one was so-and-so. I was put through a course similar to that, and came out knowing practically nothing, and when I see students to-day accomplishing in the pharmacologic laboratory what we did not accomplish when we were students, I regret that our courses were so imperfect. Instead of taking a course such as we had, students to-day are taken into the pharmacologic laboratories; they administer drugs to animals; they take the pulse curve and respiration curve, and get a clear picture of the action of the drug given, and they work through only forty, perhaps sixty or seventy drugs during the whole term. But during that term they get a key to the action of almost the entire pharmacopeia. That work has been extremely interesting to me.

DR. SOLLMANN (closing the discussion): I have practically nothing to add to what I have already said. I was glad to hear Dr. Long bring out the difficulties connected with one particular portion of this work. It is extremely difficult to get students sufficiently interested to teach pharmacology as it should be taught, to develop the subject as it ought to be developed. It is a branch that ought to be thought out very carefully and studied with great care. Pharmacology and therapeutics are not elaborated as sufficiently as they should be, nor are they taught quite as effectively as they should be.

WHEN SHALL STUDENTS BEGIN TO ATTEND CLINICS?

By Dr. F. E. Bunts,
Medical Department Western Reserve University,
Cleveland, Ohio.

It is altogether probable that this question, as important as it may seem, will be settled not by theory but by local facilities, environments and necessities, and yet it would almost seem that the whole scheme of medical education could be so classified as to make it of almost universal application. The aim of medicine is the prevention of disease, and its alleviation or cure. Therefore, in a broad way the education of each prospective physician should be identical, could the ideal method only be worked out psycholgically and practically. It is said that the only guide to the future are the teachings of the past, and if this be true we have much in the past to guide us which stands in great jeopardy of being forgotten.

The contest now appears to hinge about the relative merits and claims of laboratory and clinical methods of instruction, as though they might be considered as distinctly apart from each other, and just here, it appears to me, is where an error in our system of medical education begins to make itself evident. Too much stress is often laid on the laboratory, or so-called scientific methods, as opposed to the clinical, or so-called practical or old-style methods of education, for if the clinical methods be not scientific this fact is obviously due to a deficiency in the laboratory methods which have preceded them. It is reasonable to suppose that under the modern methods of instruction, every so-called scientific method which has been proven of value will be made use of by the clinician. His greatest difficulty will be in separating the chaff from the wheat, for of the vast amount of scientific work done in the laboratory, relatively but little can be of actual use in the practice of medicine.

It seems to be the function of certain types of medical schools to develop to the highest point the scientific phase of medicine, while others feel that their function is to turn out graduates capable and willing to take up the practice of medicine wherever chance or opportunity may call them, fitted in an all-round way to meet

the problems and emergencies of practice, familiar with the latest developments of the laboratory, trained to practical work by their clinical and hospital experience and conscious of the fact that there is an art as well as a science in the practice of medicine which must not be neglected; and conscious, too, that though in selecting some small or obscure location he will be forced into a line of exacting work that may forever preclude his making advances in the scientific laboratory methods of investigation, yet so filled with enthusiasm for the profession and of faith in the good to be accomplished by careful clinical observations, that he will continue on in his life work not as a drone, or as one satisfied with what he has already learned, but imbued with the belief, which his knowledge of the past must have taught him, that medicine has been advanced to its present commanding position largely as the result of careful, systematic and well-considered clinical observations. If the work of Pasteur and Behring and Koch shows what may be accomplished by laboratory methods, must we not give equal honor to the far-reaching influence of the clinical observations of Hyppocrates and Galen and a host of others to whom the scientific methods of to-day were wholly unknown?

I scarcely believe it possible that a course in medicine could, as some have declared, be made too scientific were there no limit as to the time at the student's disposal. A whole life devoted purely to the scientific investigation of any one of the phenomena of human life, is not too long for him who has the means and the enthusiasm, and yet at the end of such life, all that he had learned that was new and of actual practical value to the practitioner of medicine might no doubt be crowded into a brief quarter or half an hour's résumé.

We must encourage this spirt of research wherever we find it, but the vast majority must be taught in such a practical way that they may see clearly the value of such observations, be quick to see the good, intolerant of the fakes, fancies and frills which have from time to time been temporarily accepted by our profession only to be relinquished with a feeling of humiliation that their futility had not been discerned from the start.

I am inclined to think that we need two different

types of medical schools, the first of which shall foster and cultivate to its highest possibilities the spirit of science and of research with so much of the clinical side of medicine as shall be necessary to give wide scope to legitimate experiment and investigation. To be of actual lasting value such a course must be a prolonged one and should the total time of study extend but four years the portion devoted to purely clinical work must necessarily be curtailed. Graduates from such schools would be of the highest value as teachers and research workers. In other words, they would be expert medical scientists, but the very spirit which had led them to choose this line of study would, I think, militate against their entering the active general practice of medicine. At least I cannot conceive of such a one contentedly settling down to practice in a village of three or four hundred inhabitants, any more than I could conceive of an engineer, qualified by study and inclination to build a Brooklyn bridge, establishing his office in a similar town.

A former president of the American Medical Association said, "It is apparent, therefore, the lesson of our science and of our colleagues is that the scientific method is the one essential for your success." This advice would be exactly true for the students of the scientific schools to which I refer but unless accompanied by suitable explanation and modification, would, if literally accepted by the prospective student, be fraught with danger to his success in the practical solution of his life's mission. Even as it is today, where in most of our schools clinical teaching is not introduced until the last two years, we find the student entering on his third year studies with an exaggerated idea of the value of his laboratory teachings and a cynicism or skepticism regarding those things that cannot be demonstrated under the microscope or in the test or culture tube, that two years of clinical work can scarcely serve to re-establish a fair equilibrium in his judgment.

While we must encourage every true impulse toward scientific research, we must, as teachers, have the personal success and welfare of our student and of his future patients at heart. He must be taught early the clinical aspect of disease, not the post mortem findings, and as his laboratory work advances he should have the opportunity to apply it clinically and get a well-

balanced, unbiased view of its practical applications and limitations. To the true physician of the past his profession meant something more than diagnosing and prescribing. His training had not been scientific to such an extent that his interest was lost when the diagnosis had been made and the impossibility of cure had been established. He felt that a human life was entrusted to his care, not alone for cure but quite as frequently to palliate, to cheer and encourage to the end.

The medical scientist we must have, but unless the humanitarian side of our practice be more emphasized than it is at present in many of our colleges, one of the great and beneficent ends of our calling must be lost. Possibly in the natural process of elimination, it is time that this should be so, that this part of the duties of the physician which made him the most loved as well as the most esteemed by his patients, should pass to other hands. If so, something great and grand and enobling has gone from us, and we must indeed become medical scientists with the same scientific ideals that give standing and respect and an outlet to ambition to the engineer, the electrician, the zoologist, or the botanist.

In looking over the latest obtainable catalogues of seven among the most prominent of our medical schools, I find but one in which students are expected to attend clinics during a portion, even, of the second year. For two whole years of their four years of medical education they are practically shut up in the laboratories of our schools, patiently putting in their time on work which they finally come to believe is the most important part of their medical education.

When we consider that only two years of the whole college course is given to the study of what might be called practical medicine, and that in these two years are included the teaching of six or seven modern specialties, besides the continued teaching of some of the laboratory studies, we are not to be surprised that the old system in vogue many years ago of study with a preceptor and two years of earnest, enthusiastic study of medicine and its immediate collateral branches gave the profession some of its most brilliant members and most desirable achievements. The additions to the curriculum which a four years course has brought have been chiefly in the laboratories and in the addition of

specialties. The purely clinical work has not been increased to correspond with the increased time required by the modern curriculum.

It was common in former years when an older member of our profession died to regret that one, whose long life of work and observation had made his personal knowledge something that could not be transmitted to his successor, had passed away. Great value was set on the accumulated knowledge and experience which had brought him wisdom in dealing with the problems of sickness and disease. Now, with the exaggerated confidence grown and nurtured in the disproportion existing between laboratory and clinical teaching, the value of this accumulated wisdom of years is lost sight of, and such a death is too apt to be regarded as a necessary blessing since it permits the younger and more experienced laboratory man to be called in his stead.

A very recent writer refers rather feelingly to this overdose of laboratory work, saying, "Our education should strive to produce less of a laboratory man than a diagnostician, less of a diagnostician than a doctor, and less of a doctor than a fellow man." It does not do, however, to indiscriminately oppose the modern tendencies toward laboratory methods. We need them in their highest development in our education of medical scientists and we need them in every colloge, but working more and more in conjunction with clinical teaching, assuming their proper relation, assisting, stimulating, elucidating, but always, whenever possible, closely and intimately associated with the actual study of the living human body. It is not sufficient to apply their teachings to dogs and cats and rabbits and mice and guinea pigs. We are educating doctors to treat human beings. Let that fact be emphasized in every possible way, and never be lost sight of for one moment. The tendency in some of our modern schools of medicine might almost lead one to think that we could best learn how to care for men by first learning how to care for animals.

If clinical material were scarce, as bodies for dissection once were scarce, this might be true, but hospital and college managements have in most instances come to be so intimately related that there is no lack of clinical material, and why should the precious and limited

hours of student life be diverted from the true object of their professional education. The writer above referred to once wrote that the student should meet a patient at the door when he first entered a medical college. Few of us are, perhaps, prepared to admit the desirability of this early introduction to clinical training, but as the preliminary education required of the student increases, and physics and chemistry have been finished, and the elements of histology and biology have been gone over before he starts on his medical course, it might be reasonable to suppose that he might be confronted with a sick human being for investigation before he enters on his third year of study in a medical school.

It is true that several schools have introduced physical diagnosis into the second half of the second year. It seems to me there can be no question as to the urgent necessity for such an early beginning of instruction in diagnosis; indeed, it seems to me that it might well begin in the first half of the second year, and should, I believe, be followed by clinical instruction not later than the beginning of the second half of the second year. This clinical instruction might well be made more elementary than that given during the third and fourth years; definite types of disease might be selected for demonstration, avoiding, so far os possible, complicated, rare, or obscure cases which might tend to confuse or discourage the beginning student. It would seem almost as a corollary of this statement that children's diseases might prove the most valuable at first, since the various organs of the body have presumably suffered less disturbance to their physiologic or normal conditions through the changes incident to advancing years, occupation, and errors in eating, drinking and living. It is true that the pathology of the eruptive diseases is not established in all cases, but this very fact is, perhaps, an advantage to the student for it will at an early stage help to impress on him the necessity for close observation and of its value in diagnosis in those cases where the laboratory fails him, and bronchitis, pneumonia, acute nephritis, tuberculosis, diphtheria, will all be demonstrated and the value of his clinical observations and his laboratory findings will assume their just proportion. In certain ways it will prove a stimulus to laboratory work

by adding to its natural interest the application of it, wherever possible, to the human subject.

The attendance on surgical clinics during the second half of the second year is not, perhaps, so important, and yet the student surely should by this time be prepared, by his studies in physiology, anatomy, pathology and bacteriology, to take up clinical surgery so far, at least, as it might be illustrative of inflammation and repair, the various so-called surgical diseases in most of which the bacteriologic cause has been demonstrated, and possibly tumors. Certain parts of clinical surgery, just as certain parts of clinical medicine, would obviously be unsuitable for students at this time. I would not attempt to more than hint at what might properly be included in the second year clinics in medicine and surgery, but I am sure that something greatly to the advantage of the education of our students could be developed, and I feel sure, too, that the students not only should, but have a right to, receive clinical instruction during a part, at least, of their second year.

Discussion.

Dr. Randolph Winslow, University of Maryland, Baltimore: I have been much interested in this subject, and particularly in the thought which I think is a very valuable one, that certain institutions that are highly endowed and are in a position to develop the highest degree of teaching along scientific lines would do well to make that their object rather than attempt to monopolize the preparing of medical students for the practice of medicine.

I have long been convinced that in our recent devotion to laboratory methods of investigation of disease, we have neglected somewhat those cardinal features of observation that our forefathers—men like Sydenham, Abernethy and others of that intellectual stamp—so successfully practiced, namely, clinical observation as elicited through our unaided senses rather than by means of laboratory methods; not that I decry in any manner laboratory methods. I wish, however, to make a plea for the cultivation of that which we can see, hear and feel, while not excluding the other. In other words, cultivate our senses whilst we do not neglect laboratory methods. I think we have been rather inclined in the last decade, perhaps, to neglect our unaided senses, and to rely largely on what somebody in the laboratory tells us is the matter with the patient under observation. I think we might profitably cultivate sight more, also *tactus eruditus*, and hearing, than we have done in more recent years.

Dr. D. C. Bryant, Creighton Medical College, Omaha: I cannot let this paper go by without uttering a word of com-

mendation. It is one of *the* papers that has been read here to-day. I agree with what the essayist said with regard to students not having sufficient laboratory work. However, they do not fail so much from a lack of laboratory work as they do from a lack of the third and fourth years of work. They lack what we call the practical work that is given in the third and fourth years, and many have suggested to us that we begin the practical work earlier in the course. We have concluded to do that in our next year's course, so that the second year men will have some clinical work. They will attend what we call the outdoor or dispensary clinic, and we can regulate this matter to suit the class of students we wish to teach. We can bring certain cases to them that would properly come to them, and I believe that we will like this manner of teaching much better.

Thirty years ago we had practically no laboratory teaching; then the pendulum began to swing, and we took in more and more laboratory teaching, until we have really crowded out some of the teaching that was done in the old third year course, and I think the time will come when we will find it necessary to add another year to the course, making it five instead of four, so that the greater part of the work should be in the second and fourth year courses.

DR. DAVID STREETT, Baltimore Medical College: I wish to emphasize what Dr. Winslow said. I have no doubt whatever that it is true. In the good medical schools of the country that are well equipped with laboratories, histology, bacteriology, etc., have been brought prominently forward, while clinical instruction and actual physical examination have not kept pace with laboratory work, and it seems to me, Mr. President, that this work should go hand in hand.

I noticed that the author of the paper said that clinical work was begun in the second year. In our school we have been teaching physical diagnosis in the second year, having brought it back from the third to the second year. We have taught in the beginning the normal human body, beginning with the second year, and have gone on to the pathological body or the various diseases of the body, with physical diagnosis in the third year. This has stimulated the work of our students in every direction.

Another thing: For several years we gave clinics in general medicine and surgery in the fourth year, giving two general clinics. We give them good laboratory instruction. We give the students opportunities in our four years to acquire a good knowledge of general medicine and general surgery, and there is no question but what they learn a good deal by practical observation; it stimulates interest in the laboratory work of the college. The afternoon laboratory work, however, in pathology has been one of the greatest bugbears to our students, and while we have devoted more time and expense to that work, our students have gotten the lowest mark with the State Board of Examiners in that subject. We have concluded—at least, I am going to suggest that we take up medicine along with pathological work in the second year.

DR. B. D. MYERS, University of Indiana, Bloomington: I do not like to see this Association go on record as being entirely

in favor of doing clinical work in the second year. As a teacher of the first two years, I am positive that there is no time for anything but the teaching of laboratory subjects in the first two years, and when clinics are given to second year students, outside of some physical diagnosis on the normal individual, I believe it is a mistake.

DR. WILLIAM F. R. PHILLIPS, Geo. Washington University, D. C.: I wish to emphasize what Dr. Myers said. I teach in the first and second years, and am thoroughly satisfied the first and second year students do not appreciate clinical work. A student in the first and second years is not in a receptive mood. He has not received the information necessary to follow clinical work intelligently. He has not the groundwork, and it is like casting pearls before swine to bring second year men into a clinical amphitheatre with the idea that they are going to get anything out of it. That is my own personal observation. This is an experience meeting; we are relating our own experiences, and it is by so doing that we learn something. Clinical instruction can well be deferred until the middle of the third year. I have reference now to actual clinical instruction; that is, placing before the student the diseased individual. If we begin in the middle of the third year to give him clinical instruction, he may be able to understand what is taught him. In recent years more and more stress is laid on the actual observation of the sick at the bedside, and clinics are given to small classes. I believe it is an excellent idea to eliminate the large amphitheatre clinic, where the only person who gets anything out of it is the clinician himself.

NOTE.—The paper by Dr. Baker was not received in time for publication.

OBSERVATIONS ON THE TEACHING OF CLINICAL MEDICINE.

By WILLIAM SYDNEY THAYER, M. D., Professor of Clinical Medicine, Johns Hopkins University, Baltimore.

In the few words which, through the kindness of your President, I have the privilege of saying to-day I shall endeavor to bring out some of the things which we have been trying to do in the medical clinic of the Johns Hopkins University while dwelling, at the same time, upon some improvements which we feel might be made.

The idea which has inspired the development of our system, that which has been so often emphasized by Dr. Osler, is that the one satisfactory way of teaching medicine is by the direct observation and study of disease in the Out-patient department and at the bedside —that in comparison to clinical medicine, all other methods are makeshifts.

In brief, the system which we have worked is as follows: The school has a four years' graded course. Instruction in chemistry, organic and inorganic, as well as in the elements of botany and biology, are required for admission to the school. The first two years are devoted entirely to laboratory work in anatomy, physiology, physiological chemistry, pathological anatomy and pharmacology. Instruction in clinical methods is not begun until the middle of March of the second year.

PRELIMINARY COURSE IN AUSCULTATION AND PERCUSSION.

At this period in the curriculum the second-year students are given from ten to twelve exercises of two hours each, twice a week, on the theory and practice of physical exploration of the normal subject. This course, which is given by Dr. J. R. Brown, is one in which I have been especially interested and which I conducted for some years. It is based on the conception that it is necessary, before beginning the study of diagnosis, to be familiar with the physical basis of the methods of examination which one must employ and with the practical application of these methods in ex-

ploring the position and function of normal organs. The students are first introduced to the inspection of the normal body. They are trained, for instance, in the observation of the normal chest, the expansion of the lungs, the pulsation of the heart and vessels of the neck. They are then led to the study of palpitation of the chest and abdomen. Theories concerning the cause of vocal fremitus are then considered, and the student is led to suggest the physical changes which might modify these normal signs. From this they are induced to consider what physical alterations might be brought about by the more common pathological changes with which they have become familiar in the laboratory.

They are then taught methods of percussion; the variations in the note in collapsed and inflated lungs are demonstrated by experiments on pigs' lungs and bladders. The physical theories with regard to these percussion sounds are then discussed, and again the students are led to a consideration of what modifications of the percussion sound they might expect in the ordinary pathological conditions.

At the same time, in sections, the class is trained in topographical percussion of the lungs and abdominal organs. These exercises are accompanied by demonstrations of topographical anatomy on the cadaver and on models. I always endeavored to give to the class one or two demonstrations of the percussion of the heart on a fresh cadaver. The heart was first outlined by percussion; a number of hat pins then were introduced so as to mark out the boundaries. The heads of the pins were then cut off by a forceps, the chest opened and the relations of the pins to the outlines of the heart compared. In a similar manner are taught the theory and practice of auscultation of the normal heart and lungs.

The whole class has from ten to twelve exercises, the first hour of which consists of an informal talk and demonstration, and the second in practical work in sections.

Third Year Class.

Physical Diagnosis—The main work of the third year is in physical diagnosis. The instruction is given in the out-patient department under the charge of Dr.

Futcher with twelve associates. Each student has four hours a week of practical work. This is arranged as follows: The class which, this year, consists of 66 members, is divided into four groups.

In the first half year each group has every week:

(1) A two hours' exercise in systematic instruction in physical diagnosis in small sections. For this purpose each group is subdivided into four sections so that each instructor has under him from four to five students. From October to February, these sections are taken systematically through the physical diagnosis of the common pulmonary and cardiac changes.

(2) The whole group, undivided, spends two hours a week in the Medical Out-Patient Department. Their work during this part of the year is elementary, consisting of history and record taking and, indeed, the ordinary duties of under assistants.

In the second year each group has:

(1) A two hours' exercise in the physical diagnosis of diseases of the abdomen.

(2) Two hours of dispensary practice. The student is now supposed to have acquired a sufficient knowledge of physical diagnosis to examine cases independently. A schedule is arranged by which each student is assigned to a special instructor for each exercise throughout the second half year. The whole out-patient staff is called into service in order that every student may have individual instruction. In no instance does an instructor have more than two men on a given day. Each student is given a case. Of this case he is expected to take the history and make a thorough physical examination and diagnosis, reporting at the end of an hour to his instructor, who goes over the case with him. In a book is kept a complete record of the cases which each student has seen together with an estimate of the value of his work by the instructors into whose hands he has come. These records are of considerable value in determining the standing of the student at the end of the year.

In May, Drs. Futcher and McCrae give a practical examination to each student, as well as a two hours' written examination at the end of the year. The standing of the student depends upon the record which he has made: (1) in his practical work during the second half year; (2) in his practical examination; (3) in

his written examination. The personal familiarity which the instructor acquires with the student in such work has been found to be of great value, and has enabled us in a good many instances to reach much more definite conclusions as to the character and ability of the men than a single examination would afford.

Recitation—Once a week the whole class meets Dr. Futcher for a recitation in which the entire subject of physical dagnosis is taken up in systematic review.

Diagnostic Clinics—At twelve o'clock on Mondays, Wednesdays and Thursdays, Dr. Barker, Dr. Futcher and I have a clinical exercise in which several patients are brought in from either dispensary or wards for examination before the class. The object of this class, which was established by Dr. Osler, and was one of the most valuable parts of his instruction, is to teach general methods of diagnosis. The exercise has always been an informal one. If an interesting question arises, a student is requested to look up the matter and to report at some future meeting with a five-minute paper. Each student is also expected to follow, as far as he can, the subsequent history of the case which he has shown and to report on it at a later day. At the end of each month a student is appointed to read a round-up of the cases which have been seen.

Medical Clinic—On Saturdays, from twelve to one, Dr. Barker gives a more formal medical clinic in which the fourth-year class especially takes part, but to which the third-year men are also invited.

Microscopical and Chemical Diagnosis—During two afternoons in the week Dr. Boogs conducts a class in microscopical and chemical diagnosis. To these exercises two hours and a half are assigned. The students are here instructed in the methods of examining blood, sputa, gastric contents, urine, faeces, etc. This is much more than a mere demonstrative course. The students are given thorough training and are required by repeated tests to prove their ability to accurately count blood, to make satisfactory examination of urine, sputa, etc. At the end of the year the class is obliged to pass a practical examination. Each student has a locker of his own with a microscope and reagents, and often does a good deal of work outside of hours.

Medical Anatomy—A course in medical anatomy is given by Dr. Cohoe once weekly from the first of

April to the first of June. This consists of demonstrations of practical points on the cadaver.

Fourth-Year Class.

The work of the fourth year consists mainly of practical service as assistants in the wards. The class is divided into three groups, each group spending two months and a half in the medical, surgical and gynaecological-obstetrical services, respectively. The schedule is so arranged that the student is able during the period of medical service to devote the greater part of his morninigs to the wards. He acts as an under assistant, or, to use the term employed in the English hospitals, from which the idea of this service has been taken, as a "clinical clerk." Each student has a certain number of patients assigned to him. Under the direction of the ward physician he takes the history of the new case, keeps the notes and is responsible for examinations of the blood, sputa and excreta. He has access to the wards from eight in the morning until six at night. During the physician's visit in the morning the student is expected to give a thorough history of his cases, to keep account of the course of events, and to defend his diagnoses. Regular ward visits are made from nine to eleven on Mondays and Wednesdays, and from half past eight to ten on Fridays, by Dr. Barker and myself. These visits are attended by this section of students as are also the visits of Dr. Emerson, the resident physician, and Dr. Morris, the first assistant on alternate days. The class is divided into two sections so that on any given morning one-half is with Dr. Barker and one-half with me, while the visits to the wards are arranged in rotation so that the student's time is equally divided between the two instructors.

Clinical Lecture—From twelve to one on Saturdays a clinical lecture is given by Dr. Barker in the amphitheatre. At this exercise selected cases are shown and discussed. Members of the fourth-year class are expected to read the history of cases shown and to report on the progress of those which have been discussed at the previous exercises.

Recitations—Once a week Dr. Emerson holds a recitation for the entire fourth-year class, endeavoring to carry them systematically over the subject of medicine.

Clinical and Pathological Conference—From five to six o'clock, once a week, a clinical and pathological exercise is given by Dr. MacCallum and myself for a consideration of the fatal cases of the week. Owing to the closely crowded schedule and to the fact that necropsies often have to be performed on short notice it is frequently impossible for students or physicians to be present at the necropsies on cases which have been seen in the wards. The exercise is designed to fill this gap. At these meetings, to which the third and fourth year clases are invited, the history of each case is carefully summarized and read, and the diagnosis, which has been written down before the necropsy, is discussed. Dr. MacCallum then demonstrates the specimens, after which there is a discussion of the important points which have been brought out.

Therapeutics—Practical therapeutics are discussed during the morning visits. In addition to this Dr. McCrae gives a special course which extends through the third and fourth years. This consists of two exercises a week of an hour's duration each in the amphitheatre and wards.

Electives—There have been given in the last year two elective courses in medicine, one upon the Medical Physiology of the Diseases of the Circulatory System by Dr. Hirschfelder, and the other on Special Methods of Investigation of the Infectious Diseases by Dr. Cole. It has become possible to give these courses through the organization of three new laboratories: (1) A laboratory for research in matters pertaining to physiological chemistry; (2) a laboratory for biological research, and (3) a laboratory for physiological research, presided over respectively by Drs. Voegtlin, Cole and Hirschfelder. These laboratories are, it is true, more directly connected with the hospital than with the school organization, but through their formation it has become possible to give elective courses or opportunities for special research work.

Examinations—At the end of the fourth year there are given (1) a practical examination in the wards of the hospital, each student being assigned a case for examination; (2) a two hours' written examination.

In determining the final standing of the men much consideration is given to the character of the work

which they have done during their term of service as clinical clerks in the wards.

In the main this system has seemed to us satisfactory. It has differed from that which exists in most other institutions in this country only in the replacement of didactic lectures by practical ward work and recitations. This method, we are convinced, is wise. In Dr. Barker's weekly clinic, and in the long morning visits, it is perfectly possible for the professors of medicine to treat at length any subject which they feel should be set forth didactically, while the great advantages of direct personal observation of the patient are, it seems to me, hardly to be denied. The objection may be raised that too much is expected of the student—that he will not of himself read systematically. This objection is thought to be met by the regular progressive series of recitations which take the student over the whole subject of medicine just as would a course of didactic lectures. In the schedule for next year these recitations will be changed to the third year.

There is another objection which might be raised—namely, the great demands of such a system upon the time of the instructor. That the demands upon the time of the instructor are considerable cannot be denied. Dr. Futcher, for instance, gives from six to eight hours a week to pure instruction, apart from his routine dispensary work. Dr. Barker and I give, throughout the year, seven and a half hours a week to actual instruction. Many of the junior instructors in the dispensary also give an equal amount of time. But the answer to this is, it seems to me, that medicine cannot be taught without time and trouble and that the time has come when the medical school should demand of its professor of medicine a limitation of his practice outside of the hospital, while affording him the financial assistance sufficient to enable him to devote the greater part of his time to hospital practice and teaching.

There is also a third objection which is very commonly raised to a system such as ours, an objection based upon the fear of hospital trustees that the presence of students in the wards may in some way interfere with the proper treatment of patients. This objection depends upon a complete misconception of the true conditions. And it is rather remarkable to one who has had experience with the system of clinical

clerks, and has observed its operation in England, to see the persistency, in so progressive a country as ours, of so unfounded a prejudice. As a result of seventeen years' experience in the wards of the Johns Hopkins Hospital I can say without hesitation that no one improvement, nay more, not all the improvements which have developed in our system since the opening of the hospital have resulted in such real benefit to the patients as the introduction of students into the wards. Fourth-year students, in their capacity of clinical clerks, form simply an additional force of trained assistants. A few months' experience with the help which such a body of men gives to the physician in the care of his patients makes one indeed wonder how he could have conscientiously undertaken his work in the days when he had to depend upon a limited number of internes for all the emergencies which arise in a general hospital. On the other side, the advantage to the student is obviously great.

In conclusion, I should like to emphasize one point which, it seems to me, is much to be desired in the development of the teaching of clinical medicine. This goes back to the very beginning of the teaching of physical diagnosis. The student is ordinarily taught general and topographical anatomy and the physiology of the thoracic and abdominal organs in his first and second years. And it is not until the end of his second or third year's study that he is introduced to methods of exploring the condition and functions of these organs and determining the presence or absence of pathological changes. It has long seemed to me that the study of topographical percussion and of the characters of the normal respiratory sounds in the human being should form a part of or an accompaniment to the course in anatomy and physiology rather than that of clinical medicine. And I hope to see the day when it will be possible for clinicians to work hand in hand with anatomists and physiologists in such a manner that the student may be taught to control that which he is learning on the cadaver with regard to the position and size of internal organs by the simpler methods of physical exploration on the normal subject—to control that which he is taught by the physiologists with regard to the heart sounds and the respiration by intelligent auscultation of these sounds, not only in quadrupeds,

but on human beings. To bring this about requires only a little more time and a little co-operation between the anatomist the physiologist and the clinician. But no one step could be of greater importance in leading the student to approach physical diagnosis by the proper path.

Finally, there is another subject on which I wish particularly to touch. It is a matter which relates to the teaching of medicine from a broader standpoint. The last twenty years have seen great improvements in our methods of teaching and a gratifying elevation in the requirements for the qualifications to practice. The introduction of a four-year graded course was a considerable step in advance. Yet we must not forget that it is far from an ideal system. The four years of training is everywhere a crowded course. If, for instance, we look over the schedules of our own third and fourth year work we must realize that it is impossible for a student to accomplish thoroughly all that is there laid out. But with the gathering together of large bodies of men in classes—the system of ranking—the prizes, both material and in the shape of hospital interneships which go to the men who stand highest, many students are always goaded to seek for general rank, working in a way which is bad for their health as well as for their best medical development. Again, if a student, for instance, find some special interest—let us say—in anatomy, and, as sometimes happens, finds himself drawn into a piece of original work of real importance —he can pursue this only by neglecting another equally important branch or by dropping from his class and repeating a whole year's work.

Now it is obvious that any prescribed system such as the ordinary four-year medical course cannot suit all men. It must be and is planned to be the course which shall best adapt itself to the average student. There are many men in every class, and by no means always the poorest men, who would, if left to themselves, accomplish their work more thoroughly by arranging their time differently and by spending perhaps three or six or nine months more than the time allotted in a prescribed schedule. Under the present system they are crowded through prematurely and obliged to work in a manner which injures their health and impairs their efficiency as physicians. A prescribed

course with a class system encourages cramming for examinations, no matter how we may endeavor to avoid it.

All this is, of course, to a lesser extent true of boy's schools, and we all, I think, realize that, with satisfactory private instruction, the pupil can do more and better work in a shorter period of time than he can in classes which are of necessity so arranged as to suit the intellect and capabilities of the average boy. But where we have schools and academies and small colleges for boys, we have universities for men—universities which offer one the opportunity to follow whatever line of study he will under those conditions which are best suited to his temperament, his habits, his capabilities, his tastes. Now medicine is a subject to be approached by men, not by boys, and it should, in my opinion, be taught by university methods. The man who undertakes the study of medicine should have reached a period of development at which he is capable of deciding how and under what conditions he can do his best and most efficient work, and such a man ought to have freedom in the selection of his courses and of the time which he chooses to give to them. He ought not to be bound down to schedules prescribed for a large class; he should be able to present himself for his final examinations when he is ready. Such an opportunity should be offered at at least two or three stated periods in the year. This is what is accomplished by the semestral or trimestral system in foreign universities, and it seems to me that we ought to endeavor to follow their wise system. Let the requirements be high; let there be a minimal time limit of four years at least; let the student be given advice as to the manner in which his course should be arranged and planned; let those courses then be given on a semestral or trimestral basis, and let the student be free to spend as much time or as little (within the prescribed limits) in his work as he will and present himself for his examinations at the end of any semester or trimester according to his own best judgment. This system would, it is believed, develop a higher order of work and a better product.

Again, under such a system, it is but a step to the introduction of extra-mural teaching, and the time ought not to be far away when any good man who

controls clinical opportunities or a laboratory may find an opportunity to offer the advantages of his clinic or his material to the students of his community, as well as to show his own capabilities as a teacher. The University of Chicago is already in advance of our other schools in these respects. Teaching is on a trimestral basis; the class system is practically abolished; examinations are held four times a year. A man is there able to enter on the study of medicine with the same deliberation with which any one of us to-day would take up the study of some new scientific problem.

Such a system as this cannot be set up in a day, but it is the end toward which we ought, it seems to me, to look. I trust that it may not be too far off.

DISCUSSION.

DR. B. D. MYERS, of Bloomington, Indiana.—Mr. President: I would like to refer to one or two things in connection with Professor Thayer's paper. I understand from his paper, that in the first two years absolutely no clinical work is given on a sick patient. Of course, physical diagnosis can be taught on the student himself as well as on the patient.

Another point: Do you substitute your quiz work for lecture work in clinical medicine?

DR. DAVID STREETT, of Baltimore.—I would like to ask Dr. Thayer whether we understand that they cover the whole course by recitation at the Johns Hopkins. I will say that in the college with which I am connected we have the didactic and recitation clinic system, and we cover surgery in the second year, and also medicine, by recitation. We aim to cover the whole work of the second year, but never feel we can do that without didactic lectures. I fail to understand how we can conduct a course in medicine and surgery without giving students clear, definite lines, so that they will know something, **ex cathedra**, on the subject taught them. If we take the textbooks we use, on each subject we will find the student wades through a lot of matter consisting of facts taught at that time, but it occurs to me it is not possible for him to digest all things and come to any general conclusion. For that reason, it seems to me, the student ought to have in his work a short lecture course, so that he may have a platform on which to stand. This matter of teaching clinical medicine opens up a big field for Johns Hopkins, but it is a new thing to me.

DR. THAYER (closing the discussion).—I think the two questions that have been asked cover practically the same ground. In the third year the work is mainly devoted to physical diagnosis, and in general clinics on general diagnosis. In the fourth year the work is carried on at the bedside of the patient. Students in the fourth year are taken from one end to the other of the practice of medicine by recitation. They take it systematically from the first to the last page in the practice of medicine. Medicine is covered as it would be by a series

of didactic lectures under Dr. Emerson, except the students are obliged to read more than one year in such a course of lectures. They are obliged to go through the whole book; and, at the same time, students are required to devote five and a half hours a week to ward visits, and six hours a week to ward visits at the bedside of patients. It is not at all infrequent for a professor to stop in his rounds and give a lecture of one hour on one case on any special point. Here is what we call practically didactic teaching at the bedside. Eleven and a half hours a week are spent at the bedside of patients, and one recitation per week takes the student through the book on medicine.

DR. TAYLOR.—Does the student read up before he is quizzed, or is he quizzed first and then reads afterwards?

DR. THAYER.—He reads a certain number of pages that are given to him to go over in his book, which takes him from the beginning to the end of the book. In the third year he goes through pathological anatomy. He is led into the question of physical diagnosis by easy gradations. This is purely a diagnostic clinic. We expect the student in the third year to follow that which he sees. Cases are brought before him and in his third year he is expected to read medicine and to follow that which he sees.