Association of American Medical Colleges.

REPORT OF COMMITTEE ON SYLLABUS.

Sixth Annual Meeting, held at the Club House of the Hotel Rennert, Baltimore, May 5, 1895

REPRINTED FROM
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
JUNE 29 and JULY 6, 1895.

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Sixth Annual Meeting, held at the Club House of the Hotel Rennert, Baltimore.

Dr. E. Fletcher Ingals, President, in the chair.

The minutes of the last meeting were read and approved, upon amendment, changing the records to indicate the presence of the representatives of the University of California and the Western Pennsylvania Medical College of Pittsburg, Pa.

Dr. Michael raised a point denying the legality or regularity of any action taken at San Francisco at the last meeting, as only twenty-three colleges were represented out of a total enrollment of forty-one colleges. The point was discussed by Drs. Millard, Cole, Street, King, White, Roberts, Thomas and Graham. The chair ruled this point as not well taken and that a legal meeting was held.

Roll call indicated the following named colleges represented by delegate, and were reported to the Secretary as being the official list of the present membership as called for under the amended Constitution and By-Laws. [To be published later.]

The Secretary submitted his annual report, which was adopted.

Dr. N. S. Davis presided during the reading of the President's Address. [To be published later.]

Upon motion of Dr. Cole, the address was adopted and ordered printed and also ordered circulated to all teachers of medicine in the country.

Upon motion of Dr. Millard, the President appointed a committee consisting of Drs. Osler, Baker and Graham to submit the names of distinguished teachers for honorary membership. The committee reported the following named persons: H. P. Bowditch, Harvard; Geo. H. Sternberg, Surg.-Gen. U. S. Army; J. M. DaCosta, University of Pennsylvania; N. S. Davis, Chicago Medical College; Levi Cooper Lane, Cooper Medical; Hunter McGuire, University Medical College; T. Gaillard Thomas, Columbia College. The report was adopted and the names reported elected to honorary membership.

The Secretary submitted the report of the committee on syllabus, and minimum of requirements, and upon request of the committee the sub-committee, consisting of Drs. Millard, H. A. Kelly and Bayard Holmes, were directed to make the necessary amendments and to print the same in the proceedings of the fiscal year.

The Constitution was by a unanimous vote amended, to provide that the annual meetings begin Monday, A.M., of the week in which is held the meeting of the AMERICAN MEDICAL ASSOCIATION.

DR. HOLMES presented a paper upon Libraries for Medical Schools, which was read and ordered printed.

The following notice of amendment to the Constitution was previously submitted by the Dean of the College of Physicians and Surgeons of Baltimore, to-wit: that Sec. 4, of Art. III of the Constitution be amended to read as follows: "Candidates for the degree of Doctor of Medicine in 1904 and thereafter, shall have pursued the study of medicine for a period of four years, and attended at least four courses of lectures of not less than six months' duration each," was read and discussed by Drs. Michaels, Holmes, Millard, Crauмer of Omaha, Friedenwald, Culbertson, Davis and Cole. Upon vote, the amendment was defeated by a vote of 30 nays to 5 ayes.

Upon motion, the action taken at California relating to the curriculum of study was confirmed.

The Judicial Council through its Chairman, Dr. Dudley S. Reynolds, reported as follows: in the matter of complaints against the College of Physicians and Surgeons of St. Louis the Council reported the methods, as disclosed, in bad taste and not in accord with the rules of the College Association. In the matter of the reference of the Ft. Wayne Medical College, regarding the matriculation of students, the action of the school was sustained.

In the matter of the communication of Dr. J. A. Larrabee of the Hospital Medical College, relating to the action of the Association in expelling the Kentucky School of Medicine from membership in this body, the Council reported that it had no opinion to express.

In the matter of the communication of Thos. H. Hoover, Regent of the Starling Medical College, the Council reported lack of definite information.

The rules submitted by the Judicial Council were adopted.

Upon motion of Dr. Larrabee, the colleges connected with the Southern Association of Medical Colleges were invited to make application for membership in this body.

In the matter of the application of the College of Physicians and Surgeons of Boston, and the Woman's Medical College of the Presbyterian Church of Cincinnati, the ques-

tion of admission to membership was referred to the Judicial Council with power to act.

Dr. J. A. Larrabee moved that the disability of the Kentucky School of Medicine be removed, and it be permitted to apply for membership. The motion was seconded by the Secretary and adopted.

In response to a unanimous expression of the Association, the following named colleges were elected to renewed membership: the University of Louisville, the Louisville Medical College, the Kentucky School of Medicine.

The following officers were elected for the ensuing year: President, Wm. Osler; First Vice-President, J. M. Bodine; Second Vice-President, W. Graham; Secretary and Treasurer, Bayard Holmes. Judicial Council, Reynolds, Pancoast and Vaughan.

Dr. Cole of the University of Colorado, submitted the following notice of proposed amendment to the Constitution and By-Laws, to wit: that Sec. 4, Art. III, be amended to read: "That the preliminary examination provided for, shall be conducted by a Board of Examiners in no wise connected with a teaching body of a medical college."

Upon motion, adjourned.

Perry H. Millard, Secretary.

PRELIMINARY REPORT OF THE COMMITTEE OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES ON SYLLABUS OF A FOUR YEARS' COURSE OF MEDICAL INSTRUCTION.

In presenting this preliminary report your committee appointed at Baltimore, May 5, finds itself facing a problem requiring much time and study, and an emergency in the evolution of medical education calling for great promptness. Many schools are passing from a three year, and largely ungraded course, to a four year graded course. The traditions of the past must be violated and no authority or precedent for the new order is at hand.

Your committee wishes, therefore, to place before the colleges all the information in its possession, taking a very broad and liberal view of its duties. The reports of the sub-committees are given almost always in full. In a few cases it has been necessary to cut them down. The committee is unable to coördinate and simplify the syllabi, and recommend a complete syllabus of the full course at this time. It is possible that such a syllabus might be looked upon as interfering in a measure with the freedom of the teachers, even though it would be advisory only.

It is far from the intention of the Association to interfere in any way with the complete liberty of schools or teachers in the presentation of medical teaching, or crystallize upon them a course of study which would prevent or delay further progress.

So many teachers and so many colleges are calling for help in re-organizing their courses of study, that this incomplete report is offered with the hope that at the next annual meeting of the Association a complete and final syllabus may be handed in. Criticism and correspondence is solicited.

Before making a syllabus of the minimum required course of study for the guidance of members of this Association, it seems necessary to establish some unit of measure. The most common unit now in use among educators is, perhaps, the sixty recitation hour unit; or a recitation of one hour each day, five days in the week for twelve weeks, that is for three months. This unit of sixty recitation hours will be used in this report.

The following questions naturally present themselves and the discussion shows the present opinions of the committee:

1. How much work should be required of the student each year?

The student can reasonably be expected to work ten hours a day. Every recitation or lecture hour should require one and one-half hours of preparation. Four recitation hours would make the student's working day ten hours long. In medical schools the students are old enough and mature enough to stand this amount of work. Four recitation hours would be equal to 9⅓ units of 60 recitations each for the minimum year of seven months. The four years would give a total of 37⅓ such units.

2. How can laboratory work and clinics be measured?

Much of the work in the medical colleges is either laboratory or clinical work. Neither of these requires much time for preparation, outside the time consumed in the laboratory or clinical amphitheater. Laboratory or clinical work may be reasonably counted as half time. Two laboratory hours or two clinic hours equal one recitation hour.

3. What should be the proportion of lectures or recitations, of laboratory work and of clinical work?

The committee is of opinion that the proportion of lectures or recitations is now in most American institutions much too large. For the present, we recommend that the work of the four years be nearly equally divided into three portions: one-third being given by means of lectures and recitations, one-third by laboratory methods and one-third as clinical teaching.

4. Shall all of this minimum of 37½ units be required, or may some of it be elective?

We believe that the larger portion of this minimum should be definitely laid out and required of every student by his college, but we urge that each college have a group of courses measured the same as other work which students may elect to fill out the full complement of courses required.

5. Is any particular order in the curriculum necessary or desirable?

Certain branches are necessarily primary, others are necessarily final. Anatomy is, for example, a primary study, and with physiology, embryology and bacteriology it should come before pathology. Pathology should be followed by general medicine and surgery, and these by the specialties. While no definite order is necessary, a certain natural sequence should be observed, so that the student may be led from the known to the unknown, from the concrete to the abstract, and from the special to the general. In this connection the sub-committees present many valuable ideas and suggestions.

Signed, HOWARD KELLY,
BAYARD HOLMES.

DR. N. S. DAVIS JR., gave a report on

MINIMUM OF REQUIREMENTS.

First Year—Lectures and Recitations—Hours per week.—Anatomy four, physiology four, histology and embryology two, chemistry three; *laboratory exercises*, physiology two exercises a week, chemistry three exercises a week, histology and embryology three exercises a week, bacteriology three exercises a week. Dissections. [120 hours].

[In a nine months course this would equal about 15 units].

Second Year.—Anatomy two, surgical anatomy and operations two lectures and recitations, practical exercises [60 hours], general pathology three lectures and recitations, pathologic laboratory three exercises, physiologic laboratory three exercises, physical diagnosis two lectures and recitations, materia medica two lectures and recitations. Dissections [120 hours].

[In a nine months course this would equal about 11 units].

Third Year.—Practice two lectures and recitations, surgery two lectures, obstetrics three lectures, therapeutics three lectures, hygiene one lecture, pædology one lecture, dermatology one lecture.

Clinical instruction: medicine three hours, surgery three hours, gynecology one hour, eye and ear one hour, pædology two hours, dermatology two hours, mental and nervous one hour.

[In a nine months' course this would equal about 10 units.]

Fourth Year.—Practice two lectures and recitations, surgery two lectures, orthopedia one lecture, gynecology two lectures, mental and nervous one lecture, eye and ear one lecture, jurisprudence one lecture and recitation half year, laryngology one lecture and recitation half year.

Clinical instruction: medicine three hours, surgery three hours, gynecology one hour, eye and ear one hour, pædology

two hours, dermatology one hour, mental and nervous one hour, orthopedics one hour, laryngology one hour.

[In a nine months course this would equal about 10½ units.]

By laboratory exercises, is meant exercises not to exceed two hours in length. The arrangement by years is capable of deviation. The time allotted to some of the topics may with advantage be increased. The clinical exercises may likewise be extended to advantage. Each student should be furnished an instrument or microscope for laboratory use. In the chemic laboratory each student should have his own desk and apparatus. Ample equipment of all laboratories should be insisted upon.

SCHEDULE OF MINIMUM OF REQUIREMENTS.

This represents the minimum amount of work in each branch entitling colleges to remain in active membership in this Association. See report of 1894.

Represented in hours "D," indicates lectures or recitation exercises. "L," indicates laboratory work.

Histology and embryology, D, 50, L, 700; anatomy, D, 100, freshmen; D, 100, juniors; laboratory, 100; dissection of entire body.

Physiology, D, 100, L, 75; chemistry, D, 125, L, 125; bacteriology, D, 25, L, 150; hygiene, D, 25; medical jurisprudence, D, 12; practice, D, 200, weekly clinical instruction; surgery, D, 200, weekly clinical instruction; surgical anatomy, D, 100, including laboratory work: obstetrics, D, 150, including recitations; ophthalmology and otology, D, 25; mental and nervous, D, 25; materia medica and therapeutics, D, 125; dermatology, D, 25; orthopedia, D, 25: genito-urinary, D 25; pædology, D, 25; physical diagnosis, D, 75; pathology, D, 50, L, 100; laryngology, D, 25.

DR. BAYARD HOLMES, of Chicago, presented a report on

AN IDEAL WORKING FOUR-YEAR MEDICAL COURSE, LEADING TO THE DEGREES A. B. AND M.D.

Prepared for a university having regular and homeopathic medical teaching. A major equals one of the 60 hour units used above.

Admission to this course is granted only to those who have completed the sophomore year at this [any] university and to those who pass an examination on the required work, as laid down in the university calendar.

The University College embraces thirty courses of sixty recitation hours each. This college requires two years of work. When these thirty courses are completed, the student will receive A. B. at the succeeding Commencement. The *required* courses of the University College are as follows:

(*a*). Chemistry, organic, toxicology, 2 majors.

(*b*). Medical botany and pharmacognosy, 1 major.
(*c*). Pharmacy, 1 major.
(*d*). Biology, 1, Huxley and Martin, elementary biology. Martin and Mole, I, II, III, 3 majors—2, bacteriology, 1 major.
(*e*). Histology of a mammal, histologic technique, 3 majors,
(*f*). Embryology, 2 majors.
(*g*). German, 2 majors.
(*h*). Medical bibliography and methods of research, ½ major.
(*i*). Experimental or laboratory physiology, including experimental psychology, 6 majors.
(*j*). Human anatomy, 4 majors—dissections, 1 major.

Students who already have any part of this course may elect under the direction of the Dean, such accessory branches as are necessary to complete the required amount of work.

The Professional College embraces thirty majors in medicine, with a wide margin of electives. This college requires two years work. The required courses are the following:

(*a*). Pathology, 3 majors.
(*b*). Medicine, 3 majors.
(*c*). Surgery, 3 majors.
(*d*). Obstetrics, 2 majors.
(*e*). Elementary State Medicine, 2 majors.
(*f*). Elective in specialties, 6 majors.

The eleven electives must be taken with the advice and consent of the Dean, and they must be properly proportioned among clinics, lectures, researches, and theses offered every year. The elective work should be laid out as occasion requires. The following is only suggestive:

Ophthalmology, 1 major.
" second, 1 major.
Otology, 1 major.
" second. 1 major.
Laryngology, 1 major.
" second, 1 major.
Male genito-urinary surgery, 1 major.
Homeopathic materia medica, 1 major.
" therapeutics, 1 major.
" practice of medicine, 2 majors.
Dental surgery, 2 majors.
" 3 majors.
Gynecology, 1 major.
" second, 2 majors.
Orthopedic surgery, 1 major.
" second, 1 major.
Medical jurisprudence, 1 major.
Study and research in medical laws of the United States, (thesis work), 1 major.
Vital statistics, 1 major.

Elements in the fluctuation of vital statistic research, (thesis work), 1 major.

Laws relating to hospitals in the United States, research, (thesis work), 1 major.

State Boards of Health, study of results, origin, laws and evolution research, (thesis work) 1 major.

The development of the child to manhood. The normal child. The abnormal factory child, research, (thesis work), 1 major.

Blindness, history, etiology, education of blind in United States, expense, possible reduction of expense, methods. (Thesis work), 1 major.

The defectives of the United States. Origin, cost and possible limitation. (Thesis work), 1 major.

The Health Officer, his duty and privileges. (Lectures), 1 major.

Life insurance examinations. The duties of the physician and the company, 1 major.

The railway and corporation surgeon. His duties, privileges and his emergencies. (Lectures), 1 major.

Child labor. Lectures and class research. Semmarium, 1 major.

These courses may be multiplied, as the resources of the institution increase. The same degree should be given to all medical students, on the same amount of work.

The seminar and theses courses require much original work and are conducted by a teacher with a small class. Two hours, one meeting a week equals five recitation hours, and a major is therefore completed at the end of three months.

The following circular was sent out to guide the sub-committees in their work·

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

Circular of Information to Sub-committees on Syllabus of Studies.

Gentlemen:—At a regular annual meeting of the Association of American Medical Colleges held in San Francisco, Cal., in June, 1894, the Constitution of the Association was changed, providing that hereafter candidates for the degree of M.D. be required to have completed attendance upon at least four courses of lectures before receiving a degree. Beginning with this year, the course of study is therefore extended to four years, with attendance upon at least four courses of lectures, of not less than six months duration, in different years.

The action of the Association upon this most important move was substantially unanimous.

There was likewise appointed at this session, a General Committee on "Minimum of Requirements" and "Syllabus of Lectures." The committee consists of the following

named persons, to-wit: Professors P. S. Conner, of Cincinnati, Ohio; C. B. Stemen, of Fort Wayne, Ind.; Victor C. Vaughan, of Ann Arbor, Mich.; Wm. E. Quine, N. S. Davis Jr., and E. Fletcher Ingals, of Chicago, Ill., and Perry H. Millard, of St. Paul, Minn.

It is the purpose of this committee to aid in bringing about greater uniformity in the methods of admission of students to the study of medicine, in the admission of students to advanced standing with credits from other colleges, in the classification of students and in methods of instruction.

The General Committee held its first meeting in Chicago, Nov. 30, 1894. It was deemed advisable to act with deliberation and seek the advice and coöperation of some of the leading educators of the country in the preparation of a syllabus, and to divide the work of its preparation into a number of sub-committees, corresponding in number to the number of different chairs to be represented in the proposed four years' course.

By resolution of the General Committee, the different chairmen are at liberty to enlarge the number of their committee, or to perform their work without assistance. The following named persons were selected to serve as Chairmen of the different sub-committees, to-wit:

History and Embryology, T. Mitchell Pruden, New York.
Anatomy, Thomas Dwight, Boston.
Physiology, Henry P. Bowditch, Boston.
Chemistry, Walter S. Haines, Chicago.
Bacteriology, Roswell Park, Buffalo.
Hygiene, Victor C. Vaughan, Ann Arbor.
Medical Jurisprudence, B. S. Folsom, Boston.
Materia Medica and Therapeutics, H. C. Wood, Philadelphia.
Practice, Wm. Osler, Baltimore.
Gynecology, Howard A. Kelly, Baltimore.
Surgery, P. S. Conner, Cincinnati.
Obstetrics, W. W. Jaggard, Chicago.
Pathology, Wm. Welch, Baltimore.
Mental and Nervous, Daniel R. Brower, Chicago.
Diagnosis of the Chest and Physical Diagnosis, E. Fletcher Ingals, Chicago.
Ophthalmology, E. L. Holmes, Chicago.
Otology, Henry Gradle, Chicago.
Pædology, T. M. Rotch, Boston.
Genito-Urinary, J. H. Dunn, Minneapolis.
Orthopedia, Virgil C. Gibney, New York.
Laryngology, James N. Mackenzie, Baltimore.
History of Medicine, N. S. Davis, Chicago.

The sub-committees are requested to report, covering the following points in particular:

1. In a four years' course of not less than eight months' duration each year, how much time do you suggest be devoted to your branch?

2. Of the whole number of hours recommended, how divide as to didactic, laboratory, recitation and clinical instruction?

3. At what time in a four years' course should the instruction in your branch be afforded?

4. Any suggestions of subjects to precede your branch before permitting the student to enter upon the same?

5. Is it wise to credit work done in other schools, or would you recommend that students be admitted to advanced standing, only after an individual examination in each branch, below the class the student may desire to enter?

6. Suggest a rule for the classification and grading of students suitable to a four years' graded course of instruction.

7. Prepare a detailed syllabus of the topics you deem suitable for instruction in your branch, and their manner of presentation to the student.

It is intended to combine the report of the several committees and issue the same as "A Syllabus for the Use of Teachers and Students of Medicine."

The members of the different committees are requested to submit their reports to the Secretary at St. Paul, Minn., not later than March 1, 1895. A joint meeting of the General and sub-committees will occur before the meeting of the Association, which took place in Baltimore in May of the present year. Respectfully submitted,

PERRY H. MILLARD, M.D.,
Secretary Association American Medical Colleges.

REPORT OF SUB-COMMITTEE ON MATERIA MEDICA.

In a four years' course of not less than eight months' duration each year, materia medica and therapeutics should receive attention during three of these years, viz., the second, third and fourth years. Instruction should be given as a graded course.

First Year. Introductory Work. Botany.—By beginning the study of materia medica the second year in the course, the student has an opportunity to receive instruction in botany and chemistry during the first year. Botanical knowledge should be insisted upon, and the necessary instruction for the acquirement of such knowledge should consist of at least thirty hours devoted to lectures or recitations with some additional time for laboratory work.

Second Year. Materia Medica.—During the second year, two hours weekly should be devoted to the study of materia medica, giving special attention to pharmacognosy and

pharmacology. Such instruction should by preference be given in the laboratory and supplemented by recitations.

Third Year. Therapeutics.—Two hours weekly for the school year, should be given to therapeutics studied from the drug standpoint. Such instruction may be given by lectures. In this work, drugs may be studied individually, as represented by such writers as Waring and Ringer, or collectively as represented by the works of H. C. Wood, Bartholow, etc.

Fourth Year. Therapeutics.—Two hours weekly, for the school year, should be given to the subject of therapeutics studied from the standpoint of disease. Such instruction should be given by didactic and clinical lectures. The character of such work is well represented by Hare's "System of Practical Therapeutics." H. M. BRACKEN, M.D.,
Professor Materia Medica and Therapeutics,
University of Minnesota.

REPORT OF SUB-COMMITTEE ON ANATOMY.

[In conformity with your request of April 19, I make the inclosed suggestions regarding the character and order of work to be done in anatomy, in a four years' course. This, as you note, does not include any work in histology and embryology. These studies should in most part be synchronous with the lectures in anatomy. The histology coming in the first year and the embryology in the second year. This course, as outlined, is practically what is being done in the college at the present time.—G. A. HENDRICKS.]

The greater portion of the student's work in anatomy is memorizing names and the forms of objects. Lectures do not give him much assistance. The individual must do this himself. He can, however, be materially aided in his work by pursuing it logically under the guidance of an instructor, by the use of the objects to be studied, and by the stimulation of frequent recitations.

Technical terms should be learned, as far as possible, in the first year. The feature of this year's work should be the study of specimens in the laboratory, supplemented by frequent recitations from the object. Lectures are of minor importance, and should be confined more to generalizations than to minute descriptions.

The dissection and study of muscles may be done in the first year, after the study of bones and joints, and following the lectures and demonstrations on myology.

The work of the second year should be so arranged that the description of the viscera should precede the advanced course in histology and embryology, and the lectures on the physiology of these organs.

Dissecting should be done in the second year, and should not begin until the lectures are so far advanced that the

student follows the class-room demonstrations. In point, the student should not dissect to understand the lectures, but the lectures should explain and direct him in his practical work.

The instruction of the third year, unless it can be given in the laboratory, must be done by lectures.

Course of Study First Year.

Introduction: Principles of systematic zoölogy. Fundamental characteristics of vertebrates. Classifications of skeletons. Bones—classification. Bones—features, classification of. Typical vertebra, ten hours.

Etiology: Lectures and recitations, thirty hours. Laboratory work—sections, each section twenty-one afternoons, each week six hours, eight weeks forty-eight hours. One lecture per week. Two recitations per week.

Syndismology: Lectures and recitations twelve hours.

Myology: Lectures and recitations thirty hours.

Laboratory work. Two afternoons each week, six weeks, thirty-six hours. Two lectures per week. One recitation per week.

Attendance upon second year lectures covering thoracic, abdominal and pelvic viscera.

Second Year.

Organs of circulation, respiration, digestion, reproduction, genito-urinary, thirty hours.

Abdominal walls, regions, contents.

Hernia—inguinal, femoral, perineum.

Anatomy of scalp, face, neck. Anatomy of thorax, axilla, arm, forearm, etc. Anatomy of pelvis, thigh, leg, thirty hours.

Nervous system, cord, brain and membranes. Cranial nerves, spinal nerves. Sympathetic system, twelve hours.

Third Year.

Regional or surgical anatomy: Landmarks; surface markings. Review of descriptive anatomy by recitation. Surgical regions, demonstration of relations. Location and position of viscera. Advanced anatomy of brain and cord. Advanced anatomy of special sense organs.

BOSTON, MASS., March 19, 1895.

DR. P. H. MILLARD, *Dear Sir:*—I feel that I owe you an apology for never having answered your letter of two or three months ago. I consulted one of my colleagues as to what course to take. He gave me no opinion, and I forgot all about it. It is out of the question for me to give you, now, an elaborate or formal answer or to call a committee together; but owing to my previous neglect I can not do less than give you my personal and informal opinion.

The question, if I remember right, was as to what is the best arrangement of a course in anatomy in a four years' course?

This must vary with the school. The course here includes two years. In the first, is taught histology, embryology and descriptive anatomy. This, however, is taught more and more topographically from the very beginning.

In the second year, there is advanced anatomy and applied anatomy. Though it does not do so with us, this should include all surgical and surface anatomy.

Dissecting should certainly be carried on through a part of both years. It is not well to have it begin before the student knows the bones and joints. On the other hand, it should not be finished in the first year, as the student will appreciate it more in the second. Regretting that I can not give you a formal report, I am

Yours very truly, THOMAS DWIGHT.

Harvard University Medical School.

REPORT OF THE SUB-COMMITTEE ON CHEMISTRY.

For various reasons it does not appear advisable, at least for the present, to prescribe any rigid and definite rules for the course of instruction in chemistry in medical colleges. The science is one of such great breadth, and opinions among the best men in the department vary so widely as to exactly what subjects should be selected for study, and as to the best means of imparting instruction regarding them, that it seems better to allow a wide latitude for the individual choice of each teacher, prescribing only in a general way the work that should be required in colleges belonging to this Association. Your sub-committee, therefore, presents below its views regarding the minimum requirements of instruction in chemistry in medical colleges. No institution should give less than this, and it is to be hoped that all will give more. The subjects for instruction and the arrangement of the different courses are given only in brief outline, the details of the course being left to the judgment of the individual teacher.

One of the requirements for admission to the colleges belonging to this Association is a fair knowledge of the elements of physics, and this requirement should be insisted on most strenuously. There is not a department of medicine that does not need this knowledge for its intelligent study. This is especially true of chemistry, and with many colleges it is customary to precede the instruction in this branch by a short course in physics. This seems undesirable, as it takes valuable time from the study of chemistry, and, moreover, it is unnecessary if the requirements for admission are adhered to—physics having already been studied before entrance to the college is granted. If deemed advisable, a

separate course of instruction in somewhat advanced physics might advantageously be given during the first year; but it would seem best to have this totally independent of the course in chemistry, so that the time assigned to the latter may not be at all abridged.

The study of chemistry, therefore, should begin with the commencement of the first year's course, and it should be continued during, at least, the first and second of the required four years in the medical college. The first year may be profitably devoted to inorganic chemistry, with perhaps an introduction to organic chemistry. The instruction should consist of lectures, recitations, and laboratory work. To the first and second not less than seventy-five hours should be given, and fully one-half of this time should be devoted to recitations. At least twenty-five laboratory exercises, of not less than two hours each, should be given to every student during this year.

In the second year, organic chemistry may be taken up, or if already begun in the first year, may be continued, and, following this, a course should be given in physiologic chemistry, when especial attention should be devoted to the urine, both in health and disease. During this year, also, instruction may advantageously be given in toxicology, unless that subject is taken up in connection with the different poisons as they are treated in the general course. At least seventy-five hours should be assigned during this year to the didactic consideration of these subjects, and not less than one-half of this time should be given to recitations. Fully twenty-five exercises of not less than two hours each should be devoted to laboratory work.

At fixed intervals during the entire course, written examinations may advantageously be given to test the progress of the class, and final examinations should be given at the end of each of the two years on the subjects taught therein.

The sub-committee would suggest that the subjects to which the most time is given, in both years, be those most intimately connected with medicine. Those elements and compounds should be particularly studied which are of use in the healing art, while those not employed in medicine, or of purely theoretical importance should be either omitted or very briefly discussed. Thus, iodin, mercury, alcohol and strychnin should be dwelt upon at length, while cobalt, zirconium, hexane, and the azo colors may be dismissed with a few words, if mentioned at all. The field of chemistry is so exceedingly broad that unless some limitation of this kind is practiced, many subjects of the deepest interest in medicine must necessarily be omitted.

While, as before stated, practically all the work in chemistry may be completed in the first two years of the four years' course, yet it would seem highly advantageous to intro-

duce a small amount of instruction in what might be called clinical chemistry into the last year. One exercise a week might be given to the work, chiefly perhaps in the laboratory, when the examination of urine, gastric juice, and other secretions, tests for the more important elements and compounds, and the incompatibility of drugs in prescriptions could be reviewed. This would afford an excellent means of reviving a knowledge of the more important parts of medical chemistry, and the practical value of this department would then be more fully appreciated than before, since the student, having acquired a greater knowledge of disease, would be in a position to appreciate the relation of chemistry to morbid processes, their recognition and their treatment.

Your sub-committee would suggest that students coming from other colleges, belonging to this Association, receive credit for work already done in the other institution, upon presentation of a certificate from the professor of chemistry, or from the dean or secretary of the other college. It would also seem desirable that students who have taken at least two years of didactic and practical chemistry in high grade literary and scientific schools, and graduates of colleges of dentistry and pharmacy should be admitted without examination to the second year of chemistry in the medical college, upon presenting a proper certificate of work from the other institution.

In conclusion, your sub-committee would state its entire agreement with the views presented by Professor Huxley a number of years ago, that the study of general chemistry has no proper place in the curriculum of a medical college; that this should precede the study of medicine, and that medical chemistry alone should be taught in medical schools. It is certainly to be hoped that this opinion may be adopted by this Association, and that, before many years have passed by, a good knowledge of general chemistry will be required for admission to Association colleges. Instruction in chemistry in the medical college, then, could be confined to its legitimate field—medical chemistry; and, with an abundance of time for its study, the subject would quickly assume its rightful place as one of the most interesting, important, and profitable parts of medical learning.

Respectfully submitted,

WALTER S. HAINES, M.D., Rush Medical College.

It is my opinion that medical jurisprudence should be taught during the third or fourth years of the four years' course. It should be a compulsory study, including at least thirty-two hours of time. The instruction can best be afforded in lectures and recitations. It should not include toxicology, except from a legal standpoint. A few hours

can, with profit, be spent in the laboratory in a study of blood in its medico-legal aspects. I would suggest that instruction include work in the following topics in the subjoined order:

HISTORY OF MEDICAL JURISPRUDENCE.

Legal procedure, the coroner's jury; the justice or municipal courts; the grand jury; the trial court; the court of review or supreme court.

Evidence, witness of fact; witness of opinion or expert; dying declarations.

Phenomena and signs of death; molecular death; somatic death; causes of death; signs of death; medico-legal investigations in cases of death; the post-mortem etc.

Presumption of death; presumption of survivorship; personal identity; the causes producing violent death; examination of blood stains; burns and scalds.

Death in different forms of asphyxia; from suffocation; from strangulation; from hanging; from drowning.

Death by lightning; death from heat and cold; death by starvation; death from poisoning; toxicology.

Toxicology from a medico-legal standpoint; malingering; pregnancy; criminal abortion.

Infanticide; legitimacy; inheritance; rape; insanity; medical malpractice; civil malpractice; life insurance.

Dr. N. S. Davis, Dean and Professor of the Practice of Medicine Chicago Medical College, presented the subject of

THE HISTORY OF MEDICINE AND MEDICAL ETHICS.

The importance of a more systematic study of the history of medicine and its relations to all other coincident branches of human learning through the past centuries, is well illustrated by the following saying of Hippocrates: "The physician must know what his predecessors have known, if he does not wish to deceive both himself and others."

Having delivered a course of lectures to the senior class in the Northwestern University Medical School, each of the last three years, on the history of medicine and medical ethics, I am more than ever before convinced that the subjects named are of so much importance that they should be placed in the curriculum of a medical school. They should be taught with a reasonable degree of thoroughness. Guided by my own experience, I am induced to think that a fair discussion of the origin, progress and more important events pertaining to the history of medicine can not be given in less than fifteen or sixteen lectures or lessons of one hour each.

SYLLABUS OF WORK.

Lecture 1. All the earliest historical and mythological data prior to, and at the time of Hippocrates; between the fourth and fifth centuries, B. C.

Lecture 2. The characteristics of Hippocrates and his works, and their relations to co-existing systems of philosophy and religion.

Lecture 3. The progress of medicine from the death of Hippocrates to the establishment of the Grecian or Alexandrian School and Library, to the overthrow 100 B. C.

Lecture 4. The effects of the Roman conquests, and the transference of medical institutions to Rome and their progress to the time of Galen about 200 A. D.

Lecture 5. Medical progress from the death of Galen to the overthrow of the Roman empire; the establishment of Arabian medical schools, to the return of medicine with the Saracens to Europe, covering a period of ten or twelve centuries.

Lecture 6. The reëstablishment of medical schools at Salerno, Bologna, and other points in Europe, from the thirteenth century to the end of the fifteenth century, during which chemistry and anatomy became distinct branches of science, and the arts of printing is discovered.

Lecture 7. Progress of medicine during the sixteenth and seventeenth centuries, with the influence upon it of the thirty years of religious wars.

Lecture 8. Progress during the eighteenth century—the era of medical theories and dogmas, as well as of scientific discussions.

Lecture 9. The important discoveries and progress during the first half of the nineteenth century.

Lecture 10. The condition and progress of medicine and medical institutions in the American colonies from their settlement to the close of the War of Independence.

Lecture 11. The progress of medicine and of medical institutions in the United States.

Lecture 12. Progress in the development of minute anatomy, pathology, etiology and experimental therapeutics, closing the second half of the nineteenth century, and its relation to coincident progress in the other departments of science.

Lecture 13. The important discoveries and their application in all practical departments of medicine, during second half of the nineteenth century.

Lecture 14. The present status of the science and art of medicine and surgery, the effect of its segregation into specialties, and the principles that should guide our efforts for future progress.

Lecture 15. A candid statement of the origin and distinctive characteristic features and claims of homeopathy, Thompsonianism, eclecticism, physio-medicalism, etc., which still remain as an eighteenth century excrescence or dogmas in the domain of medicine.

In presenting a fair discussion of medical ethics, I have found it necessary to give four lectures, to-wit:

Lecture 1. The origin of medical ethics, including the Hippocratean oath, the volumes by Thomas Percival in 1803, and the framing of the American Code by the National Medical Convention in 1846 and 1847.

Lecture 2. The adoption of the American Code by the AMERICAN MEDICAL ASSOCIATION and nearly all the State medical societies. The duties of the physician to his patient and of the patient to the physician.

Lecture 3. The Code as applied to the relations existing between physicians and to the profession at large.

Lecture 4. The Code, defining the duties of the physician to the public and of the public to the profession, with the explanatory preamble and resolutions appended thereto, with such comments may be deemed proper.

The most appropriate place in the medical course of study is the fourth year, and certainly not earlier than the third year; as the more advanced the student is in the current medicine of the day, the better he will appreciate all that relates to its past history; and the more certainly it will guard him against entertaining extravagant ideas of the importance and permanence of the popular doctrines and practices in which he is being educated.

We would recommend as the minimum amount of work for four years, courses to consist of eight months each as follows:

For the third year men, thirty recitations, twenty didactic lectures, ten practical lessons in physical diagnosis, and three review examinations.

For the Seniors (that is for the fourth year men) we recommend thirty recitations, twenty didactic lectures, ten lessons in practical physical diagnosis, thirty clinical lectures, and three review examinations. Although we have recommended this as a minimum, we think it would be a fair average. There would be no objection to adding a few more hours if other subjects permitted.

The work of the Juniors should comprise recitations on physical diagnosis, and on all of the common diseases of the heart and lungs, and didactic lectures on the more important diseases of the thorax.

The work of the Seniors should comprise recitations on practically all of the diseases of the thorax, except those of very rare occurrence, with didactic lectures on all of the principal diseases, and clinical lectures on such cases as might be presented. Practical physical diagnosis would necessarily have to be much the same for the two classes, but the Juniors should study thoroughly the normal chest. By this arrangement all subjects are gone over twice in one way or another, and we believe it necessary that they should be so considered, in order to fit the men for work as general physicians. We have not specified the particular dis-

eases, thinking it would require more space than you would care to devote to this branch, but we will do so if it is your desire. Respectfully submitted,

E. FLETCHER INGALS,
Chairman Rush Medical College.

DR. HENRY P. BOWDITCH, Professor of Physiology at Harvard Medical College, said, on the subject of

PHYSIOLOGY.

I feel much hesitation in undertaking the work you have asked me to perform; since no one person can have an adequate idea of the conditions under which medical instruction is taught in various medical schools of the country. An ideal course of instruction should be arranged so as to bring the instruction in physiology subsequent to that of anatomy; but this is rarely, if ever, possible, owing to the small number of subjects which can be properly taught the first year. With regard to this, the fifth point in your circular letter, I would say that, in my opinion, it would be unwise to make any general rule to regulate the practice of medical schools with regard to giving credit for work done in other schools. Each school should judge of this for itself. It seems that the object of this committee will be secured if the aid of various national societies of specialists is invoked. The preparation of a syllabus of lectures in physiology, for instance, could be intrusted to a committee of the American Physiological Society, and if indorsed by the society would command the confidence of the various medical faculties of the country. A result would be reached more slowly by this way but it would, I think, be worth waiting for.

DR. ROSWELL PARK, of New York, discussed the subject of

BACTERIOLOGY.

Basing the following plan upon a four years' course of not less than eight months each, my suggestion would be as follows: I think that bacteriology ought to be taught in a way differing from that in which it is at present generally taught, and I would divide the subject in accordance with these views. During the first year, when the men are doing their preliminary work on the fundamental studies—at the time, in other words, when they are studying anatomy, physiology and biology, which I assume they are also to be taught—I would have systematic instruction in cryptogamic botany, devoted in a large measure to morphology and the classification of the various forms of vegetable life, with which they will later have to become more familiar as disease germs. This instruction at such time would be essentially didactic, with illustration by diagrams and, if possible, by a certain amount of acquaintance with the appearance of these minute forms of life through the microscope. This didactic instruction should

be partly by the way of lectures, partly by way of recitation, and might profitably consume eight or ten hours of actual work. Incidentally, I would put in also instruction upon the lowest forms of animal life—the sporozoa, etc. This might possibly be done before they take up the other forms of animal life which are parasitic, that is, the entozoa.

During the second year, or at such time as the men are taught organic chemistry, and along with the study of the alkaloids, or in appropriate places, I would have instruction inserted, concerning the ptomaines and other poisonous alkaloids which are the products of bacterial life; and, again, when they are dealing with the albuminoids, I would insert so much as can be taught with any definiteness about the albuminoid poisons of the same origin. This would require a careful arrangement of these and their insertion at proper points, with a reference backward to morphologic studies and a strong impetus forward in the direction of a practical application of what they have learned during these two years, which should come in during the fourth year in the way of laboratory investigation.

I am taking it for granted that teachers in the various departments who have to deal with infectious diseases would make, now and again, the statement that such and such a disease is due to such and such an organism, and would give such demonstration of this as they might see fit. This would be both an illustration of the importance of remembering the isolated facts already gathered, and would serve to keep the student alive to the importance of such knowledge.

It would be difficult to assign a definite number of hours to this work in organic chemistry *in toto*. I should say that at least three or four hours ought to be devoted to this particular part of the work during the season's instruction in chemistry, perhaps more.

Finally, during the fourth year, I would have courses of practical instruction in a bacteriologic laboratory, arranged to last at least six weeks, preferably eight, during which at least three hours of continuous work should be devoted to this each day, this to be like laboratory instruction in other respects. The men should be taught to make the culture media, and to go through all the various manipulations which are included in the study of bacteriology. They should be taught to differentiate between different forms, and to recognize pathogenic organisms; and at least a certain amount of work upon living animals should also be insisted upon. They should also be taught the use of the microscope in the recognition of bacteria and their differentiation, as well as their detection in various morbid products—sputum, urine, etc.

It seems to me that in this way, men would go out from college, not experts, but intelligent scholars, having already

in their possession the knowledge which would incite them to further study, or at least make them intelligent readers and students.

First year. Instruction in cryptogamic botany and morphology.

Second year. Instruction in the chemistry of the bacterial products.

Fourth year. Laboratory exercises and instruction in the cultivation and detection of the bacteria, and methods of experimental study.

DR. HOWARD KELLY, Johns Hopkins Hospital, said, on the subject of

GYNECOLOGY.

(*One hundred hours.*)

1. Gynecology is a specialty and not one of the fundamental branches. If it is to be mastered, this must be done by post-graduate study. The time recommended is sufficient to give a general practical knowledge, but not to fit a man to perform any important operations. This time should be divided about as follows: Didactic lectures, thirty hours; clinical instruction, thirty hours; touch course, fifteen hours; pathologic laboratory demonstrations from recent specimens, fifteen hours; recitations, ten hours. One hundred hours in all.

2. These lectures should be arranged as follows: Topographical anatomy, two; gynecologic examination, two; diseases of external genitals and operations, eight; diseases of urinary system, four; diseases of uterus, tubes and ovaries, general principles of gynecologic operations, after-treatment of abdominal cases, fourteen. Total, thirty.

3. This branch should be given the last year with other special branches.

4. No special preliminary studies are necessary, except such as are naturally included in a well-arranged course with thorough teaching in anatomy and pathology.

5. I consider an examination the only proper method of admitting men to advanced standing. If the standard is high, this is but fair to the other students.

7. Topograhical anatomy, two lectures. General principles of gynecologic operations, two lectures.

Touch course of ten hours. Examination of normal pelvic organs: vulva, vagina, uterus, tubes, ovaries, broad ligaments, urethra, bladder, ureters, anus, rectum, sigmoid flexure. Two lectures; fifteen hours practice.

Minor gynecology and diseases of vulva, vagina and cervix: inflammatory, neoplasms, cysts, lacerations, fistulæ. Eight lectures.

Diseases of urethra, bladder and ureters: inflammatory,

strictures, fistulæ, calculi, neoplasms, cysts. Four lectures; four hours clinical instruction.

Diseases of uterus, tubes, ovaries and broad ligaments: inflammatory, neoplasms, cysts. Ten lectures.

After-treatment of abdominal cases. Two lectures.

NOTE.—Clinical instruction willl have to be given to the class as the material is available.

1. For satisfactory gynecologic teaching, the class should be divided into small sections of five and ten.

2. Not more than five should be admitted to a touch course at one time.

3. In didactic teaching, the whole class should be united.

4. It is important, as far as practicable, to establish the plan of teaching several minor gynecologic operations upon the cadaver.

Order of instruction: one didactic lecture weekly, thirty hours. Demonstrations from recent specimens in pathologic laboratory, one hour every second week, fifteen hours. (Touch course to class by sections throughout term, fifteen hours each.) Recitations, one hour every third week, ten hours. Clinical instruction, one hour weekly, thirty hours. Total, eighty-five hours. Adding touch course, fifteen hours; total, one hundred hours.

PROFESSOR VICTOR C. VAUGHAN, of the University of Michigan, presented a

SYLLABUS OF LECTURES ON HYGIENE—NOT INCLUDING BACTERIOLOGY.

(*Seventy-eight hours.*)

Part I.—Individual Hygiene.

Lecture 1.—Food, definition, classification.

Lecture 2.—Force value of foods. Cyclical changes in matter, actual and potential energy. Foods for plants. How plants obtain their carbon, hydrogen, oxygen, nitrogen, phosphorus and sulphur.

Lecture 2.—Food principles; water, inorganic salts, proteids, carbohydrates and fats. The amount of each food principle required by healthy persons daily.

Lecture 4.—The economic value of foods. The percentage composition of the most important foods.

Lecture 5.—The construction of diet tables for the healthy. Rations for prisoners, for workingmen, for students.

Lecture 6.—Meats. General statements concerning the use of meats as foods. Is man suited to an exclusive vegetable diet? This question is answered from the anatomic, physiologic, chemic and experimental data known.

Lecture 7.—Meats (continued). General rules which should govern the selection of meats. Digestibility and food value of meats from different animals. Influence of

season, of previous feeding, of age, of exercise just before death, and of methods of slaughtering and dressing on the food values of meats.

Lecture 8.—Meats (continued). The transmission of animal parasites to man in meats. Trichinæ, echinococci, tæniæ.

Lecture 9.—Meats (continued). The transmission of bacterial diseases to man through the flesh of diseased animals. Anthrax, tuberculosis, foot-and-mouth disease, etc.

Lecture 10.—The inspection of animals before slaughtering. The hygiene of slaughtering houses.

Lecture 11.—Meats infected with non-specific toxicogenic germs. Historical review of cases of mass poisoning of this kind.

Lecture 12.—The examination of meats suspected of producing untoward effects. Chemic and bacteriologic examination.

Lecture 13.—Milk. Its physical and chemic properties. Adulterations. Detection of adulterations.

Lecture 14.—Milk (continued). Comparison of woman's and cow's milk. Changes in cow's milk to make it correspond more closely with that of woman. Infants' foods.

Lecture 15.—Milk (continued). A vehicle for the spread of tuberculosis, typhoid fever and other diseases.

Lecture 16.—The relation of infected milk to the summer diarrheas of infancy. The formation of poisonous ptomaines and proteids in milk.

Lecture 17.—Rules to govern the dairy farm, milking, the cooling and transportation of milk.

Lecture 18.—Sterilization and Pasteurization of milk.

Lecture 19.—Butter. Its food value. Methods of preparation. Influence of bacteria in the production of butter. Adulterations and methods of detecting the same.

Lecture 20.—Cheese. Methods of preparation. Action of rennet. Action of bacteria. Hygiene of the factory and curing room. Adulterations and methods of detecting the same.

Lecture 21.—Varieties of cheese. Food value. Cheese poisons.

Lecture 22.—The starches and starchy foods. Their value. Their digestibility. Effects of excess of starchy foods. Digestion of cellulose. Fermentation in the intestines.

Lecture 23.—Sugars and syrups. Kinds of sugar. Distinctions. Commercial methods of preparation. Confectionery. Adulterations of sugars, syrups and confectionery.

Lecture 24.—The cereals. Their food value. Varieties. Wheat, rye, barley, corn, etc. Methods of conversion into foods. Ergotism. Maidismus, lathyrismus, tayopyrismus.

Lecture 25.—Flours and meals. Tests of the bread-making value of flours. Food value. Estimation of gluten contents. Food values of flours and meals.

Lecture 26.—Bread. Methods of making. The leavening of bread, with yeast, with baking powder, with compressed air and other gases. Adulterations of bread. Impure yeast. Adulterated baking powders. The use of coloring matters in cakes. Short weight loaves.

Lecture 27.—Fresh fruits and vegetables. Their food value. Scurvy, its history in the past, its occurrence at present and its prevention.

Lecture 28.—Dried and preserved fruits. Their preparation. Adulterations. Poisoning from canned vegetables and fruits. Jellies and their adulterations.

Lecture 29.—Condiments. The extent to which salt should be used in food. The use of pepper, mustard and spices. Their adulterations.

Lecture 30.—Non-alcoholic beverages. Coffee, tea, maté, cocoa, chocolate, etc. Their food value. Their stimulating effects. Active principles. Physiologic and toxicologic effects. Adulterations.

Lecture 31.—Alcoholic beverages. Fermented and distilled; cider, wine, beer, porter, brandy, whisky, rum, gin, liquers, etc. Percentage of alcohol. Other constituents. Food values. Adulterations.

Lecture 32.—Alcoholic beverages (continued). The physiologic and pathologic effects of alcohol. Its effects on digestion, the circulation, nervous system, etc. Its use in health and disease.

Lecture 33.—Baths and bathing. The necessity of frequent bathing. Excretion through the skin. The temperature of baths. The morning bath. The shower bath and cold plunge. The warm bath. Mineral baths. Sun bathing. Swimming as a means of exercise. The resuscitation of the apparently drowned.

Lecture 34.—Clothing. Fibers used in the manufacture of clothing. Silk, wool, cotton, flax, hemp and jute. The properties of each. Their durability and adaptability. Influence of season on clothing; color. The use of fur, leather and rubber as articles of clothing.

Lecture 35.—The adjustment of clothing. Advice to patients in regard to their clothing in various diseases, such as Bright's disease and tuberculosis.

Lecture 36.—Physical exercise. Its value. Pulmonary and systemic respiration. Oxygen in the blood is physiologically still outside of the body. It must be carried into the tissues and this can be done only by activity of the tissue. Kinds of exercise. Conditions necessary to make it of value.

Lecture 37.—Mental hygiene. Activity necessary to brain development. Mental work does not kill, worry may. Train the judgment. Take some line of work and make yourself master of every detail. Study must be begun early in life. One who takes up a new line of work after 40 is

likely to make a failure of it. Methods of study. Hours of study.

Lecture 38.—Rest. Recreation. Physical rest. Mental rest. Change in work. Evidences of need of rest. Rest in sleep, in recreation and in work.

Part II—The Hygiene of the Family.

Lecture 39.—Healthful homes. The selection of a site. The nature of the soil and the surroundings. The construction of the cellar, the walls, the decorations of the walls, floors, carpets and rugs, doors, windows, etc.

Lecture 40.—The arrangement of the rooms. The living, sleeping and dining rooms. The pantry and kitchen. Closets. bath room, etc.

Lecture 41.—The heating and ventilation of residences. Heating with open fire, stove, hot air, steam and hot water. The inlets for fresh air and outlets for the foul. Patent systems of ventilating houses. Simple methods.

Lecture 42.—The disposal of excreta and garbage in villages and country places. Privy vaults, dry earth closets, cesspools. The disposal of kitchen waste. Private water supplies.

Part III—School Hygiene.

Lecture 43.—Location of the building. Hill and stair climbing good exercise. The size of rooms. Air space per student. Cloak rooms. Study and recitation rooms. Lighting, heating, ventilating, blackboards, etc.

Lecture 44.—School age. The kindergarten and its methods. The study of language and mathematics. Hours of study in school and at home. Methods of study and of teaching. The influence of school life on growth and health.

Lecture 45.—The diseases of school life. Myopia and various forms of nervous disturbance. The duties of teacher, parent and health officer when epidemics appear in schools. Disinfection of school rooms.

Part IV—Industrial Hygiene.

Lecture 46.—Diseases due to the inhalation of dust. Bronchial catarrh. Pulmonary emphysema. Bronchiectasia. Deposition in the lungs of coal dust, of finely pulverized metals, of sand, tobacco dust, etc. Influence of an atmosphere filled with dust on the digestive organs. Statistics.

Lecture 47.—Diseases most frequently observed among those who work in cotton, wool, silk, hair and feather manufactories. Among those working in glass factories, in ultramarine, etc. General rules for the protection of workingmen against dust inhalation.

Lecture 48.—Diseases common among those who work with poisons. Diseases of the respiratory organs. Diseases of the abdominal viscera. Phosphorus, arsenic, lead, zinc, mercury and antimony poisoning.

Lecture 49.—Working with organic poisons. Cyanogen compounds. Anilin and its derivatives. Carbolic acid. Poisonous plants. Animal poisons. General rules for the protection of these working men.

Lecture 50.—Special diseases of the skin as influenced by occupation, of the circulatory organs, of the muscles, bones, joints, of the nervous system, of the organs of special sense.

Lecture 51.—Injuries common in certain occupations. Mechanical and chemical injuries. First help to the injured. General rules for the special protection of parts of the body exposed to danger.

Part V—Municipal Hygiene.

Lecture 52.—Water supply. Sources. Cistern, surface and subterranean waters. The pollution of streams and lakes. The self-purification of rivers. The artificial purification of water; by subsidence, by precipitation, by filtration.

Lecture 53.—Waterborne diseases. Typhoid fever, cholera, dysentery.

Lecture 54.—The chemic examination of drinking water. The determination of sodium chlorid, free and albuminoid ammonia, nitrates and nitrites. The value of chemic analyses.

Lecture 55.—The microscopic and bacteriologic examination of drinking water. Objects found by microscopic examination. Methods of bacteriologic study. Counting the number of germs. Determining the toxicogenic properties of the germs.

Lecture 56—Sewers. The single and double systems. The house connections. Traps, ventilating pipes, etc.

Lecture 57.—The disposal of sewage. Discharge into bodies of water. Sewer farms. The purification of sewage.

Lecture 58.—The disposal of garbage. Dumping into water. Burying. Burning. The utilization of garbage.

Lecture 59.—Streets, pavements, parks, public baths. The sanitation of tenements, lodging houses, places of amusement, etc. The sanitary inspection of buildings.

Lecture 60.—Sanitary supervision of the markets. Meat and milk inspection. The detection of gross adulterations.

Lecture 61.—The duties of the municipal health authorities. The notification of infectious diseases. Isolation. Disinfection. Sanitary police regulations.

Part VI—State Hygiene.

Lecture 62.—State sanitary service. State Boards of Health. Plans of organization. Duties. Relations to local and city boards. Comity between State and provincial boards. Inter-State notification of diseases dangerous to the public health.

Lecture 63.—The State Board of Health as an executive body, as an advisory board, and as a promoter of scientific investigations.

Lecture 64.—A State sanitary inspector, his duties and responsibilities. His relation to the Board of Health. A State analyst. The duties of such an officer.

Lecture 65.—The sanitary laws of different States. The means provided for their enforcement, etc.

Part VII—National Hygiene.

Lecture 66.—The National Health Service. Has our country any such service? What should be done in this direction by our government? History of national sanitary legislation in this country? In other countries?

Lecture 67.—What means are now used to protect against the importation of disease from other countries? Quarantine, disinfection, inspection. What should be done? Should the national government undertake scientific sanitary investigations?

Part VIII—The Influence of Climate on Health.

Lecture 68.—What is meant by climate? Comparison of climatic and local conditions? The geographical distribution of tuberculosis and the lessons to be learned therefrom?

Lecture 69.—The geographical distribution of diphtheria, scarlet fever and measles.

Lecture 70.—The geographical distribution of influenza, yellow fever, dengue and malaria,

Lecture 71.—The geographical distribution of typhoid, typhus, plague, etc. Lessons to be learned from these facts.

Part IX—The Hygiene of the Sick Room.

Lecture 72.—The prevention of the spread of the infectious diseases in private practice. The selection of the sick room. Its furniture. The nurse. Isolation of the sick. What must the physician do to prevent his carrying the disease to others?

Lecture 73.—Hospitals. Their location, construction, heating, ventilation, management, etc.

Lecture 74.—Contagious disease hospitals. Hospitals and sanitaria for special diseases, as smallpox, diphtheria, tuberculosis, etc.

Part X—Immunity.

Lecture 75.—Natural and acquired immunity. How is immunity secured? Vaccination; history and statistics.

Lecture 76.—Vaccination against anthrax, chicken cholera, swine plague, etc. Immunity secured by the chemic products of germs.

Part XI—Miscellaneous.

Lecture 77.—Military hygiene. The soldier. His clothing and food. The camp. Barracks. Hospitals. etc.

Lecture 78.—Marine hygiene. The ship. Its construction

and ventilation. The food and clothing of sailors. The diseases and accidents to which they are specially liable.

Lecture 79.—The disposal of the dead.

DR. H. GRADLE, of Chicago, presented a paper on

OTOLOGY.

After comparison of the courses in otology in American and foreign medical schools, the undersigned would recommend as the minimum requirement: the daily attendance in small classes at a well-organized ear clinic or dispensary, where the students can closely examine the patients for a period of at least four weeks—or what amounts to the same thing, the distribution of the twenty-four clinical hours throughout a whole semester, and either in connection with this clinic or separately, a course of at least eight systematic lectures on diseases of the ear. The only conclusive evidence that a student has not merely attended this course, but profited by it, is his ability to examine clinically and interpret correctly when put in front of new patients.

Otology should not be taught before the third year, and it would seem more logical to have it follow the training in general medicine and surgery. It would be well to have otology follow a course in rhinology.

If the various colleges belonging to the Association agree on a standard of minimum requirements in any one branch, there is no good reason why a student who presents evidence that he has passed in this branch in an equivalent medical school should not get credit for his work. But if he comes from an institution which has not adopted the same standard, justice would require a re-examination. In otology, as well as in any other branch of clinical medicine, a practical test of the student's ability to form a diagnosis and prognosis, when placed before a series of patients, is a much more correct mode of gauging his knowledge than a theoretical examination.

DR. EDWARD L. HOLMES presented the report of the subcommittee on

OPHTHALMOLOGY.

This committee presents a syllabus of minimum instruction in ophthalmology, which it believes every medical college should provide for its students. It does not suggest, much less advocate, a course for the education of students in college as specialists; simply that they should study with care fundamental principles; that those, especially, who began practice in small towns and villages, may skillfully examine and treat the ordinary diseases and injuries of the eye in patients who are utterly dependent upon them for aid; that they may, without dangerous delay, advise intelligently, patients when to seek the skill of the specialist; that they may comprehend the structure and use of

common optical instruments and appliances, and, finally, that they may be able to pursue advantageously after graduation this special study if they choose.

I.

During the last four months of the second year, one lesson a week should be devoted to demonstrations of the following subjects, in classes of not more than thirty students, under the direction of instructors in properly equipped laboratories.

1. The anatomy of all the tissues by means of human eyes and the eyes of animals, at least one eye being provided for each five students, and by means of microscopic preparations.

2. The physiology of each structure.

3. In the laboratory of medical physics, a study with appropriate apparatus of the primary principles of optics.

4. Reflection of light from plain, convex, concave surfaces, with a sufficient number of small mirrors for each student to perform all necessary experiments.

5. Refraction of light by media with parallel, plain, curved surfaces; by prisms and by convex and concave lenses, each five students being furnished with lenses and a small camera. filled with smoke, that he may make his own demonstrations.

Every student should be strictly required to study approved books in connection with the laboratory exercises, and be subjected to thorough examinations.

II.

For the fourth year·

1. One clinic a week through the year.

2. Sixteen didactic lectures, chiefly on the following topics: The cornea, the conjunctiva, the uveal tract, the optic nerve and retina, the lens, the lacrymal apparatus, the muscles, the lids, the orbit, with special emphasis upon purulent conjunctivitis, glaucoma, iritis, sympathetic ophthalmitis and myopia.

3. Review of the laboratory work of the second year in the reflection and refraction of light.

4. Fifteen hours devoted to practice in the use of the ophthalmoscope, with suitable artificial eyes; emmetropic, hypermetropic and myopic, with the eyes of patients and of the students themselves.

5. Examination by focal illumination.

6. Fitting glasses, tests for color perception and tests for malingering.

7. Study of gross pathologic specimens.

8. Although the class may have passed the general examinations in materia medica and therapeutics, students should be required to study in review, at least, the following list of

remedies and to write upon the blackboard at the clinics and other exercises, prescriptions in proper form for diseases of the eye.

Four mydriatics: coca, boron, silver, copper. Two myotics: mercury, zinc.

In the opinion of this committee, no student in college should be exempt from the above courses, even if he shall have taken them previously in another college.

It will be observed that, in accordance with this syllabus, the number of purely didactic lectures is reduced to a minimum, and that the teaching is in a great measure by "manual training." With this kind of individual training, and with ample clinical observation, the study of a suitable book and regular recitations from it become a most important mode of instruction. By recitations, the student gains knowledge and retains it. Unfortunately, no book has been written which is fully adapted to the requirements of this syllabus.

It is assured in this report that the college curriculum extends through four years, with a term of study each year of eight months.