

ASSOCIATION OF
AMERICAN MEDICAL
COLLEGES



PROCEEDINGS OF THE TWENTY-
FIRST ANNUAL MEETING, HELD
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which is composed of a majority of the best schools in the country! Nothing but good can result from such a union, so long as the portal of entrance is scrupulously guarded against all but those schools which not only live up to the requirements of the association, not simply because of their obligation to do so, but because they believe in them and stand ready, at all times, to advance to a higher and better standard, in keeping with the progress of the age and the demands of the ever-increasing and enlightening truths of medical science.

Now, when these two are so fortunate as to work in harmony and unity with the organized examining and licensing boards of the various states having the legal power to enforce all laws and regulations passed for the protection of the people, a trio of such strength has been formed that the day of reckoning for "diploma mills" and uneducated physicians, or quackery, of all kinds, is not far distant.

Then only the schools doing honest work, with standard and acceptable courses of study, will exist throughout the entire country. Then, and not until then, will reciprocity be a reality. The improvement in medical schools, in equipment and standards in both entrance requirements and curriculum, in the last few years has revolutionized medical teaching. When we consider that only seven years since we had about 170 medical schools in this country, practically as many as those in the rest of the world, and that the awakening of professional and public sentiment, educated and guided by such organized efforts as those of our own association, and those meeting with us, has lessened the number by one-third, we have just cause for congratulations.

MEMBERSHIP

While I would not advise reckless or unjust condemnation of others, or such radical and rapid changes as would work a hardship on those schools struggling under great difficulties to meet the requirements of the times, I would insist that the entrance into this association of colleges be zealously guarded, and that no school be admitted to membership that does not fulfil every requirement, in both facilities and teaching ability, and in honestly upholding our standards as well.

No backward step must be taken, and very thorough investigation must be made before admittance. One unworthy school can so tarnish our reputation that it may take years to overcome the mistake.

In my opinion it will be equally disastrous and hurtful to the cause of medical education if we should advance standards, especially entrance requirements, beyond what the existing conditions of preparatory education can stand. To explain: it would be folly for the state boards of medical examiners to expect higher entrance standards than the schools in the states are prepared to give, and it would be suicidal for the medical school in any state to fix the entrance requirements higher than its students have had an opportunity to receive. By so doing, the schools would entirely exclude good men who seek and deserve a thorough medical education, or drive them to accept the inevitable, and enter the low-grade schools.

ENTRANCE STANDARDS

While, of course, I accept as the minimum the present standard of a four-year-high-school course, or its equivalent, and believe that nothing under this should be tolerated, in my opinion, in view of the fact that high-school courses vary greatly in the different sections of this country and are indefinite and without censorship, the fourteen-unit plan that has been suggested would be more uniform and acceptable. I doubt the wisdom of aspiring to a higher minimum standard at the present time, especially by these bodies, all three of which are national, and must, therefore, consider the conditions of every section of the country. I have been convinced, after years of work and close study of these problems, that the cause of medical education in general will be injured in this country rather than helped by higher entrance requirements until the present movement, which is universal, shall have improved the system of preparatory and general education.

Of course, this will in no way prevent those schools which are fortunately located from demanding a standard much higher. While I am firmly convinced that our present entrance requirements and the four years of a strictly graded course are sufficient for the present, I would respectfully suggest that the trouble is not in either of these adopted standards, but in the loose way in which they are enforced.

If these three educational forces would see that every school conscientiously enforced to the letter their published requirements, without evasion or equivocation, and emphasize the fact that there is no difference between individual or personal morals and collective or school morals, they will have taught a great and much-needed

lesson and placed medical education on a very much higher plane and sounded the death-knell of all pretenders and low-grade medical schools.

TEACHING FACILITIES

Improved facilities for teaching, in keeping with the necessities of an up-to-date course in modern medicine, the rapid progress of which is the wonder of the age, should be demanded. We must not only act together, but work separately, as each of the three bodies assembled here, with a common interest, has its distinctive field in which the others can only be helpful in an advisory way. The association of schools should first see that none but those doing high-class and honest teaching shall be members and that the equipment and facilities for both scientific and practical training shall be in every school.

I would emphasize the practical, as the tendency of the times seems to be to lose sight of the essential element in the preparation of a student for his life's work, viz., to combat and prevent disease, relieve suffering and save human life. While there is a place for men in the laboratories of experimentation and original investigation and research, the great majority will best serve and fulfil their mission in life by receiving a thorough training in medicine at the bedside, with a well-rounded course which will enable them to apply their laboratory training as an indispensable aid to thorough work. If the consensus of opinion, after thorough study of this great question of medical training, is in favor of an additional year, I am convinced that we would give to the world better doctors by adding a fifth year of clinical and bedside instruction rather than an extra year preparatory to the study of medicine. Facility in diagnosis and skill in the application of prophylaxis and treatment of disease can be acquired only by such a practical course of study.

With sufficient educational training to prepare the mind for the assimilation of medical teaching, a four-year course of study, as given in our best schools of to-day, with an additional year in hospital work, would, in my opinion, be an ideal preparation for one whose life-work is to prevent and combat disease. In making this statement I am not unmindful of the great advantage of a classical education in every avocation of life and I am in thorough sympathy with the improved laboratory training, without which no medical education is half complete; indeed, no doctor can practice modern

medicine without the chemical and microscopic aids taught in the laboratory, for they are absolutely necessary.

FUNCTIONS OF OTHER ORGANIZATIONS

The Council on Medical Education of the American Medical Association occupies a peculiar, but very important place in this work. It can exercise no authority; at the great bar of publicity its standing is conferred by the great prestige of a national association of the medical profession. While it has made mistakes, I, who have been a member since its organization, can truthfully say, that individually and collectively, as a body the Council has labored honestly and faithfully to better conditions and to elevate standards gradually, by selecting facts and giving to the profession statements of their findings in each state in the Union, thereby creating a healthy sentiment in favor of improvements in medical education as rapidly as the educational conditions would permit. Always mindful of the fact that it represented the entire country, in which standards differed widely, and which in some sections were distressingly low, by availing itself of the council and advice of all organizations laboring in the field as well as the opinion of educators all over the country, it has created a sentiment which has helped to better understanding and has made it plain that there is no longer in this country a place for the cheap and poorly-equipped medical school. It is with pleasure that I announce a recent action of the Council, inviting a delegate from the Association of American Medical Colleges to attend and take part in all of its private meetings.

The function of the Confederation of Medical Examiners is so necessary to the perfecting and enforcing all advances in medical education that it is especially fortunate that they have met with us this year. The examiners have great advantage of being on the ground, as it were, and understanding the local conditions. They can have a large influence in promoting better preparatory education, and, indeed, it would be impossible for them to exact entrance qualifications without seeing that the educational conditions of the state would justify them; in other words, they must insist on better facilities in public schools and preparatory schools in their respective states if they would insist, as they should do, that the present entrance requirements of this college association be the minimum for a college to be recognized. Again, they are indeed public benefactors when they protect their people from irregular

and ignorant pretenders, as well as improve the moral and ethical relations both in the profession and with the public.

I would suggest that growth and importance bring increased responsibilities and obligations. This is true of our Association of Medical Colleges, on whose faculties are men of experience and ability, many of whom are leaders in the magnificent progress of medicine and surgery in the last few years; and I believe that if they would assist, with their combined wisdom and experience, the few hard workers in this Association, our position would soon be the commanding one on all questions of medical teaching. Others interested in this work would yield to this association the right to fix all standards. For teachers, by right of their positions and experience, are the ones best prepared to suggest all advances and improved methods. They are, by virtue of their work, best equipped to inspect schools and pass on their laboratories, curriculum and teaching ability. For this purpose the president, secretary and chairman of the judicial council form what is known as a visitation committee, the duty of which is to investigate, not only applicants for membership, but the members, at least every five years; and this requirement, if it were carried out strictly, especially the occasional inspection of our members, would at once strengthen and broaden the influence of this association and commend it to the state board of examiners, do much to quiet the present state of unrest and dissatisfaction existing in many medical schools and elevate medical teaching in the eyes of the public out of its present questionable status.

UNIFORM STANDARDS

Standards acceptable to examining boards could be established and the variable demand of the different states be gradually molded into a universal and much-needed standard agreeable to all. The result would be better-prepared and more uniformly educated physicians, and more ethical relations between the profession and the people. The time is ripe for some organized body to assume command and restore confidence by combining the good accomplished by the several organizations laboring in the field. We should stand sponsor for as high standard of medical education as present conditions will permit, at the same time quieting the present feeling of uncertainty which is agitating the modern school-world with the assurance that the schools would be given time to establish and

enforce the demands of to-day, and adjust themselves to the changes, at least before some other radical change is forced on them.

While I would not detract from the great advances made in the last few years—and every force deserves credit for honest and faithful service—the conditions mentioned above are the natural result of lack of concerted effort and unity of action, and but illustrate the necessity of uniform standards applicable to the whole country.

Now, I ask, what body is best equipped and qualified for this work, or into what hands can be placed the elevation and perfecting of medical teaching to properly meet the demands of the present, if not our own Association of Medical Colleges? Indeed, we should be derelict if we do not assume this responsibility. If every school, which is a member, would live up to association standards and assume and perform its part willingly and enthusiastically, every worthy school would seek membership, and the vexed problem of standardizing medical teaching would be solved.

State laws can be made more uniform if the Association of American Medical Colleges and the Council on Medical Education of the American Medical Association join forces with state boards, and the unfortunate necessity for the present differences in grading schools will have passed; for there will be no excuse, even commercially, for the existence of low-grade schools, and the much-needed reciprocity between the States and Canada will be assured, and with European countries as well.

In this short paper I have tried to point out some of the strong and important reasons for all three of the educational organizations meeting here at this time. I predict that their coming together in a bond of unity of purpose will, of necessity, vitally effect every side of this great question. The combination of our interests and energies for the future promises great things for the medical profession, and, through them, for the people of this country.

In closing I would make the following suggestions:

1. This association should adopt a uniform standard after consultation with all forces interested, and enforce this standard by frequent inspections of members.

2. Inspections of both applicants and members should be placed in the hands of the judicial council or a committee appointed for that purpose; at least two men should be required for the inspection of any school, and the report should be in writing for future reference.

3. The interests of the association demand that the work be divided up so as to utilize as many men and their influence as possible, if we would broaden our field of usefulness in both higher educational and moral or ethical standing sufficiently to make membership an honor so distinctive that all good schools will desire the connection.

4. At present the four-year high school, or the fourteen units for entrance and a four-year strictly graded course of study of 4,000 hours is as high as the conditions of education will permit.

5. If an additional year is wise, then a fifth year following the present four-year plan, which shall be strictly practical and bedside in hospital wards, is preferable; and this association should insist that a hospital controlled by the college is essential to thorough training.

If these suggestions are carried out then this association will be a great factor and the day will not be distant when the medical men of America will be recognized all over the world. Then and not until then will this association have fulfilled its true mission.

150 North Eighth Avenue.

THE EVOLUTIONARY SPIRIT FOR BETTERMENT IN MEDICAL EDUCATION

ALEXANDER HUGH FERGUSON, M.D., M.B.
CHICAGO

The time is opportune to indulge in a few remarks relative to medical education. The evolutionary spirit for betterments pervading the land is significant. The teaching and practice of medicine are being influenced by this same spirit. An opportunity, full of possibilities, now presents itself to this body to manifest this spirit by inaugurating a resistless movement for betterments within our educational ranks. The perturbed condition of medical matters in America and abroad, cries for rectification. Medical education must be standardized, systematized and glorified. Innumerable details must be considered and generalized. The materials are present in abundance, the opportunities are ripe, and everything is in readiness for the master-strokes of our educationalists.

A grave responsibility, in fact, rests on this body. You have before you no easy task, but a mighty labor—a labor in which we proffer you our undivided support and prayers. It is your task to evolve out of chaos a practicable system that will be a credit to yourselves and a lasting monument to the genius and tact of American democracy.

I would specify among the many subjects that would profitably come under your deliberations, three in particular: First, *State Medical Education*; second, *Interstate Medical Relationship*; third, *A National Standard of Medicine*.

I notice by your program that "Standards of Admission to the Medical Schools," "Administration of Entrance Requirements," "The Fifth Year in Medicine," "The Medical Library," "What the Internist Wants the Anatomist and the Physiologist to Teach," and "What the Surgeon Wants the Anatomist and the Physiologist to Teach," etc., are to be presented and discussed by members of this body of specialists in medical education. These presentations and these discussions will be gladly received and thought over, again and again, by the medical profession of this city, state and country.

OVERCROWDING OF THE MEDICAL PROFESSION

One great and lamentable condition stands out very prominently in America, namely, that the medical profession is overcrowded—not by the survival of the fittest, but by the survival of the unfit. This is a serious evil which must be remedied. With a population of about 90,000,000 in the United States, we have at least 140,000 doctors (1 to about 642+) who are legally qualified to practice. In England the proportion of doctors to the population is about 1 to 1,250 and in France 1 to about 2,175. In other nations the proportion is still more favorable to the medical profession. To be concise, we do not need more doctors in America, but we do desire a better brand of doctors. It is my deliberate opinion that this evil, which is due to the large number of irresponsible medical colleges, would be remedied by free medical education.

FREE MEDICAL EDUCATION

The fulfilment in the future of long-cherished ideals in the teaching and practice of medicine is a potent reason for the advocacy of free medical education. Free medical education would ensure a proficient medical profession, which, in turn, would protect the public health and enlighten the masses on medical matters. Thus disease would be forestalled, suffering alleviated and deaths prevented. From a financial standpoint, alone, free medical education would prove a boon to the state, for, since every premature death is a loss to the state of from \$1,000 to \$2,000 by the lowest computation, every life saved through the agency of the medical profession is a corresponding gain. The number of preventable diseases is many, and the number of deaths due to ignorance is simply appalling.

Free medical education, moreover, would play an important rôle in abolishing certain undesirable private medical schools. The teaching of medicine is too sacred a thing to be trusted at all in the hands of these petty medical colleges. In this connection we would do well to follow the example of Germany, which has demonstrated to the world that it has the best systems of teaching and maintaining scientific medicine.

Allow me to conjure up before you the ideal educational tree as I would fain see it in this state in the near future. Behold, it is a stately tree, with its roots firmly implanted in the common schools, from which it receives its nourishment; its sturdy trunk embodying

the high schools, from which it receives its stamina ; and its branches outspreading into the various departments of the university, where it attains that maturity which enables it to put forth good fruit in arts, in agriculture, in engineering, in science, in law, and in medicine. Then, with the aid of free medical education, would this stately tree bring forth in medicine the rich and abundant fruits to which our commonwealth is logically entitled.

In our grand educational scheme we must not forget that the life motive of a child naturally begins to germinate at puberty. If all were taught that at this age they should begin to map out their futures and were aided in this by the mature judgment of efficient teachers, according to the symptoms and signs presented by the individual, they would be enabled to decide early on a life career. Especially in medicine is it true that the student should begin on his training early in life.

MEDICAL TRAINING AND TEACHING

The teachers in the college of medicine should be well paid for their services. In this regard all the colleges of a university should be treated alike. The courses should be made largely elective. This elective system would create a spirit of emulation between the professors as well as among the students. The medical students should be given an examination every year, written and oral, and should moreover be scrutinized socially, politically, and religiously.

Didactic teaching and the reading of books is no longer the sole source of knowledge. Memorizing Gray's "Anatomy" and other text-books is unprofitable. I remember when the student who was most lauded at college was he who gave his answers verbatim as he had read the information in a text-book or received it from the lectures of his professor. The introduction of the laboratories into universities and colleges completely changed the method of teaching and learning. The spirit of experimentation is developed by this laboratory method of training, and an impulse for thought and study is inspired. The student of to-day sees for himself, handles for himself and thinks for himself. The young doctor in the hospital investigates what he hears. The laboratory man expresses doubt of what is presented by others and sees for himself.

There is nothing, it seems to me, of much more importance in the successful teaching of medicine than the actual personal contact of professor and student, when the professor may inspire and the pupil

be inspired by that subtle quality called personal magnetism. While individual attention by the professor to the student is not always possible, yet much can be accomplished along this line by limiting the size of the class—say to twenty or twenty-five members. This comes back as near as possible to the old doctrine of Locke, Montaigne, Milton, Spenser and others, namely, that the student receives the greatest amount of educational benefit under a tutor.

No matter what method of teaching is employed, however, no student can hope to know it all. Time was not long since when we took an arts course and a medical course at the same time. Professor Eliot, the late president of Harvard University, said: "When I was an undergraduate at Harvard I took almost every course that the college offered. Now I think it would take a bright, active minded student at least one hundred years to go through all the courses the college offers."

THINKERS

"Thinkers rise upon us like new stars, a few in a century." Thinkers are not unlike runners inasmuch as some excel others—those in the lead think farther and faster. Incidentally I might mention here that while some of the medical profession think for themselves according to circumstances, environments and conditions, still many of them, as a result of their bad training, "follow the lead" of some one else. The true philanthropists are thinkers and altruistic specialists. To this class belong Rhodes, Carnegie, Rockefeller and others. What a far reaching influence the philanthropy and thinking of Rhodes will have for all time upon the education of the world. Just think of the furore that has been created by the Carnegie Fund for Medical Education. This donation has stirred us to the utmost and has set us to thinking afresh. Great praise must be given to John D. Rockefeller for all that he has done for general education and research in medical sciences through his unbounded spirit for the welfare of mankind. A new era has been created, a new future is before us, and it is the honorable duty of this distinguished and learned body to aid Carnegie and Rockefeller in their great work.

ENTRANCE REQUIREMENTS FOR ADMISSION TO THE MEDICAL COURSE

GEORGE EDWIN MACLEAN
President State University of Iowa
IOWA CITY, IOWA

In accordance with the instructions of this Association in 1910 to your committee on education to present "some plan looking toward a more correct administration of the present entrance requirements" certain amendments to your Constitution are proposed. Your committee and I have worked independently. In view of the amendments they have worked out, this paper is largely superfluous. In the main with several very important variations, it will only reinforce the positions taken by the committee or urge the realization at an early moment of what has been set out as ultimate ideals.

The first step in advance is the requirement of "a completed or unconditioned medical student's certificate." The entrance requirements should be met absolutely without conditions. The candidate for admission to a medical college will find the work of the college so heavy that he ought not to be permitted to drag any entrance conditions after him. The success of the instruction in the first year of the medical college is imperiled if the student must divide his attention between his current studies and back work. The abolition of conditions removes opportunities for college authorities, overzealous about attendance, or tempted to dishonesty in administration to evade the published requirements. Without intended impoliteness, permit me to say the present regulation is an absurdity. It reads, "A student may be allowed to enter upon his medical work conditioned in not more than six points, and these conditions must be removed by satisfactory examination before he is allowed to enter on the second year of his medical course." This burdens the student practically with a year's work in addition to the heavy work of his first year in medicine, and retracts the requirement of a four-year high school course, making it quite possible for one to enter from a three-year course. If the ideal entrance requirement to be urged later in this paper is adhered to, namely, not less than two

years of work in a liberal arts college, there is little or no sense for one to seek admission to the school of medicine with a condition.

If the first and highest alternative for admission be fulfilled, namely, the presentation of a Bachelor's degree from an *accredited* college or university, certainly there is no occasion for conditions except in the rare case of an individual who does not make up his mind that he is going to study medicine until after he has taken his Bachelor's degree, and who has failed to take the necessary year's study each of physics, chemistry, and biology. These cases would be so few that it would be best for the general system that they take these studies in an extra year in a College of Liberal Arts, in order that the medical college may be unadulterated. This practice has been inaugurated by the Association of American Law Schools. They require every applicant for admission to present the entire amount of preparatory work demanded, and will not admit with conditions.

The committee leaves unchanged the point numbered "B" as follows:

A diploma from an accredited high school, normal school or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades, and for graduation not less than four years of study embracing not less than two years (4 points) of Latin or four years of either high school French or German, provided an examination is passed in the elements of Latin grammar, two years (4 points) of mathematics, two years (4 points) of English, one year (2 points) of history, one year (2 points) of physics, and six years (12 points) of further credit in language literature, history or science.

THE IDEAL STANDARD

Here I would have radical change. I would go at once to the ideal standard already set out as something to be aimed at by this association. I would have the preliminary education consist of graduation from an accredited high school, normal school or academy, plus two years taken in an *accredited* college of liberal arts with a course of at least one year each devoted to physics, chemistry, and biology. The entrance requirements to the collegiate work should be made more flexible, the number of specifically required subjects in the secondary education being reduced in view of the fact that the two years in liberal arts rounds out the four years of the secondary school. In short, in fact, the disciplinary period of

education covers the six years now known as four high school years and the first two collegiate years.

If this be true, greater flexibility of entrance requirements is possible, for the subjects may be completed or brought up in the first two years of the college. In the period of six years, of course, there should be not less than two years of Latin or Greek or four years of modern languages with the elements of Latin grammar, two years of mathematics, two years of English, one year of history, and the year each of physics, chemistry, and biology, preferably done in college. You will notice I amend by inserting "or Greek" as an alternative with Latin and substitute "modern languages" for "French or German." In college one might have two years each of French and German or in these days of American expansion an alternative language like Spanish. If temporarily you must still allow some schools the liberty of admitting upon a four-year high school basis, and therefore think it necessary to specify rather particularly certain entrance requirements, might it not be possible to permit such medical colleges as require the two years of collegiate study for admission not to require specific subjects beyond Latin, physics, chemistry and biology. Practically every high school graduate will offer a reasonable amount in English, history and mathematics.

THE EQUIVALENTS

The wider range of time given in which to complete the required subjects would largely do away with the evil of estimating equivalents and the frauds sometimes perpetrated in these estimates. The scheme proposed harmonizes with the recognition of the newer commercial and industrial subjects which, with proper safeguards, are now encouraged by great associations like the North Central, and even by older universities, like Harvard. It removes stumbling blocks from pupils who wake up somewhat late as to their vocational or professional purposes in life, in that the subjects they have studied bring them credit. It prevents the too early choice by the immature pupil of his life work. It continues the American tradition of common and cultural education. It is in harmony with the tendency that has already deeply imbedded itself in the colleges to differentiate the course at the end of the sophomore year, the higher collegiate or university courses leading to the professions beginning with the first of the junior year. It falls in with the reorganization of American education, of which we hear much in

many quarters, e. g., in the Educational Council of the National Education Association, the National Association of State Universities, and elsewhere. This reorganization talks of a possible saving of two years' time beginning in the grades and by the end of the sophomore year in college. This would gain time for the extension of the professional courses, including hospital work. There has been a tendency to measure too largely by the time element and in a mechanical way quantitatively. The qualitative character of the work with freedom from the mechanical can be conserved by carefully framed and administered definitions of units. The greater associations of colleges and secondary schools, in cooperation with the College Entrance Examination Board, and with terms coordinated by the National Conference Committee on Standards of Colleges and Secondary Schools, promise the fulfillment of this ideal.

Though it may be an aside, at this juncture the last remark brings in forcibly the suggestion that your association adopt the terminology recommended by the National Conference Committee on Standards of Colleges and Secondary Schools. It is stated as follows by the College Entrance Examination Board, which has adopted it:

UNIT OF ADMISSION REQUIREMENTS

"In order to facilitate the comparison of admission requirements with one another, the Board has given its approval to the following statement, formulated by the National Conference Committee on Standards of Colleges and Secondary Schools, descriptive of a unit of admission requirements:

A unit represents a year's study in any subject in a secondary school, constituting approximately a quarter of a full year's work.

This statement is designed to afford a standard of measurement for the work done in secondary schools. It takes the four-year high school course as a basis, and assumes that the length of the school year is from thirty-six to forty weeks, that a period is from forty to sixty minutes in length, and that the study is pursued for four or five periods a week; but under ordinary circumstances, a satisfactory year's work in any subject cannot be accomplished in less than one hundred and twenty sixty-minute hours or their equivalent. Schools organized on any other than a four-year basis can, nevertheless, estimate their work in terms of this unit.*

* College Entrance Examination Board, Document No. 48, Dec. 1, 1910.

The National Conference Committee at its meeting on Jan. 28, 1911, recommended the following:

1. That the term *unit* be used only as a measure of work done in secondary schools, and that the term *period* be used to denote a recitation (or equivalent exercise) in a secondary school.

2. That the term *hour* be restricted to use in measuring college work, and that the term *exercise* be used to denote a recitation, lecture, or laboratory period in a college.

3. That *unit* be used as defined by this committee, the Carnegie Foundation, and the College Entrance Examination Board, and that *hour* be used preferably in the sense of year-hour.

4. That the use of other terms, such as *count*, *point*, *credit*, etc., in any of these senses be discontinued.

AMENDMENTS

Returning to your committee amendments, certainly it is well to add "through quadratics" after algebra in the required subjects, and to add "higher algebra" to the electives in advanced mathematics.

I would further amend "c" with reference to examinations, which should total not less than fifteen units in required and elective subjects, by following in the footsteps of the new plan for admission at Harvard. I would select major topics in the four fields of language and literature, history, mathematics, and science, instead of giving detailed examinations in all the subjects enumerated. The examiner should be an expert university or college examiner, meeting the few individuals who have prepared by tutoring or in unaccredited schools or through misfortune and age come up without institutional training. The examiner should size up these personalities in connection with all the records that may be presented, and use his discretion in giving a chance for these individuals in the College of Medicine. We must preserve opportunities for individuals in this day of emphasis upon institutionalism. The examiner an expert, a man of calibre and totally independent of the medical college, having full responsibility, would conserve standards.

Of course, therefore, I concur in the amendments eliminating points "d" and "e" taking away the danger of accepting certificates from miscellaneous instructors.

Section 2 proposed by the committee provides for sound administration. "This examination must be conducted by or under the authority of the Board of Medical Examiners of the state in which

the college is located, or by a duly authorized examiner of the College Entrance Examination Board, or the authorized examiner of an accredited University, state or otherwise." The same commendation may be made of section 3. "The term accredited as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the state university of their respective states, or by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the Association of American Universities, and the Association of State Universities, provided that such accrediting is based on Article III, Section 1, of this Constitution."

THE PROPER ENTRANCE STANDARD

In fine, the entrance requirements for a medical course should be fifteen units of secondary school work in an accredited school plus thirty year-hours of college work, the secondary and collegiate work embracing the required subjects of not less than two units of Latin or Greek, or four units of modern languages provided an examination is passed in the elements of Latin grammar, two units of mathematics, one unit of history, two units of English, one unit or year-hour each of physics, chemistry, and biology.

The candidate for admission should not be permitted to enter the college of medicine with conditions, and the quality as well as the quantity of his work is to be measured by the definitions of units, subjects and hours now being given national currency by organizations like the National Conference Committee on Standards of Colleges and Secondary Schools, the College Entrance Examination Board, etc.

The administration of these standards is to be by boards empowered by statute to administer them, and by accredited schools and colleges, and by authorized examiners not members of the medical colleges concerned.

DISCUSSION

EGBERT LE FEVRE, New York City: I felt I was not competent to discuss this able paper and hoped I would not be called on. Dr. MacLean's paper has been illuminative in more ways than one, showing us a way out of our trials and tribulations which you of the West, at least, may find very helpful, but in the East we are still somewhat behind.

Harvard has done us a great service in its requirements for entrance, but one of the biggest stumbling blocks in the way of the medical colleges

is the attitude of the universities not connected with the state toward this two-year-college requirement. In the West you have worked it out very logically and the high-school and university courses are correlated so that with a minimum amount of disturbance one may pass from one to the other. In the East we have no such coordination. We have a school system growing out of the public demand; then we have our disassociated universities and colleges, so that there is a great impediment to students passing from one to the other, and that makes it doubly hard for a high-school pupil to get two years' college and then pass smoothly into the medical college. We have discussed this matter with the colleges, but they merely say, "Should we modify our curriculum to suit these two-year men? We do not wish them. We are carrying on our colleges for humanity and for culture; we are not running them as a preparatory school for technical and professional education." There is where we usually end when we ask them to give us a two-year course in biology, sciences and languages. We demand an intensive course preparatory to a professional education which cannot be given in the professional or technical school, but in making this demand we place our students at a disadvantage because of this attitude on the part of the universities.

In the Middle-West the boys enter by right from the high-school to the university. In the East they are not accepted without examination, and until the universities and colleges accept it as part of their duty to correlate their entrance requirements with the generally accepted and accredited high-schools there is going to be great difficulty in advancing men from the high-school into the college to meet the requirements which Prof. MacLean has mentioned. It is coming, but the universities and colleges must help in this matter. We can lay down all the rules and regulations we will, but until the colleges and universities smooth the way and make it possible for a young man to complete his high-school course and be admitted to a college so as to meet this college requirement it is going to be more or less useless for us to put up such a set of requirements.

When a state says that for license a man must have had two years of work in college they must see that the colleges of that state offer that opportunity. If they make that requirement and then the educational system of the state puts a bar against a man fulfilling it they are placing a bar against the study for that profession, instead of raising its standard.

RANDOLPH WINSLOW, Baltimore: I simply arise to express my extreme gratification at the paper and particularly in regard to the suggestion made that a man of sufficient intelligence who has not in his youth (for financial or other reasons) been able to get a certain specific class or amount of education should have the right of every American citizen to get a medical education. We have been trying to establish as a requirement for the study of medicine a thing which is not demanded of a man to qualify him for the presidency of the United States, a chief justice, a legislator or any other high office. A man can hold any of our public offices without having seen the inside of a college, and yet we are demanding that before he is even qualified to study medicine he shall have a B.S. degree! If a man has not had an opportunity for just the prescribed education, but he has some sense and is capable of acquiring the necessary qualifications he should be permitted to study medicine. To say to a man that because he has not had certain specified training "you shall not be permitted to study medicine" is distinctly un-American and undemocratic and should not be tolerated.

DR. W. C. BORDEN, Washington: I wish to compliment the author on this splendid paper and to say that I agree most heartily with the remarks of the gentleman who last spoke. I have had this matter in mind, and as I listened to the proposed method of bringing in this examination requirement I was particularly pleased that President MacLean brought the subject to the attention of the Association. He has voiced exactly my sentiments. There will be a minimum of persons who will be admitted to medical colleges who have not had or need not have this particular training—this cut-and-dried educational requirement. To cover these cases we have outlined in our constitution what an examination shall be for these men, and it seems to me (if I read it aright) a most cut-and-dried set of what a man should and should not know. There are sixteen points and in these are included mathematics, history, physics, biology and languages. We have further confused that by putting a maximum to these requirements. The requirements, to my mind, obviate the minimum, and the maximum is always there. Then I see that there are fourteen elective points. Now "elective," to my mind, means a certain elasticity, and yet when I total these up I see that there is allowed but half a year for elective study! If I read this correctly it is absurd. You might as well have placed there all the points when you allow but one point in thirty elective.

President MacLean's idea is, to my mind, much more to the point. I think that the Council, before bringing this up, might well take his remarks into consideration and perhaps see if they could not modify these examination requirements, as stated in the constitution. As it is now, it appeals to me as being absurd and entirely too rigid; there is nothing *elective* about it.

H. D. ARNOLD, Boston: I think I may well say to President MacLean that if we have not jumped in and said all he expected us to say and more, too, there are two reasons: First, we have to fight it out to-morrow and, secondly, we do not wish to get into a skirmish. He has brought a valuable contribution to the study of "requirements" but one which we, of this Association, know well we cannot apply at once. I think he has the right idea that our ideal is two years of college work, properly regulated, on top of four years of high-school work. When that is adopted, then elasticity in the arrangement is certainly wise. At the present time if we are not to adopt that standard it seems to me we must be a little slow in allowing elasticity in the four years' preparatory school work.

He has touched on one of the most important questions we have to deal with in fixing standards. The other gentlemen have also touched on it—the question of the individual who does not happen to fit into the regular prescribed lines of preliminary education. When we come to that point, I think we may just as well admit frankly that the strict regulations which we have tried to place about our examinations are due to the fact that we are not living up to our present standards. They have come as a matter of evolution in trying to make us, as educators, be honest and with all due respect to college teachers I do not believe requirements of this sort are entirely out of place in other departments than the medical. We are dealing with conditions as they exist. We know we are not living up to our present requirements. I think what this Association needs more than anything else is to fix a minimum that they will insist on being lived up to. When we have once done that, then we can go before the public and talk about advancing our requirements.

DR. G. M. LINTHICUM, Baltimore: One point was well taken by Dr. LeFevre in regard to the high-schools of the East. They are so arranged that one cannot follow direct from the high-school into the college, as you do in the West. This probably is due to the fact that they are a development from the parochial schools. In the East we had, first, the parochial schools for children of a certain religious training. Then, from that developed the schools for the few who did not go to these schools, until now we have the schools for the general public as of first importance. In the West you began where we left off (or, rather, where we have just arrived), so that your public schools were always of first importance. In the East the colleges and universities were an independent organization following the academies for the higher classes. So that we have independent schools, independent high-schools and independent colleges, which makes a smooth course from one to the other impossible.

If we demand four years preliminary school, four years grammar school, four years high-school and two years college you make fourteen years in all; so that a young man beginning his education at the age of eight years (which is the generally accepted age at which children should be started) will be twenty-two before he can begin the study of medicine. Then he must have four years at the medical college, and then it is some years before he is able to earn a living after he gets into practice. But, leaving that aside, he will be twenty-six before he will even be in a position to start to earn his living.

I feel some concern about this myself in view of the fact that I have a son whom I shall undoubtedly have to educate. It is a serious problem whether people can send their sons to school until they are 26 years of age. I do not know that I should have been able to go to school if that had been my case, and I doubt if there are many who could so prolong their course unless they were able to do so by working in the interim.

I think we must consider that a man is entitled to a reasonable amount of time after he has secured his education to enjoy it. Following practically what Dr. Osler said, that 60 years is the period of a man's life (to be sure he is at his best at 40, but still most men are very able to carry on their work until they are 60), I feel that we must permit him a reasonable time after his education is completed in which to enjoy it. I feel that to push this two-year college requirement is going to make it hard for the average American citizen to develop his education along this line.

In Germany and England you will see many instances where they have to go 18 to 20 miles for a physician or go without one. I know of a place in America where a man is making \$1,200 a year, but he will not live there. Many would go there who cannot pass the state board examination, but it is impossible to get a good competent doctor for that place, although it is a good community and they have even gone to the length of advertising for a doctor. This is merely an illustration of the condition which exists.

DR. A. K. WEST, Oklahoma City, Okla.: I wish to emphasize one point in Dr. MacLean's paper; that is, if possible, to eliminate conditions, that we exercise more intelligence and less ingenuity in dealing with this matter. I know that to be a cardinal point. For many years I was associated with the old Southern College Association and we had a great deal of trouble with that. It is just as reasonable to tell a man who comes

along with a hoe to leave his hoe outside and go into the garden and work all morning and then send for his hoe at noon. If I understand this preliminary education, it is only a tool by which the student carves out his education. It seems to me if the young man has a tool he should bring it with him, and to enter him conditioned is like putting him to work without his tool until such a time as he can acquire it.

One more point which I think will not agree with President MacLean's paper, and I am not sure but that it should be classed among the "adulterous conditions" he spoke of. Some of us of the West have advocated the six-year course as being better than the present high-school and being more cultural than four years high-school and four years medical. I want to say that the six-year course and the B.A. degree is being much talked of and is well thought of among educational heads. I should like to hear what some others to whom I look as authority have to say along that line.

J. S. FERGUSON, New York City: One point in connection with this matter occurred to me during the remarks of the last speaker, the relation that is to exist between the B.A. degree and the degree of M.D. The essence of the thing lies in the point made by the gentleman from Maryland, of the necessity of hurrying the course somewhat over the time taken by the uncorrelated schools. I cannot quite agree with him in his estimate that the beginning school age is 8 years. I think a child may be taught many things before he reaches that age. Efforts to shorten the course have brought about an anomalous condition to this effect: That we have an association in cooperation with us to deliver the interpretation of the degree of M.D. and at the same time are trying to secure, as preparatory to the medical college entrance, a requirement which tends to degrade the degree of B.A., inasmuch as such a degree requires four years of college work of such a character as to require the sole attention of a man of average ability after only two years of college work. It seems to me anomalous that the same effort which tends to elevate the degree of M.D. should lower the degree of B.A.

It seems to me also that if we should endeavor to exercise our influence with the colleges to that end we should then be able to secure preparatory medical courses in the non-state-supported institutions without any very great difficulty. If a man has his mind seriously inclined to the study of medicine, or any other profession, there are few colleges which have fallen under my observations which will not supply him with the two-year course as a preparation. The crux of the thing lies in the desire of the student to write after his name "B.S." and, at the same time, shorten his medical course.

A. D. BEVAN, Chicago: I was unfortunate in not hearing all of the paper. I have, however, had the pleasure of a brief reading of it and I must say that in the main I agree with the proposition which President MacLean has submitted. After all, this is not a matter on which there can be any argument. All of this talk of what we should do, how we are going to do it, the difficulties, etc., has nothing to do with the case. It has been shown clearly and without doubt that modern medicine requires a certain preliminary training in order to enable the student to grasp his medical work properly. It demands that a man have a well-rounded, secondary school education, and be trained in chemistry, physics and biology. It is not a question of what we want to do. The conditions demand such a training. The colleges which do not require that are poor, inefficient

colleges and are doing poor, inefficient work in the light of the demands of modern medicine.

It is the duty of every college to demand that the students come to them with certain qualifications, and if it is not out of place, I should like to add further that it is equally clear that a medical education, in addition to this preliminary education, demands something more than any have yet demanded—namely, one year of practical training in a hospital where the student is part of the machinery that actually takes care of patients medically and surgically. I think that it is quite clear that modern medicine demands this, and it is simply a question of how soon each school and state can succeed in making their demands effective.

B. D. HARISON, Detroit, Mich.: I agree entirely with Dr. Bevan's ideals, but from a practical standpoint I must take a little exception. I think if you look into the question thoroughly you will find that for every one of these high-grade men you are producing four or five quacks. I think some states will even show more than that. Now, if that is right for the public, then the ideas of Dr. Bevan are all right.

I agree with Dr. Winslow, but should like to know how you are going to get at the enterability of a man who has not had the specified education.

In his paper, President MacLean spoke of the credit-system of marking as being almost obsolete. Now as the Association of American Medical Colleges has adopted this system of credits, and as the New York and Michigan Boards and the American Confederation have adopted it, I think this statement is an exaggeration. It makes no difference whether you call it a unit or a credit, it is one factor.

Some one spoke of the requirement of modern languages. We all know that foreigners coming into our schools can qualify in nearly sixty points all in the matter of languages and gain entrance, being totally deficient in mathematics, history, etc. If you accept all foreign languages in your qualifications you are going to lower your grade of students.

As regards minimum and maximum requirements: there is no doubt but that a minimum should be required, but the maximum should be required also, otherwise you destroy the symmetry of your preliminary requirements. While I do not object at all to this high requirement, I do not believe that it is in the interests of the public to make these requirements from the fact that of these six-year men (who are practically seven-year men because your six-year man will take the additional hospital year) fully 90 per cent. of them go into specialty work. They may start in as general practitioners, but it will only be a little time before they have gone into some sort of a specialty. If this is for the best interest of the public and for the profession as a whole, well and good, but I cannot believe it to be.

GEO. E. MACLEAN (closing discussion): I thank you very kindly for your courteous treatment of this paper. I will not attempt to enlarge on the points because the discussion has been very full, but I shall be very happy to answer the questions put as to the combined course.

I suppose Dr. West means a combined six-year course after the high-school four years. My idea was that the two years should be done in a separate school, not in the medical department, which should leave preliminary education entirely alone and concentrate its efforts entirely upon the medical education. The second point, as to the B.S. degree made by Dr. Ferguson: The B.S. degree has already become a secondary degree,

lower than the A.B. degree in most of the western states and universities. It was felt when we combined two years in college and four years of medical work that the historical degree might be lowered, and while the scientific men have labored to make it equal to the A.B. degree it has never arrived at that point. Therefore, to save the A.B. degree the B.S. degree has been given to this course.

To-day the medical course is not two years of six months each but four years of nine months each. It is no longer merely a professional school but a scientific institution combining in its teaching a liberal education which the liberal arts colleges are bound to recognize. It is true that in the East there is not yet correlation between the secondary schools and the colleges, and the colleges have not fully realized that they are, in a sense, vocational or preparatory to vocational and professional purposes. We have developed in the United States a unique sort of a notion that the colleges exist for cultural purposes, pure and simple, which is a departure from the idea of the colleges of Europe. While I would not in any sense lower that thought, we must not forget that the original college was simply a preparatory school for the professional man. The very word "bachelor" means one who has taken his preliminary education and is to become a master, just as in the crafts one is apprenticed first in order to later become a master.

The purpose of the American college is two-fold, the literary education and the professional or technical education. The eastern colleges are swinging into line; they are coming slowly, but the New York state system, under its great department of education, and now Massachusetts with its great Commission of Education, are looking toward the correlation of education, and the New England Certification Board, second only to Harvard, are all developments along this line, and this movement of Harvard toward correlation of methods is distinctly along this line, so that I think the difficulty spoken of is disappearing. The professional schools should not forget the fact that it is a question of bringing healthy pressure to bear on these colleges to give students an opportunity for good educations in them and no one should discourage this movement on the part of the medical schools because it is merely a knock at professional education.

THE MEDICAL COLLEGE LIBRARY

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Much of what is presented in the present paper will apply equally well to all medical libraries, both public and private. Primarily, however, the discussion will concern the medical college library, its significance, contents, administration and utilization.

SIGNIFICANCE OF THE MEDICAL LIBRARY

The library is a neglected factor in medical education. Its importance and significance are evident when we consider it in comparison with the laboratory and clinic. The laboratory and clinic stand for direct observation. They make it possible for the student to gain first-hand knowledge of the facts of medical science. During the past quarter of a century our efforts in medical education have been devoted chiefly to the task of providing these facilities for the direct study of medical phenomena. The main emphasis at first was laid upon the fundamental laboratories; but now attention is directed chiefly to the provision of similar facilities for the study of clinical medicine.

The emphasis thus laid upon the direct observation of facts in laboratory and clinic is of fundamental importance, and represents most substantial progress in medical education. But this is not all. It is rather merely the beginning. It is evident that the facts which the student is able to observe directly for himself represent only a small part of the facts he needs to know in order to apply them in the daily practice of medicine. Furthermore, the facts which he does observe must be correlated and interpreted if they are to be of service.

This additional knowledge and the necessary interpretation are to a certain extent supplied by the teacher. But even the teacher's supply of knowledge is comparatively small, and the time he is able to give to the student is limited. For the most part, therefore, the medical student has access to the vast storehouse of accumulated medical knowledge and wisdom only through the printed records—that is, the medical literature.

The medical library, therefore, next to the laboratory and clinic, assumes a place of importance in medical education. This is true especially with reference to the mental growth and progress of the practitioner after graduation. Osler has well said that the ultimate condition of a majority of physicians depends upon the quantity and quality of their reading, especially during their earlier years of practice. Teachers, laboratories and clinics are left behind. Through his experience in daily practice the practitioner of course learns something. But through the medical literature he learns to interpret this experience, and to profit by the experience of others.

WHAT SHOULD THE MEDICAL LIBRARY INCLUDE?

Granted that the medical college library is, or should be, an important factor in medical education, we may next consider the question as to what it should include. The Association of American Medical Colleges in the list of standard equipment for medical schools adopted in 1908 includes the following under library: "One publication on general medicine and one publication devoted to the work of each department. Text-books. Library must be catalogued and available for use."

The Council on Medical Education of the American Medical Association* includes among the essentials for an acceptable medical college the following: "The college should have a working medical library to include the more modern text and reference books and ten or more leading medical periodicals; the library room to be easily accessible to students during all or the greater part of the day; to have suitable table and chairs, and to have an attendant in charge."

The American Confederation of Reciprocating, Examining and Licensing Boards states as follows: "The minimum of library facilities of a medical school should consist of a well lighted, ventilated and comfortably warm reading room, supplied with chairs and tables for the comfort and convenience of the students. There should be the current medical periodicals and standard text-books on the subjects of each department taught in the college. The library should be catalogued and made available for use, and placed under the supervision of a librarian. The librarian may be a student competent to perform such duties."

* THE JOURNAL A. A. M., vol. iv, p 685, 1910.

The foregoing indicate in a general way what may be considered as the minimum requirements for a medical library, without which no medical school should be approved. They do not, however, by any means measure up to the requirements of a first class medical college library. From this point of view, the medical library ought to include four or five thousand well-selected volumes, quality however being more important than quantity. Especially it should include subscriptions to at least one hundred of the leading medical periodicals. Considering the value and importance of the medical library, this is not an unreasonable requirement. It is doubtful, however, whether there are now more than twenty medical schools in the United States which meet this standard. More could easily do so, and doubtless will when the value of the college library in medical education is better understood.

In selecting the books for the medical college library, careful judgment should be exercised. As between text-books and periodicals, it is the latter which are of primary importance. This cannot be too strongly emphasized, for it is a common mistake to spend most of the available money on text and reference books which go out of date in a few years and are of comparatively little value. They are, for the most part, mere compilations. Good standard periodicals, on the other hand, contain the original observations, which are of permanent value, no matter how much our interpretation of them may change. Even from a purely commercial point of view, it pays to invest in good periodicals. Indeed complete sets of standard high-class journals form perhaps the only part of medical school equipment which tends to increase in value rather than to depreciate as the years go by.

While it is not possible to discuss here in detail the individual periodicals,† it may be noted that they include two general classes: (1) those more or less general in their scope (such as *THE JOURNAL of the American Medical Association* and the *American Journal of Medical Sciences*) and (2) those devoted especially to the individual laboratory and clinical subjects. Those of the second class are the most numerous and costly. Some of the principal French and especially the German journals should be included, as the better

† The Surgeon-General's Library at Washington, according to the report of the Librarian, now receives in all (including foreign) about 1,500 current periodicals. Many of these, however, are not strictly medical, but belong to allied sciences. Even of the medical periodicals, many are local in character, or of no importance.

class of medical schools now require students to have a reading knowledge of these languages. Under periodicals should also be included the transactions of the more important medical societies and hospital reports which contain much of permanent value.

Next to the periodicals in importance come the various guides to the medical literature. First and foremost is the Index Catalogue of the Surgeon General's Library. This invaluable work should be in every medical library. It is the most complete index of medical literature, and is also of especial value because the books catalogued therein may be borrowed by non-residents through responsible libraries. The Index Medicus is another publication which appears monthly giving classified titles of current articles. The brief reviews of the current literature each week in *THE JOURNAL A. M. A.* are also very useful. Nearly every medical branch of study also has its own special year-book and review publications, of which the German *Jahresberichte* and *Centralblaetter* form the best examples.

Next in order of importance are the works of reference, including dictionaries, encyclopedias, systems of medicine and surgery, and the numerous handbooks and monographs on special subjects containing original data of importance. Last of all come the numerous ephemeral text books, attractively gotten up by the publishers for purpose of sale, but of comparatively limited value in a library, for reasons already stated. Text books of course have a very definite and useful place in medical education, but they should for the most part be purchased by the student, with the advice of his teacher.

ADMINISTRATION OF THE MEDICAL LIBRARY

Under business administration, we may next consider briefly how the medical college library should be established and maintained. If the college is a part of a University, the services of the University librarian will be available in cataloging the library, purchasing books, binding the completed volumes of periodicals, and in other matters of general administration. If the library is small, a student attendant under the supervision of the general librarian will probably be satisfactory. For selecting the books and periodicals to be placed in the library, there should be a faculty library committee representing the principal branches of medical study.

The funds necessary for the medical library should be provided for regularly in the financial budget, just as are those for the laboratories. To maintain a good working medical library, such as outlined above, will require an appropriation of \$1,000 or more annually. If this much is not available, however, it should not discourage a school from beginning with less.

Various makeshifts may be utilized to supplement an inadequate appropriation for the library. In a few schools, the students maintain a cooperative book store, the profits of which go to the support of the medical school library. If necessary, each member of the faculty should be willing to subscribe for and place in the library two or three journals in his special subject. An energetic librarian or library committee can also secure other valuable donations to the library from outside sources. In time many gifts of entire libraries will come in as bequests from public-spirited physicians. If sold on the market, a practitioner's library will usually bring very little, but if given to a public medical library, it will be of permanent benefit to mankind.

HOW SHOULD THE MEDICAL LIBRARY BE UTILIZED?

The utilization of the library is a matter of supreme importance. Just as with laboratories, good equipment is of no value unless it is properly used. The first step is to make the library accessible. It should be conveniently located in a properly furnished room, and placed in charge of an attendant who will keep it in order and assist students in finding the books they need. The library should of course be catalogued, the decimal system being that most generally used. A card catalogue (by authors and subjects) is also indispensable for the convenience of all concerned. A printed catalogue in pamphlet form is also very useful, as it may be consulted by students, teachers or others without a trip to the library.

In the school with which I am connected, a printed catalogue of the library is also furnished to the physicians of the state, and the books and journals are loaned to non-residents free of charge (excepting for transportation). We are also trying the experiment of sending out small traveling libraries in circuits to the county medical societies of the state. This is a line of extension work which should appeal particularly to medical libraries connected with the state universities; but it can be referred to at this time only in passing.

As ordinarily administered, the medical college library concerns only the faculty and students. The extent to which the students utilize the library will depend chiefly upon the attitude of the teachers. If the teachers are, as they should be, earnest, active and productive investigators, each in his own special line, they will require a first-class working library. In turn they will arouse in their students an interest in the best medical literature, and inspire in them that research spirit which ever thirsts for more and better knowledge.

It is a fatal mistake for a teacher to restrict his students to a single text-book (even though it be his own). Originality and independence of thought should rather be encouraged by frequent references to various sources in the best medical literature. One teacher in my acquaintance has adopted the excellent plan of bringing into his laboratory each day from the library a selection of the best books for reference on the subject which the students are studying. Thus the library and the laboratory work are brought closely together, as they should be.

It is important for the students as early as possible to become familiar with the best sources of medical knowledge. It is also important for them to be taught how to use the library, for the utilization of the medical literature is a difficult art. Instruction regarding the medical library and how to use it should be given to the first year class, by the librarian or some one else competent to do so, perhaps in the form of one or more lectures. The huge number of medical books and periodicals published every year constitutes a veritable embarrassment of riches. It is becoming increasingly difficult to keep up with the literature of even a single one of the several branches of medicine. It requires intelligent, discriminating judgment to sift out the wheat from the chaff and get what is really of permanent value. The student therefore needs to learn first what books and periodicals to use, and second how to use them.

In this connection it has always seemed to me that every medical student before graduation should be required to write an original thesis on some subject of his choice, which of course would include a review of the literature. Even with our overcrowded curriculum, time might well be spared for this. It was formerly required in our medical schools (according to the European custom), but is now so far as I know required in no school in this country, excepting Yale Medical School and the Medical School of Maine. With

our advance in preliminary education required for entrance, with better equipment and opportunity for scientific work in laboratories and clinics, and finally with a growing tendency to allow some elective work in medicine, there would seem with proper library facilities no good reason why every graduate should not be required to present a creditable thesis. It would stimulate both teachers and students to better work all along the line.

SUMMARY

By way of summary, let me emphasize the fact that the medical library is an important but neglected factor in medical education. It supplements the laboratory and clinic by making available the accumulated knowledge and wisdom of the whole world, both past and present. The library should be carefully selected, quality being more important than quantity. Of the various forms of medical literature, the standard periodicals are by far the most important. Students should be instructed in the use of the medical literature. A good library is indispensable in encouraging that research spirit which should be the ideal in medical education.

DISCUSSION

C. M. HAZEN, Richmond, Va.: The points made are absolutely important. There are only two things more which might be said: First, it is very easy for a fully-equipped physician to waste his time skimming over too much literature—that is, there are too many books on the same subject, so that in trying to read them all we scatter our attention. If this is true of the fully-developed physician, it is more true of the student. He should be taught to know some good books and periodicals well.

Second: the thesis. I do not think anything is worse than the leaving out of the thesis. I believe that should be re-established. More than that, pupils should be taught to review literature in conference. Many teachers used to have conferences and require the students to write up the literature of the period or for the month. This is an additional use for the library.

The medical course is somewhat complicated. We are supposed to be dealing with a man who has finished his pedagogic work. He is supposed to be trained. We should remember this and not waste our time on kindergarten. Only the training which may rightly be counted in the medical course should be undertaken.

GEO. BLUMER, New Haven, Conn.: As to this matter of the thesis: I do not know but that we are the only school which requires the thesis now. We have had the matter under discussion several times and have always come to the conclusion that, while the thesis has its drawbacks, it is well worth while to continue it. We find every year out of a class of twenty-five or thirty that there are possibly four or five or more theses which show that the men have done considerable original work. On the

other hand, we find the majority of the class trying to skim the literature and with a little of their own work hand in something that will pass. After all we usually come to the conclusion that even these get some benefit from the effort and so we continue it.

ELI H. LONG, Buffalo, N. Y.: Our appreciation is due Dr. Jackson for this valuable contribution. In visiting some of our better medical institutes I have been much disappointed in seeing almost an utter disregard of this important feature. In fact, some of our institutions ranking high up have a very, very poor medical library. We are very fortunate in this respect in our school and I believe a little of our experience may be interesting to some of you because at first it seems to be a great task to gather together a working library. In the first place, practitioners have bequeathed libraries, and I believe in other places many would do this if they were approached. I believe, more than that, with the wealth of literature, we are coming to realize that we can personally look up a subject better in a well-appointed library than we can in our own, so that it is a question worth considering whether practitioners might not well turn over their own libraries to the medical schools, thus enriching it and at the same time having it in classified form for their own use.

In the institution with which I am connected, for the past twenty years we have been accumulating a medical library, and now have some 8,000 volumes and twenty-eight current magazines, mostly American, some German and one or two in other languages, and we find in it a great field for medical education. We appropriate about \$1,000 a year, aside from the librarian's salary, and we believe it to be money well spent. We have a librarian in charge constantly (a lady trained in the work), and inquiry from her elicits the fact that there are fifty or more students who use it every day. I believe we cannot lay too strong emphasis on this matter.

D. C. BRYANT, Omaha, Neb.: Dr. Jackson has read a good paper and I agree with it entirely. I think there is no question as to the necessity for every medical college to have as large a library as possible. I do not believe we could overestimate the benefit of its influence upon the faculty, the students and the general local profession, but I think there is a decided limit as to what we should allow the students to use. I think he should be limited (because he is not in a position to judge) to the best authorities and only two or three of those. Many of our text-books are too verbose. If we add to that considerable library reading, we so use up his time that he does not have time for his regular work. I do not object to the text-books, as such, as much as I do to too much journal reading. Some of them are good, some are not so good, but do not allow them to overdo the matter.

ADMINISTRATION OF PRELIMINARY REQUIREMENTS

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The subject assigned me is not only a very important one at this time, owing to advances in medical education, but also one that it is almost impossible to do justice to in a paper of limited length. The administration of preliminary requirements is also so closely allied to preliminary requirements that it is hardly possible to divide these subjects, and when you refer to the administration of preliminary requirements, you must necessarily have in mind the requirements for matriculation. I will, therefore, not attempt to do the impossible, but will endeavor to simply and briefly emphasize some of the major conditions met with in the administration of preliminary requirements, you must necessarily have in mind the requirements of medical colleges. In this necessarily very brief paper on the subject, I shall, therefore, endeavor to present to you sufficient material for a practical discussion, knowing that the subject is not only of great interest to you all, but also one with which you are familiar in its practical details.

What are the standards of preliminary education at the present time?

In the majority of states the requirements for registration in a medical college are identical to the statutory requirements of such states, viz., a diploma from a reputable high school. A few of the states—notably Minnesota—are requiring, in addition to the reputable high-school diploma, a two-years' biological course. In a great many of the states the measure of the diploma is not set forth, but is subject to the rules and regulations of the board, and in almost every state in the Union the diploma itself is accepted as *prima facie* evidence of qualification, the measure of which is not entered into by the board. This method is contrary to the methods adopted by the American Confederation of State Medical Boards and by the College Association, both of these bodies going into the detail and the symmetrical qualifications of the subjects involved in

the diploma. In this detail the above associations emphasize and require fundamental subjects, which cover a minimum of thirty-five counts of the total sixty-count requirement. The unit of qualifications required has been gradually changed to a more definite requirement, from the fact that in some states a unit represents four recitations a week upon a subject, and in other states five recitations per week. We, therefore, have the proposition of *reducing our dollars to cents* in the method of crediting requirements, which naturally tends towards exactness.

Your Association adopted a seventy-five count requirement at Cleveland three years ago, which I considered at the time, and still do consider, an excess for the quality of a high-school diploma, from the fact that the course in the large majority of high schools, or similar institutions, does not at the present time properly cover a seventy-five count credit, thereby rendering it necessary to condition a student in at least fifteen counts. In consequence of this, the student during his first year in a medical college has been forced to take a double course—a literary course and a medical course, at one and the same time, which must necessarily affect the quality of his medical course. I understand that the number of units demanded in the future by your Association will be reduced to sixty counts, without conditions, and I consider this a move in the right direction, although personally I should advocate at least a five-count condition, which would allow a student to make up a small defect during vacation or the summer months.

The question of certain required subjects as a measure in a diploma or equivalent credential, and that of an entirely elective course, is at the present time beyond discussion, from the fact that it is universally admitted that required or fundamental subjects, such as English, Mathematics, Latin, and Physics, are necessary as a preliminary to the proper study of medicine. Even New York, who has an elective course and has tried the matter out for some twenty years, acknowledges this to be the fact. Students' certificates are issued in New York, which under the method of a required system would not total more than twenty-five counts, from the fact that a great many foreigners are admitted with seventy-five or eighty credits, the majority of which cover foreign languages, with absolutely no qualifications in English, Mathematics and Physics, and very little credit in history.

The question of a so-called biological course of two years in a literary college in addition to the credentials of a proper high-school diploma, does not seem to me at this time practical, from the fact that in my experience I am led to believe that fully 50 per cent. of the colleges to-day are accepting students, and graduating them, who have entered with a lesser requirement than a proper and symmetrical high-school diploma. In the administration of preliminary education I could cite hundreds of cases of this nature, and I believe that before we attempt something higher in the matter of entrance requirements, the lower requirements should be enforced, and a fact. When we have achieved, properly and honestly, the requirement of an essential high-school qualification, then I think it is time to increase the minimum requirement. You will understand that I am speaking strictly of *minimum* requirements. This does not interfere in any way with a student who recognizes and obtains a higher preliminary qualification in a legitimate manner. The adoption of, or even the suggestion of the adoption of the two-year biological course, has resulted in many instances throughout the United States, in the usual methods of fulfilling improperly such requirements. Medical schools have created literary departments, by affiliation with inferior institutions, who as an adjunct have added a preparatory school. The student is given a low-grade two-year high-school course, is admitted to the so-called literary department, and continues his course as a full-fledged literary undergraduate, and at the end of two years is admitted to the medical college with a so-called two-year scientific or literary course, and at the end of his second year in a medical college is granted a degree of "A.B." or "B.S.," and at the end of four years is granted the additional degree of "M.D." The only method of overcoming this pseudo qualification, is the exact enforcement of the credential of a high school or equivalent credential.

Who should administer preliminary requirements, and how should they be administered?

There are several methods now in vogue. A large number of states appoint a so-called "preliminary examiner," who is usually the principal of a high school, and upon his certificate the student is admitted to the medical school as a legitimate matriculant in medicine. From experience, these "one-man" boards of preliminary examiners are either in league with the medical board or with the

medical colleges, with the result that students are certified to as having the legal requirement for matriculation equal to that of a credential of a graduate of a high school or similar institution. In a large number of instances *an examination is not given*, but simply credits are accepted in lieu of an examination, and these credits may vary from night courses in Y. M. C. A. institutions to certificates from tutors.

It seems to me that the proper method of administering preliminary requirements is by the board itself, covering credentials and credits, and in the event of an applicant not having the required qualification or credential, he should be referred to a board of preliminary examiners, consisting of not less than four high-school principals or superintendents, for regular examination upon the standard set by the board, covering a high-school credential and its symmetrical features. The board in question simply acts as an examiner and reports to the medical board its findings—it absolutely has nothing whatever to do with the administration of the law. A properly constituted board of this kind will, in my experience, refuse the proper certificate to at least 75 per cent. of the applicants. The one system is simply a make-believe, the latter system not only represents an honest administration, but also a practical one.

In closing, I wish to emphasize particularly the material difference between what is known in law as a *qualification*, and a *credential*. A *credential* means the actual course and diploma from a reputable high school having a legitimate and effective course of a certificate which on its face represents an honest credential, as study absolutely essential for matriculation as a student in a medical college. A *qualification* is subject to all kinds of interpretations, and is used as a method for providing, without proper merit, above noted, but which actually is a defective credential.

WHAT THE INTERNIST WANTS THE ANATOMIST AND PHYSIOLOGIST TO TEACH

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The teacher of anatomy in the medical school of the present day has a steadily growing burden to bear. Influenced by tradition, and a reverence which has been nurtured in the oldest of laboratory sciences throughout four centuries, and which has fostered a conservatism not to be found in the more recently developed medical sciences, he must impart to his student the multitude of facts which have been laid bare throughout this long period of investigation, and yet must needs maintain the high standard for thoroughness in detail and minutiae set for Vesalius, the father of anatomy, in his *De Fabrica*. The advent of the microscope has broadened his field a thousand fold and the development of embryological and morphological investigations have rendered his task well nigh a hopeless one. Nor does the clinician, clamoring for more anatomical light in his own special domain allow him any respite from his labors. Little to be wondered it is, in view of this, that the present text-book of anatomy is bulky and unwieldy in the extreme, and that the student of anatomy becomes bewildered at the mass of anatomical facts he must acquire in two brief years of study.

Nor is the lot of the instructor in physiology a less difficult one. Lest trammled, possibly, by the tradition of centuries, the physiologist, by combining with his own the closely allied science of physics and bio-chemistry, with their rapidly broadening fields, has added greatly to his load.

Not many years have passed since in the majority of our medical colleges the teaching of anatomy and physiology was combined in one chair. As the trend of physiological teaching towards physical and chemical lines asserted itself the chair of physiology became divorced and the two sciences grew apart. Happily, by virtue of the development in anatomical research of micro-chemical methods, of experimental morphology, and the study of structural variations, anatomists are becoming once again to lay more and more stress

upon the necessarily intimate relation of structure and function, and the two sciences are rightly becoming more closely allied, and though the chairs be separate, one not infrequently finds the physiologist investigating purely morphological problems and the anatomist bending his energies towards the revelation of function. Indeed, so absurd is it for the anatomist to isolate function from structure that the facetious Abernathy many years since, in one of the lectures, likened anatomy without physiology "to an old maid without a dowry."

It has been wisely said by President Eliot that the function of the professional school is to train for power rather than for information. The business of the medical school is to produce good doctors who can heal the sick. Mindful of this obligation, the teachers of the two fundamental sciences of anatomy and physiology may proceed in either of two ways to impart their knowledge. First, they may direct their teaching towards practical ends, selecting isolated facts and methods which later will help the student in earning his living. Or second, they may treat their sciences in a broadly scientific manner, and arrive finally with conscience void of offense at the goal of utility. Among scientists and scientific clinicians there is no need for a justification of this latter policy.

As clinicians and teachers of clinical medicine we do not ask that the anatomist and physiologist depart from the teaching of their branches as pure sciences. To do so were to render barren and inert the two sciences which lie at the very threshold of the study of medicine. Metaphorically it were to kill the goose in order to secure the golden egg. It is a trite saying that the isolated fact of to-day may be one of the greatest practical import to-morrow, and it is in the best interest for his usefulness and power as a practitioner of medicine that the student be so instructed in the fundamental principles of these sciences that after graduation he may keep pace intelligently and be able to utilize the further discoveries of these sciences as applied to scientific medicine. Purely anatomical and physiological researches have long since been vindicated by their fruits and by the power they have created for the use of clinicians in the practice of medicine.

The teaching of anatomy in the early period of development of medical education in America has suffered from the practice in vogue in almost all of the medical schools, and still extant in many

of them, of making the chair of anatomy a stepping stone to that of surgery. Accordingly the teaching was for the most part directed toward practical ends, and was, in the main, a species of surgical anatomy. Anatomy became the handmaiden of surgery and very few contributions of scientific merit were produced. To this is due the fact that in our text-books, compiled under the various titles of topographical, applied, clinical and surgical anatomies, the needs of the internist have been sacrificed for those of the surgeon and but meagre consideration, if any at all, has been given to the topics of interest to the internist.

An attempt has been made on the part of the medical schools to bridge over the more or less real gap that exists between the teaching of anatomy as a pure science and anatomy in its practical application to the clinical branches. Some of the writers of text-books of descriptive anatomy, alive to this need, have added at the end of each chapter a section on practical considerations, usually written by a surgeon, "Aiming (to quote from the preface of one of these) to present in connection with each organ or system, enough facts illustrative of the dependence of the diagnostician and practitioner upon anatomical knowledge to awaken interest and to combat the tendency to regard anatomy as something to be memorized during student days and forgotten when examinations are over."

Courses under the titles of topographical, applied, surgical, and medical anatomy are offered in the curricula of many schools. In some of the schools such courses are compulsory, and in others elective. All of these courses in some colleges are taught by members of the anatomical staff, and in other colleges by clinicians. It is as yet a mooted question whether it is advisable that all of the courses in anatomy should be given by the professional anatomist. The best solution probably lies in the course approved by the sub-committee in anatomy of the Council on Medical Education who suggest that applied anatomy may be taught by competent physicians, but should be given in the anatomical department. There exists yet a further diversity of opinion as to the year of the curriculum in which such courses are best presented to the student. In the majority of schools it is the custom to place these in the second year, while a few schools reserve them for the clinical years.

In order to gather some data as to the stress placed upon the teaching of the practical application of anatomy and physiology in relation to internal medicine, I have submitted a number of inquiries to the deans of the various leading medical schools.

In a brief analysis of the information obtained concerning special applied courses in the curricula of some seventeen schools from which replies were received, we find that topographical or surgical anatomy is required in thirteen; in two schools such courses are elective. In only two schools is medical anatomy as a special course offered (Fordham and Johns Hopkins). One school offers a course in applied physiology, while some seven give courses in pathological physiology. At Yale a course in medical technics is given, which includes the use of a blood-pressure apparatus, sphygmograph, etc.

An expression of opinion concerning the desirability of offering in the curriculum, courses bearing directly on the practical application of anatomy and physiology was also solicited. In a large proportion of cases the deans of these schools are themselves clinicians and their responses are of special interest as presenting the clinician's point of view. The onus of opinion indicates in no uncertain manner that the clinicians decide that both of these sciences be taught in a broadly scientific manner, and that the teaching of isolated facts of so-called practical value, at the sacrifice of fundamentals, would be grave error.

I shall take the liberty of reading a very few of these replies which have a direct bearing upon this subject:

Dean V. C. Vaughan (University of Michigan) writes: "The scientific branches of medicine should be taught scientifically, but special stress should be laid on application. Medicine consists of those facts gathered from the various sciences which may be utilized in the prevention and cure of disease. The sciences from which these facts are largely if not altogether gathered are, physics, chemistry, biology, including bacteriology and physiology. Now there are two ways of teaching medicine. One is to pick out the isolated facts of these sciences which are useful in the prevention and cure of disease, and require the student to familiarize himself with these facts. This is the old way of teaching medicine. It is unsatisfactory, is not scientific, and has led to disastrous results. Facts in chemistry, for instance, which at present have no application in the prevention and cure of disease, may ten years from now, or even two years from now, or even one year from now, be of the greatest utility. The only way to teach medicine is to teach these branches scientifically and thoroughly. While this is being done special

stress may be laid upon those facts which are applicable in the cure and prevention of disease. But no man is wise enough to foretell what facts in any of these subjects may within a short time become most important in medicine. The one method is to teach by rule of thumb, and the other method is to teach scientifically."

Dean Geo. Blumer, of Yale, says: "I think the ground should be covered, but question whether special courses are necessary."

Dean H. A. Christian, of Harvard, expresses the opinion that "there are too many separate courses already in every curriculum that he has looked over. Any well taught course in surgery or in medicine must include the anatomical and the physiological side."

Dean J. M. Dodson, University of Chicago, writes: "In my opinion clinical medicine is applied physiology, as well as applied anatomy, pathology, bacteriology, etc., and should be so regarded and taught by every clinician. I can see no reason, therefore, for designating some clinical courses as applied physiology. How comprehensively and effectively any clinician will apply our present knowledge of physiology to the study and treatment of his clinical cases, and in the instruction of his students, will depend, of course, on how thoroughly and broadly he is in touch with the recent advances as well as our older knowledge of physiology. These advances are taking place so rapidly that it is impossible for the average clinicians to keep abreast with them, and hence the necessity that some (not all) of the teachers of clinical medicine in any given school should be so circumstanced that they may give all of their time to investigation and instruction in 'clinical medicine,' which I regard as synonymous with applied physiology, pathology, etc. By this I mean that such men, absolved from the time-consuming and distracting duties of ordinary practice, having no clinical work except that in the hospital where their investigation and instruction is carried on, should devote some part of their time to research in pure physiology and to keeping themselves thoroughly informed as to the advances in these sciences, while the remainder of their time is devoted to the study of the application of these physiological facts and methods of the treatment of disease. Through these men, their colleagues, engaged in general practice, as well as in teaching (and in research so far as their time permits), should be kept informed as to the advances in pure physiology and of their bearing upon and applicability to clinical medicine."

A certain number were favorable towards the establishment of applied courses in the curriculum :

Dean A. J. Smith, University of Pennsylvania, says: "I personally regard the applied side of anatomy and physiology as highly desirable as a bridge between pure science and clinical work and would urge the plan to the very fullest extent for which space can be afforded in the curriculum of any medical school."

Dean C. M. Jackson, University of Missouri, says: "Courses in purely topographical anatomy belong to the department of anatomy. Courses in applied anatomy (also applied physiology) are also necessary and should be given by the clinicians in connection with the clinical work and from that point of view."

What, then, are the anatomical facts most needful for the student to know if he is to become a successful practitioner of internal medicine? To specify and select an isolated number of facts to-day might be to omit those most important in the burning problems of to-morrow. I think that clinicians and anatomists are of one mind in the belief that the most fitting place for the student to acquire a knowledge of anatomy for the years of practice is in the dissecting room, where he may learn to visualize and carry away a mental image of the structure of the human body. Nothing is more true than the dictum of John Hunter that the way to learn anatomy is by dissection, and dissection, and dissection. The work in the dissecting room may well be supplemented by the study of frozen sections in the various planes of the adult male and female as well as of the child and infant. Corrosion preparations and models of the different organs and special dissections of certain regions are most instructive. The Anatomical Museum, such as one sees so highly developed in the German universities, is a valuable asset in enabling the student to get a clear conception of the form and relation of viscera and of the structure of intricate regions.

A special course in medical anatomy, distinct from that of surgical anatomy, while not to be regarded as essential, can be made of considerable aid in teaching many facts, commonly taken up by the instructor in physical diagnosis. In such a course the living model should be employed for mapping out the topography of the various thoracic and abdominal viscera, the surface landmarks, the domain of the distribution of the cutaneous nerves and of the segments of the cord, etc. Certain anthropological considerations might be

studied with advantage. Where clinical material is available the various types of crania, such as the microcephalic, dolichocephalic, and hydrocephalic could be exhibited, and determinations made of the various indices. Attention should be drawn to the various types of thoraces. The elucidation of the medical anatomical parlance of such terms as Harrison's groove, Riedel's lobe of the liver, etc., would be useful. The pathologically produced anatomy of such conditions as hepatic cirrhosis with its caput medusae, dilated parumbilical and hemorrhoidal veins might be studied in order to train the student to apply his anatomical knowledge. The function of such a course is, in the last analysis, to teach the student to think anatomically. If this end has been accomplished in the dissecting room there would exist small reason for a special course in applied anatomy.

It is perhaps to be regarded as a reproach to the present teaching of neurology that almost all of our text-books on clinical neurology devote a lengthy preface to the anatomy of the central nervous system. In this instance more attention to the practical application, or in other words, a more intimate association of function and structure, would be of real aid in fixing in the student's mind the course of fibre tracts and the effects of lesions in the various regions of the brain and a stimulus would thereby be given him to master the intricate structure of the nervous system. Another source of weakness in most of our schools is the scanty attention given to the anatomy of infancy and childhood. The study of frozen sections of the body at various periods of development and of special preparations of the viscera showing alterations with growth, and where feasible, the dissection of a foetus, would later materially assist the student in coping with diseases of infancy and childhood. Developmental defects and congenital anomalies could be logically dealt with here.

Finally it is gratifying to know that the anatomists are keeping pace with the clinicians in investigating the morphological aspects of the problems of the hour, for the light that such researches throw upon function, as in the instances of the atrio-ventricular bundle, the parathyroids and hypophysis and other ductless glands. The student would be greatly stimulated by having such examples demonstrated to him.

Since the teaching of the broad principles of physiology apply so intimately to the practice of clinical medicine, since the practice of clinical medicine is in itself an attempt to restore normal functioning, to urge a greater practical application of physiological facts would appear to be redundant. To teach the student to be active in these applications, to do for himself, would appear to be the fulfilment of the whole law. The application of a certain physiological method tried on the dog, is good, but on the human body, where feasible, preferable as a preparation for practice. To know, by actual experiment, the use of the sphygmograph, of the cardiograph and the electro-cardiogram, and to be able to intelligently interpret his observations of such normal physiological functioning of the human body, will give him power in restoring to normal the diseased cardio-vascular mechanism. The actual use of the stethoscope, the pneumograph, spirometer, haemoglobinometer and haematocytometer should be insisted upon. A careful laboratory study of the various secretions of the body, and of the problems of metabolism is of course assumed. A wise plan adopted in a few of the schools is to allow the student to choose some special field for exhaustive experimental work with the aim of teaching him thoroughness and initiative in his methods of work as a student and, as a result, methods of precision in the study of his cases as a physician. In the other fields he should familiarize himself with the elementary experiments.

In the ultimate weighing of evidence, concerning the ideal pedagogic method, even if from certain quarters there may arise a cry for a more practical teaching on the part of the anatomist and physiologist, the consensus of opinion is, I believe, that that student is best prepared for the long race of the practice of internal medicine, who has been trained in a school where these primary branches are taught as pure sciences, and where, not unmindful of their practical application, the imparting of the fundamental truths and principles of these sciences is regarded as paramount, and in which no attempt is made at a short cut to the goal of medical learning by keeping practical facts ever in the foreground at the expense of pure science. The student in such a school cultivating earnest, careful habits of investigation, as an undergraduate, and developing the power of keen, intelligent, observation and deduction,

a student once and always, will finally attain to the highest type of student physician. That the training of the medical student of to-day in these primary branches be directed in such manner and towards this end would, I believe, fairly represent the message of the internists to their colleagues in anatomy and physiology.

WHAT THE SURGEON WANTS THE ANATOMIST AND PHYSIOLOGIST TO TEACH

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When I first read the title of this thesis that I am expected to explain and defend, I felt profoundly surprised, but upon reflection I think I have grasped the reason for a present consideration of this question. I am sometimes almost dismayed at the practically unimportant position to which anatomy and physiology are now relegated. This is only a matter of surprise when superficially considered.

The absolute necessity which existed in the past, when anesthesia was unknown, for a quick, sure completion of the simple operations employed, then demanded little more than a knowledge of the bony relations of certain points, of certain vessels and nerves with muscles or other guiding structures, to insure safe, and at the same time expeditious completion of ligations of the great vessels, of lithotomies, amputations, and the reduction of luxations, and this knowledge was justly considered to comprise all that the surgeon was required to know of anatomy. This error still governs much practice now, because, aided by anesthesia and asepsis, recoveries, not deaths, ensue, covering up for the time, the clumsy and unnecessary mutilations often producing equally unnecessary disabilities.

In the new era, difficult and complicated operations, lasting for hours, during which even delicate structures of importance can and must be avoided, require a much more minute acquaintance with cerebral, spinal and neural, even muscular and osseous anatomy than formerly, so that the crude old points of reference, other than the skeletal, fade into insignificance; hence modern surgical anatomy and physiology occupy an enormously larger field, and these two fundamental subjects should be coming into their own again.

Both modern surgical as well as medical differential diagnosis should depend largely on a much more intimate acquaintance with anatomy and physiology than it did even a decade ago. If such

knowledge could be more general, the resort to diagnosis by exploratory incision would but seldom be required. The just criticism of many foreigners would soon in a great measure lose its justification, that, while American surgeons can vie with, indeed often excel those of other nations in mechanical dexterity, they are not diagnosticians.

Let us first clear the ground of any misapprehension by defining that which I think a surgeon should be, viz., a medical man who operates. If by a surgeon is meant a man who is incapable of differentiating medical from surgical disorders, and who, like the surgeons of old did, now does what the physician directs, he is merely a chirurgion, a true hand worker; or if a surgeon be a specialist who knows but little outside his specialty, and who removes all a woman's internal generative organs for the backache, really due to lumbo-sacral spinal caries, or if he be the man who removes a healthy appendix in a child because he cannot recognize a pneumonia, then my answer would be different from that which I propose making.

I do not contend that real surgeons, not mere operators, should keep themselves thoroughly abreast with the refinements of the diagnostic methods employed in other branches of the healing art, but they should have been sufficiently conversant with those of the past, and must learn the newer methods sufficiently well to check, on the one hand, the *cacoethes operandi* of too many internists, or perchance, check their carelessness and even ignorance, for all specialists and internists are not infallible; *ergo*, anatomy and physiology becomes more necessary than in the past.

Still further, how often students have been compelled to change their cherished plans by force of circumstances, or special adaptability, developed later and favored by exceptional openings, and have found themselves handicapped by their improper information—I do not say education—so far as anatomical and physiological knowledge is concerned. In other words, not every student can know what line of professional activity he can take up, and few know what they are best fitted for, hence my broad answer to the query of my title is, the true surgeon wants *all* the anatomical and physiological knowledge proffered *every* student, which is compatible with a due regard for the proportion of time required for other equally important or difficult portions of the curriculum; because any graduate may have to practice some one of the branches of surgery, either as a permanency or in an emergency.

After over forty-one years of teaching of various branches of medical science and art, I have been impressed with the inevitable results of the modern graded course, so far as anatomy and physiology are concerned. In all modesty I think I am competent to pass judgment on such matters, after sixteen years in the dissecting rooms as student and demonstrator, during the latter part of this time having delivered numerous didactic courses of lectures. When I add to these qualifications my three years as an office student of a celebrated teacher of physiology, and my having served as his assistant for some years subsequent to graduation, doing all his vivisection work, I think that I can claim at least a judicial hearing.

During my pupilage, and after my graduation, until the graded course was established, every student, irrespective of his future plans as a practitioner, had to work more or less continuously in the study of anatomy and physiology during his whole undergraduate course, consciously or unconsciously digesting his surgery, internal medicine, obstetrics, gynecology, etc., with a constant and due admixture of anatomy and physiology, which studies had to be kept up, because his final examination in these branches only preceded his graduation by about two weeks. The surgeon and other teachers had not then to pause to explain the anatomy of the part being treated of, or the physiology of the diseased organ, which often only shows its disease by a slight perversion of its normal functions.

Now unfortunately much of this is changed. The aspiring oculist devotes his time only to maintaining and adding to his knowledge of the structure and functions of the eye. The prospective aural surgeon behaves in a similar manner, and the dermatologist certainly has but a limited anatomical or physiological field to cover.

Those teaching in schools where the scientific side of the subjects under consideration are largely ignored, in favor of the so-called practical aspects of anatomy and physiology, overlook, or underestimate the fact that in institutions where the scientific side is *not* neglected, practical anatomy, by instruction in regional anatomy with reference to its surgical and medical aspects receives due attention, while ordinary operative demands are amply provided for by operative courses on the lower animals and the cadaver; the course on the living animal having been first made compulsory, many years ago, at the University of Michigan. Yet it cannot be denied that there is room for improvement in securing the knowledge of anatomy and physiology which the surgeon needs.

Let us first examine what is a very patent cause of trouble with our modern graded course. It is too much to expect of human nature, much less of student nature, to resist the psychic impression backed by the fact that he has "passed off," done with, his anatomy and his physiology, early in his course, and that he cannot be examined in these subjects again. He knows too little to understand what his fading knowledge of these fundamental subjects will surely entail during the remainder of his professional life, in half comprehended or wrongly comprehended surgical information.

Some of those present cannot personally know, and therefore recognize, the advantages of the old system of acquiring anatomical and physiological knowledge; few seem to appreciate the unnecessary damage done in many of the modern operations proposed and practiced by eminent operators—I will not say surgeons.

Surely the old instructions concerning operating still hold good, *tuto, cite, et jucunde*, but is this possible without more anatomical and physiological knowledge than our students too often carry away with them on graduation day? Is this maxim not, therefore, too often reversed in their subsequent practice? Mark me, I am not recklessly attacking the modern graded course, but am endeavoring to indicate wherein it fails the modern surgical teacher and compels him—too often himself incompetent—to divert his energies from his proper field to instruct his classes in fundamental subjects, which being fundamental must be there; it is absurd to erect a superstructure without adequate foundations.

Still further, is not this a natural result of the manifest advantages of the graded course in some branches of study blinding us to the possible untoward effects in other portions of the curriculum? In many ways we are now remodeling other portions of our medical curricula which have been largely experimental and too hastily adopted; cannot this part also be improved?

I am sure that teachers of anatomy and physiology will see their way in the future how to readjust and remedy the shortcomings, so far as results go, of our present methods, but I would earnestly protest against curtailing the scope of instruction on these important subjects. It is not the fault of too much science but too little, or at least the proper proportion at the proper time, and no amount of so-called teaching of practical anatomy, with its still useful and necessary points of reference, will give the student such a spirit of

catholic knowledge and interest in anatomy, as a proper combination of the scientific with the miscalled practical.

How is a correct diagnosis to be made, for instance, of a cervical rib when nerve or vascular symptoms are puzzling the practitioner, unless the medical man has been taught something about comparative anatomy with such possible reversions of type? Surely neither by reference to bony points or a resort to a blind exploratory incision, but by knowing of such possible anomalies and either excluding them or determining their existence by proper methods. This illustration may not seem to adequately sustain my contentions, but many other even more pertinent ones could be adduced, yet *expede Herculem*.

The surgeon wants anatomy taught with as broad a scientific foundation as feasible, supplemented by such a sharp presentation of the facts of general anatomy as will show what structures *must* be injured during any operation in a given region, what *may* be injured or destroyed, and what *must not* be injured, much less sacrificed.

What, may I ask, is the modern surgical anatomy in operating on the biliary apparatus? My answer would be the whole anatomy of the right hypochondriac region, often largely supplemented by that of the greater part of the upper half of the abdomen, as any unfortunate surgeon finds necessary when dealing with the matted pareties, liver, stomach, duodenum, transverse colon, great omentum, etc.

Is there any such thing as surgical anatomy, as formerly understood, needed during the intra-cranial removal of the semilunar ganglion other than the general anatomy of the temporo-cranial region and that of the middle fossa of the skull, osseous, nervous and vascular, whereby first, a soft flap can be cut without damaging the relatively unimportant muscular branches of the seventh nerve, much more the important ones; by a knowledge of which injury to the cavernous sinus, middle meningeal and carotid arteries, and nerves other than the fifth, can be avoided; and whereby the structures sought for can be easily and safely identified.

When a case of intra-cranial tumor or cerebral abscess presents itself, must the surgeon be entirely dependent on the neurologist for the diagnosis and the location of the trouble? Certainly he should not be. In how many instances has the general surgeon failed to

recognize a condition but accepted the diagnosis of the neurologist, and an operation has been avoided for conditions which later have been proved not to have existed? In cranial surgery the operator should possess sufficient anatomical and physiological knowledge to enable him to properly weigh and determine the value of the evidence upon which the specialist relies for his diagnosis.

What is the modern surgical anatomy required during operation for injury or disease of the spinal cord? Merely the whole anatomy of the spinal column, ligamentous and osseous, acquaintance with the enormous intra-spinal plexus of veins, etc. What is the physiology needed for the diagnosis of intra-spinal tumors? Surely nothing more and nothing less than the general physiology of the cord, and this knowledge is essential. Can anything but a competent acquaintance with modern cerebral anatomy prevent the surgeon from operating where disease does not exist, or doing irreparable damage when a correct diagnosis has been made? Assuredly not! And yet what I have mentioned is certainly neither regional surgery nor anything but plain scientific descriptive anatomy.

It is not fair that the critic should object without suggesting a remedy. I confess that I enter upon this part of my subject with great hesitation. Would it not be possible to hold over the student's head the certainty that the internist and externist will hold an examination, the one on physiology, the other upon anatomy as part of the final examinations for a degree? In this way the advantages of the old and new methods would be combined. I merely suggest this as a possible solution of the problem, and would gladly accept any better or more feasible plan.

In conclusion, let me reiterate that a proper knowledge of scientific as well as so-called surgical anatomy is of equal importance in the diagnosis of surgical conditions as in their treatment, operative or otherwise. The same is true of physiology, and the surgeon, *i. e.*, the operating medical man, as a practitioner, needs these aids, while the teacher cannot successfully instruct when students do not possess them. I could thrice exceed my time in giving illustrations of my meaning, but if what I have said does not convince, a multitude of words will not avail.

DISCUSSION ON PAPERS OF DRs. COHOE AND DE NANCREDE

E. P. LYON, St. Louis, Mo.: Both gentlemen emphasize what I have long believed, that these subjects should be taught from the scientific standpoint and not merely to point out the features thought to be of practical

value. The only other thing which occurs to me is to defend another proposition for which I have always stood: namely, the presence in the medical school of one who has not the M.D. degree, but who is really well versed in one of these sciences. If we are to regard the prime need in the teaching of these subjects the necessity for a scientific knowledge of them, then it seems to me that the argument is especially strong for the trained anatomist, rather than the physician who can teach anatomy.

H. D. ARNOLD, Boston: It seems to me that one of the fundamental principles on which we are discussing this subject is a mistake—a mistake which, fortunately, I believe is passing away. It is the old distinction between the science and the art of medicine. In the olden days, when medicine was almost entirely empiric and not based on science, that distinction was necessary, but it has broadened out now and yet we have not entirely done away with this distinction. If our students are not taught scientific anatomy and physiology, they are not going to make good practitioners, as we understand them to-day. There is no conflict between the science and the art as they are practiced to-day. On the other hand, the man who is attempting to teach the practical application and does not base it on the scientific principles of anatomy and physiology, whether he be teaching medicine or surgery, is not up to date. We have had men who taught anatomy, physiology and pathology who believed that they need not concern themselves with the practical application of what they were teaching. These men are fast disappearing. We can teach just as good science as it applies to helping human beings as we can teach it in the abstract.

To be sure, some of the things which we are fighting to-day, to-morrow will have a practical application, but I fail to see why science applied to those things which seem to have no application can have any more value than those which are known to have an application. It is the method more than anything else. If these things are borne in mind, the teacher can teach just as well on things which have a practical application, and if he does so these questions will just naturally simplify themselves. This matter of scientific training in the first year or two will vary according to the previous education of your students. In our Association we have students coming in from the high-schools and some coming in with the B.A. degree. With those coming in from the high-schools, anatomy and physiology bear an important part of the course of study, but with it all, I believe that we teach the sciences best when we bear in mind their practical application.

H. A. CHRISTIAN, Boston: In this discussion we are considering two separate questions intermingled. The first is whether the student needs fundamental knowledge of anatomy and applied physiology. I hardly think there is a doubt of the answer. They do need it and they need as much knowledge of these subjects as they can get.

The other is: Do our students need separate and special courses on these subjects. From the point of view of the curriculum and the best means of attaining the best answer to the first question (which most of us agree is affirmative) we can agree. Personally, from the point of one teaching internal medicine, it seems to me it is not desirable to have separate courses. As I said in my letter (which has been quoted) I believe we have too many separate courses in our curriculum to-day, and one thing we must strive for is a reduction in the number and an increase in their

thoroughness and a broadening of the correlation in the separate courses.

Following that idea, the anatomist and physiologist must give his time to teaching the fundamental principles. That does not mean that he cannot illustrate with practical applications, but the time at his disposal is not sufficient to justify his going into the practical application too deeply. On the other hand, the internist must teach them as applied sciences. In teaching such courses the question arises whether the internist himself should give the instruction or whether he should call on the physiologist to assist him. The answer to that must always be a varying one inasmuch as the men teaching internal medicine vary. The more he calls on others for this information, the larger he is criticized on his own ability. Of course, no one can teach all subjects, all must call for assistance sometimes, but he teaches best who best understands his subject from all sides and has to call in the least assistance.

A word as to the question brought up by Dr. Nancrede in regard to correlation and the loss that has come to the medical student by our present system of distinctly separate courses. The student does learn to feel that after he has passed his first years he need no longer concern himself about anatomy and physiology. Here is where the teacher of applied sciences should make it evident to the student that the two have a connection and that it is necessary for him to know physiology and anatomy in order to study medicine and surgery; to compel him to constantly review the principles in order to study the application and to hold himself responsible for these things in examination.

We might go farther and have final examinations in these branches, which would impel correlation, and this brings me right back to where I started from, that it is necessary that we have less and less distinctive courses and more and more correlation and broader examinations than we have at present.

B. D. MEYERS, Bloomington, Ind.: As an anatomist, I am very much interested in applied anatomy. I should like to have the surgeon and clinician teach some anatomy. If there is anything that more handicaps the anatomist than to give the student a good scientific basis and then have him go up against his clinical work and never give anatomy another thought, I do not know it. It seems to me applied anatomy is a very necessary part of the medical course. It is placed at the beginning because the student must have it as a foundation for physiology, medicine and surgery. Two years later he begins on his medical work. I do not see how diagnosis can be taught without reference to anatomy.

A. K. WEST, Oklahoma City, Okla.: There seems to be some variation between what the student should know and what the teacher should teach. It is merely a matter of the method used in assisting the student. Beginning with anatomy, which is the foundation, we then say physiology, but it seems the physiologist should teach applied anatomy. He must also apply his chemistry. The clinician, building on that, must recognize the pure sciences of anatomy, physiology and, I might add, chemistry. It is really his function to apply the pure sciences.

The difficulty has arisen (and I think this point may well be presented here) that the clinician does not give the time necessary to his branch. In a very large majority of our medical colleges the clinician only gives an hour or two a week to his special work, therefore, he does not have time to bridge the space between the two and they ask some one else to

come in and teach applied anatomy and physiology, so that the student must learn, as separate studies, pure science and applied science.

The ideal to my mind is, the first two years given to the pure science, but as applied to medicine. Then the teacher develops that knowledge later on, using what the student has learned as pure science, and each teacher (if it were possible) giving his whole time to the work, leading the student out of the realm of pure science into applied science and medicine.

Incidentally, as several have mentioned giving examinations to preclude the idea on the part of the student that he was through with these particular subjects and that they would not be taken up again, it is a matter of expediency, and the trouble is that with a great number of teachers we are making a patch work of the course.

J. S. FERGUSON, New York City: As a teacher of anatomy I should like to make a plea for what appeals to me to be an overlooked and much-neglected phase of the study of medicine. We were reminded of the saying of John Hunter that the way to learn anatomy was Dissection! Dissection!! Dissection!!! That applied to the time of John Hunter, but that time has passed. Following that, we have rapidly developed on the surgical side, and Dr. de Nancrede has pointed out the difference between anatomy as a science and the applied anatomy which the surgeon demands. It seems to me that the anatomy from the side of the internist demands not so much the knowledge of the dissecting room as it does an accurate knowledge of the conditions in which the tissue exists in the body as shown first by the gross appearance; second, by its macroscopic structure, and third, the application of the whole structure to the function of the organ.

In the study of anatomy we cannot avoid, in this day, the macroscopic phase of anatomy, and we must place that on an almost equal footing with the gross phase. This should all be taken up step by step, from anatomy and physiology to internal medicine.

BENSON A. COHOE (closing discussion on his part): I am much gratified at the discussion and quite pleased at the consensus of opinion, which seems to be that these subjects should be taught in a scientific way, and I agree with Dr. Ferguson in his remarks that the macroscopic examination is quite as important as the microscopic. One thing I should like to add as to the teacher of pure science: While we all agree that that chair should be subservient to the chair of medicine and surgery, they should not utterly disregard practical application. That is, they should teach their science in the way best fitted to the practical application of medicine and surgery. In some colleges there is a tendency to keep away from anything that looks like application. That is a mistake which I hope soon to see done away with.

C. B. DE NANCREDE (closing the discussion): The only difference of opinion seems to be the best way of attaining the end we have in view. Of course, when I speak of anatomy I include embryology and histology. It is a question whether you teach it yourself or allow competent assistants to teach applied anatomy and physiology. That is what I called into question. I think that by any ordinary mental process if a student knows that he is not going to be examined again in a branch of study he is not going to pay very much more attention to it. In order to impress the science of anatomy and physiology thoroughly on his mind some attention should be paid to it in the last two years, but when I find that those who

are teaching medicine and surgery do not know the simplest points of anatomy I say that had these men been compelled to keep up their anatomy as we used to do, when the time came they would know something about it.

When it comes to pedagogy, reviews are necessary. If it is not possible for the professor or teacher of surgery to go over all the anatomy, it certainly is better to have some one else do so than not to have it done at all.

The last thing I would advocate is that the teacher teach everything as it comes up, but, unfortunately, time does not permit of this to any great extent, but we should not try to draw hard and fast lines between the different studies.

THE FIFTH YEAR IN MEDICINE: A HOSPITAL YEAR

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(ABSTRACT)

In presenting the plan which has been adopted in Minnesota for a fifth or hospital year, it is apparent that the viewpoint is not simply that of the welfare of the medical college but that of the good of the people of the state. It is recognized that what may be advantageous for a state situated as is Minnesota may be quite unsuitable or impracticable for other states where conditions are radically different.

In order to secure the opinion of those in Minnesota who are specially interested, written information as to the desirability of a fifth or hospital year was obtained from representatives of various hospitals, of the medical press, from influential members and officers of the Minnesota State Medical Society, members of the Minnesota State Board of Health, of the Minnesota State Board of Medical Examiners, medical officers of state institutions and other similar sources. The requirement was announced last year and goes into effect with the class entering college in September, 1911, which means that compulsory internships must be provided in 1915. This affords four years' time for the final perfection and announcement of methods. A committee of the faculty of the College of Medicine and Surgery has been appointed to perfect final arrangements. Since this committee has not yet reported, it is impossible at this time to give the details of the plan as it will be put into operation.

At present 90 per cent. of the students voluntarily take internships, so that the carrying into effect of the announced plan will mean simply the requirement of one more year of service for a few students. To make these requirements compulsory for all will, however, protect the state in a number of directions.

The plan provides a further year of collegiate supervision for students before they are granted degrees. It protects the college and the state against the granting of degrees to those who may be

satisfactory students but who may prove to be unfit, incompetent or unpractical in the care of patients. For the hospitals, advantage is secured in providing a stimulus to better work and sustained service on the part of interns, since the degree will be withheld unless the hospital service of the student is satisfactory to the proper authorities.

For the successful carrying out of the work, the state university must establish a set of requirements as to the size and scope of hospitals, methods of organization, facilities for scientific work and case records, and such other details as may prove necessary to standardize the hospitals for the purpose of this fifth or clinical year of medical education. It is believed that hospitals so standardized will welcome affiliation with the university.

The further opportunities it provides for medical and public health cooperation in the state and in furnishing an added stimulus for each hospital to become a scientific center for the physicians of the locality are apparent.

The available internships in Minnesota will far outnumber the local candidates for the positions. The university hospitals, when completed, will provide a large share of the required positions. The Minnesota State Board of Medical Examiners, according to the law, does not require graduation but demands of its candidates for licensure four years of work in a recognized medical college and two years of premedical college or university work, which is equivalent to that provided by the University of Minnesota. These equivalents are determined for the Minnesota State Board of Medical Examiners, as in the case of students entering the College of Medicine and Surgery, by the Registrar of the University, or when necessary, by the Enrolment Committee of the College of Science, Literature and the Arts of the University of Minnesota.

Whether the future graduates of the College of Medicine and Surgery shall be required to take their examinations for license to practice medicine at the end of the fourth year or college course or at the end of the fifth year or hospital service has not been determined. Nor has it been decided whether it is desirable to substitute graduate research work for the hospital year in the case of those who wish to qualify, not for medical practice, but for teaching and research posts. It has seemed to the people of Minnesota that owing to the increase in present-day knowledge in chemistry,

physics and biology, and in their increased applicability to the diagnosis, prevention and cure of disease, nothing less than seven years of university and clinical work should be demanded of candidates for a medical degree after graduation from an accredited high school.

DISCUSSION

JOHN M. DODSON, Chicago: I hesitate to discuss this question for I feel that I can add little to what has been said, although the topic is exceedingly interesting to me. To those schools which have the college requirement, the time is ripe for the addition of this hospital year. I think we made a mistake twelve or fourteen years ago when we changed the time of the course in not adding the two years to the entrance requirements. Now, having added the collegiate work, I think the time to add the fifth year which Dr. Wesbrook has discussed is at hand.

The institute with which I am associated has had the fifth year for some time but, unfortunately, we are not able to make it compulsory because in this state a degree is necessary in order to get a license, and the student must have the license in order to become an intern. We find, however, that our difficulty is not in finding openings for our students, but to find students enough to fill the places.

I think the chief difficulty is going to be on the side of the hospital, and this educational movement is going to be as good for the hospitals as it is for the students. The disposition now is to overload the internist with routine work and to assign to him too many patients. I believe that he should not have more than twenty-five (or thirty at the outside) beds at one time if he is to make a proper study of his patients, and that without reference to himself but for the good of the patients.

In our work we ask him to report, and we find that many hospitals are not adequately equipped and are not careful enough about having the work properly done and the effect of having one or two enthusiastic interns who will do proper work whether it is absolutely required of them or not, and I have known of two or three hospitals whose staff has been revolutionized by the earnest work of these young men.

The intern is under the personal charge of some member of the faculty who investigates the hospital to be sure it is good and who keeps in touch with his work, and more than this the student is required to do some piece of original work and to present a thesis. This latter condition has been rather difficult in some instances, the student claiming that his time was so occupied that he could not do it. I doubt that, because another student working right along with him has done a very credible piece of work, but if we are going to make this requirement we must arrange with the management to give him time for this and a certain class of cases to study. I regard the thesis as the most important thing during the hospital year. That is the thing which makes for power and gives the young man command of himself.

F. C. WAITE, Cleveland, Ohio: What I say is not entirely authorized, but it has been very thoroughly discussed and is about the plan on which we shall decide. In our state we, too, have to give our students a degree before they can get license to fill an internship. Our plan is this: We are able to place every man in a hospital, but we find we have different grades

of man, the same as there are different grades of hospitals. We propose to allow them to distinguish themselves in a way. When the student goes into a hospital, he will do a certain amount of work on which he is to report, and in addition to that he is to do something in the way of original work, and when that is credibly done he is to get an additional degree of "Master of Medicine." His special work need not necessarily be medical, but may be laboratory or anything pertaining to his medical education, and when it is done he gets this additional degree. We hope in this way to induce men to go into hospitals who would not otherwise do so.

D. C. BRYANT, Omaha, Neb.: There is no question as to the value of this training, but in our country we shall have difficulty for a long time in supplying internships for our graduates. We usually have a class of about thirty-five, and we have under our control only about seventeen internships. We have no trouble in getting our students to take the places.

We have one other trouble which you of the East perhaps do not have. Outside of the two or three hospitals for which we supply interns, the staffs are not suitable as teachers for our graduates, and so, even if they were open to us, we should hardly feel like placing our students in them, and until we have places enough for our students we cannot possibly consider making this a condition of graduation or even very strongly insisting on it after graduation.

H. A. CHRISTIAN, Boston: It seems to me exceedingly desirable that every man who is to practice medicine should have practical experience in a hospital. I have been much interested in Prof. Westbrook's outline as the plan to be followed in the University of Minnesota. I think it is an experiment which we shall all watch with great interest. In the East I think that the plan outlined by Drs. Dodson and Waite should be tried to see how far it furnishes an incentive to medical students to take the practical year.

If we consider this from the point of view of whether we should make the fifth year compulsory or voluntary it seems to me there are a number of objections to the idea of making it compulsory. In the first place it does not seem to me that the colleges of to-day are in a position to thoroughly administer the four years and a fifth year would add considerable to the burden and might only serve to detriment the four-year course. Then, many would have difficulty in placing their students in hospitals for the reason that they do not control sufficient hospital positions. Very few are situated as Minnesota is in this matter.

Then there is the question whether it is desirable on the side of the hospitals to have interns furnished them in this way. I doubt that it is desirable in the hospitals which now have better service. The tendency would be to make the year just one year and then grant the degree at the end of the year. That would place new interns in the hospital each year, and to my mind that time is entirely too short a time to get the most out of his service and too short a time for him to get the most out of his hospital connection.

The difficulty of controlling students in the hospitals, the selection of the hospitals, etc., probably could not be met in any other part of the country as it is now in Minnesota, therefore the University of Minnesota is in a very good position to try this thing out. I think the rest of us had better wait and see the success of their plan before we urge the fifth year as a part of the curriculum administered by the students.

There is another way, it seems to me, of approaching this problem. Two methods have been suggested: First, that the institution require it. Second, that the institution furnish an incentive by offering an honorary degree for good work. I have a third method to suggest (and it seems to me preferable at the present time) to make a practical degree required by the license. That would give the student freedom in selecting his hospital and place the hospitals open to him.

It is not to be denied that many go into laboratory work who might not be particularly benefited by this hospital training. At the same time, they many times get a great deal of work which fits in with their particular choice of subjects.

Another phase which we must not overlook is that of the public health officer. Some need the practical experience of that hospital year. Others need training in the fundamental science and could very well spend a year or two after the four years of the regular course in such a course. I might cite, as an example, the present "Doctor of Public Health" course which gives this degree to a medical student if he has confined his four-year course to a number of subjects closely allied to public health work. It seems to me there is a growing demand for men with this training.

Following along that line it would seem thoroughly desirable to require this of every man going into the practice of regular medicine, but not really necessary to the man preparing in a medical way for work other than general practice. At the same time, I would favor the demand on the part of the licensing board of practical hospital experience. That would involve a change of laws in many states. It is probably possible in some and might be tried in those states as an experiment; but it seems to me we are at present offering it without being in a position to see that it is desirable or even thoroughly possible. We shall have to try out several plans and then select the one which is best adapted to the largest number of cases. That is as far as the Association can go at the present time.

EGBERT LEFEVRE, New York City: This subject has been engaging considerable attention for some time. In the first place, in the East, where the number of students is very great, the term of office is two years, therefore a change would disrupt the hospital service and would not be a good thing. The subject of licensing has been a hobby of mine for some time and I think should be worked out. If a man presents himself before the examining board and is able to present, in addition to his regular degree, a year hospital internship, that should be a basis for valuation which should relieve a man of a certain part of his requirements. If, on the other hand, examining boards demand that every man who comes up shall have had hospital service, then they must provide for the taking of that course.

We have been troubled in all of our propositions for a longer course by reason of the fact that we have lost sight of the administrative side. We have no right to demand of our students what they cannot possibly perform. It is time that in our requirements we were able to give the student a chance to get what we are demanding, otherwise it becomes a dead issue and we merely extend the now four years' work over a period of five years.

Everyone, I think, appreciates the need for the year of hospital work. In many localities it can only be postgraduate as yet, and we can only

recommend it as such. But I am not in favor of having this made obligatory in the present state of control of hospitals. The hospitals are very loath to consider themselves as adjuncts to the medical college, and until we have educated the hospital boards to the desirability of this close connection we cannot make this fifth year a requirement.

H. U. WILLIAMS, Buffalo: I think it would be a good plan for this Association to have a census made of the number of internships available. Evidently, that information is necessary as a basis for any plan of action.

I have been quite surprised from the remarks of Dr. LeFevre and Dr. Christian to learn that there might be a lack of positions for graduates. In Buffalo we find it difficult to get a sufficient number of graduates to fill the openings. Some will not take the positions, it is true, but there are, I should say, 75 per cent. who do take them, and these are not nearly enough to fill the hospitals.

F. F. WESBROOK (closing discussion): I neglected to say that we have two years of college work included in our medical college requirements, embracing certain special subjects, science and languages, which are familiar to all of us and which we have been discussing for years. We have four years of graded study and are proposing to add to this a fifth year. In this we realize that it is not a question of what the medical colleges are going to do, but what the state is going to do. The state examining board in Minnesota, as you know, requires two years of college work for a physician licensed to practice in the state. They also require that of physicians coming from other states to Minnesota, for what Minnesota requires of her own citizens she also requires for others taking up residence there.

The matter of whether this hospital course shall be one year or eighteen months or two years presents no particular difficulty to the medical college. That is a matter to be decided by the hospital itself. In the Minneapolis City Hospital, I believe, the term of service is eighteen months. However, the college grants the degree after one year of service, and then the hospital arranges with the student for the time over that period by contract or bonding.

We have not yet definitely decided whether this shall be a hospital year, a clinical year, or work in the clinical laboratory, or to extend it still farther with a view to developing teachers. Personally, I think it is a good thing for any teacher to have put in one year in hospital work. Perhaps it is too much to require, but I think it will be found to be time well spent.

I have one other word to say: With our hospital (which we own) the board is given power by the legislature to manage the hospital and make their own regulations. Our state board of health also has power to make rules after they have the approval of the attorney-general. Until that is shown to be unconstitutional, or until we have law-suits which upset it, we shall continue to work under that. Our problem is certainly not what it is in some other states because with us it is a state matter.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES
MINUTES OF AN ADJOURNED MEETING HELD AT CHICAGO, FEB. 27-
28, 1911, UNDER THE PRESIDENCY OF DR. J. A. WITHER-
SPOON (VANDERBILT UNIVERSITY)

FIRST DAY—MORNING SESSION

The delegates assembled in the Congress Hotel and were called to order by the president at 10 a. m.

ROLL CALL

The roll call showed that thirty-four of the forty-six colleges in membership were represented by delegates, as follows:

University of Colorado School of Medicine.—W. P. Harlow.

Georgetown University School of Medicine.—J. D. Hird.

George Washington University Department of Medicine.—W. C. Borden.

University of Illinois College of Medicine.—F. C. Zapffe.

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

Drake University College of Medicine.—W. W. Pearson.

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

University of Kansas School of Medicine.—G. H. Hoxie.

Washburn College Medical Department.—F. K. Sanders.

University of Louisville Medical Department.—T. C. Evans.

Medical Department of the Tulane University of Louisiana.—
I. Hardesty.

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

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

Baltimore Medical College.—D. Streett.

Medical School of Harvard University.—H. A. Christian.

Tufts College Medical School.—F. M. Briggs.

University of Michigan Department of Medicine and Surgery.—
C. B. G. de Nancrede.

Detroit College of Medicine.—H. O. Walker.

University of Missouri School of Medicine.—C. M. Jackson.

St. Louis University School of Medicine.—E. P. Lyon.

Washington University Medical School.—J. Erlanger.

College of Medicine University of Nebraska.—R. H. Wolcott.

John A. Creighton Medical College.—D. C. Bryant.
 University of Buffalo Medical Department.—H. U. Williams.
 Cornell University Medical College.—J. S. Ferguson.
 University and Bellevue Hospital Medical College.—E. LeFevre.
 Ohio-Miami Medical College.—P. G. Woolley.
 Western Reserve University Medical Department.—F. C. Waite.
 Starling-Ohio Medical College.—W. J. Means.
 State University of Oklahoma School of Medicine.—A. K. West.
 Vanderbilt University Medical Department.—J. A. Witherspoon.
 Meharry Medical College.—G. W. Hubbard.
 Medical College of Virginia.—C. M. Hazen.
 University College of Medicine.—A. L. Gray.

The following representatives and visitors from other colleges, state examining boards, state and national medical societies were also present:

R. Winslow, Judicial Council Association American Medical Colleges; Geo. E. MacLean, president State University of Iowa; V. C. Vaughan, University of Michigan; L. C. Morris, Birmingham Medical College; J. W. Abercrombie and Rhett Goode, University of Alabama; Geo. Blumer, Yale Medical School; F. F. Westbrook, University of Minnesota; J. L. Heffron, Syracuse University; W. H. Doughty, Jr., Medical College of Georgia; J. M. Dodson, Rush Medical College; J. F. Barnhill, Indiana University; C. S. Bacon, University of Illinois; P. H. Wessel and W. R. Schussler, Illinois State Board of Health; J. McClintock, University of Iowa; P. J. Maveety, Flint Medical College; G. M. Linthicum, Baltimore Medical College; C. H. Neilson, St. Louis University; R. S. Copeland, New York Homeopathic Medical College; H. H. Baxter and Geo. H. Matson, Ohio State Board of Registration in Medicine; W. A. Dewey and Geo. M. Royal, Institute of Homeopathy; W. S. Hinsdale, University of Michigan Department of Homeopathic Medicine; Chas. F. Meserve, Shaw University; E. M. Gilliam and Frank Winders, Starling-Ohio Medical College; E. I. McKesson and L. A. Brewer, University of Toledo Medical Department; D. R. Alexander, Eclectic Medical University, Kansas City, Mo.; A. H. Abbott, University of Pennsylvania; B. A. Cohoe, University of Pittsburg; C. P. Lommen, University of South Dakota; W. B. Rogers, Memphis Hospital Medical College; R. O. Tucker, University of Nashville-Tennessee; McG. Newton, University College of

Medicine; W. B. Hill, Marquette University; J. A. Scane and J. G. Adami, McGill University; H. C. Tinkham, University of Vermont; R. H. Whitehead, University of Virginia; L. L. von Wedeking, U. S. Navy; G. B. Young, U. S. Public Health and Marine-Hospital Service; J. F. Hall and L. M. Maus, U. S. Army; A. D. Bevan and N. P. Colwell, Council on Medical Education American Medical Association; J. C. Guernsey and M. G. Motter, National Confederation of State Medical Examining and Licensing Boards; F. R. Green, American Medical Association; E. H. Long, Medical Society State of New York; L. W. Littig, Iowa State Medical Society; H. D. Arnold, Massachusetts Medical Society; W. T. Dodge, Michigan State Medical Society; Geo. Cook, New Hampshire Medical Society; T. S. Cullen, Medico-Chirurgical Faculty of Maryland; F. H. Gerrish, American Academy of Medicine and Maine Medical Association; C. H. Cook, Massachusetts State Board of Registration in Medicine; C. P. Tuttle and S. M. Garlich, Connecticut Medical Examining Board; W. S. Nay and E. B. Whitaker, Vermont Medical Examining Board; B. D. Harison and A. H. Alvord, Michigan State Board of Registration in Medicine; V. H. Hulen, State Medical Association of Texas; A. L. Muirhead and A. E. Carr, Nebraska Board of Health; A. B. Brown, Louisiana Medical Examining Board; A. F. Longeway, Montana State Board of Health; J. N. Roe, Chicago College of Medicine and Surgery; E. S. Talbot, G. F. Butler, A. S. Burdick, W. L. Copeland, M. E. Donohue, F. H. Martin, E. M. Wickstrom, A. Tenny, J. F. Burkholder, Chicago.

ADDRESS OF WELCOME

Dr. Alex Hugh Ferguson, president Chicago Medical Society, delivered the address of welcome. (See page 13.)

RESPONSE

Dr. Egbert LeFevre, University and Bellevue Hospital Medical College, responded as follows:

Dr. Ferguson and Gentlemen: It is my great privilege to voice on behalf of this association thanks for these words of welcome. New York always bows to Chicago. We all know the charms of this lake city and appreciate its hospitality. We have partaken of it in the past, and it is with pleasure that we renew acquaintance not only with Chicago but with the members of the profession. However, it is well to sound a note of warning. We must not be dis-

tracted by the hospitality and social features offered to us. We have work to do. I cannot fail to take advantage of this opportunity to express the appreciation of the East for the activities of Chicago as a center of medical education. No city will have so many men assembled to discuss the problems of medical education now before us. We are passing through a period of criticism, constructive and destructive, and it is prudent that we should face these criticisms without any feeling of sensitiveness. We should enlist the sympathies and support of the entire medical profession if we are to solve these problems correctly. We must respond to environment and the stimulus that comes to us from without. We must attempt to regulate and clarify not only those problems besetting the science of medicine but also the practice of medicine. Once again, Dr. Ferguson, on behalf of this Association, I accept your welcome to Chicago.

MINUTES OF PRECEDING MEETING.

The secretary read the minutes of the preceding meeting, as published in the volume of transactions, and on motion of Dr. F. C. Waite, they were adopted as read.

REPORT OF SECRETARY-TREASURER

The report of the secretary-treasurer was called for and Dr. Zapffe submitted the following report:

Forty-six colleges are now in membership. Since the last meeting one college, the Woman's Medical College of Baltimore, has become extinct. There have been three mergers: The Cleveland College of Physicians and Surgeons merged with the Western Reserve University; the Denver and Gross College of Medicine merged with the University of Colorado, and the American Medical Missionary College merged with the University of Illinois. One college, the Marquette University Medical Department (Milwaukee Medical College), withdrew from membership.

Applications for membership have been made by the schools of medicine of the universities of Syracuse, Vermont, Minnesota, Alabama and Arkansas, and the Northwestern University Medical School. Holdover applications are those of the University of Nashville-University of Tennessee, Toledo University and the Memphis Hospital Medical College. The application of the Maryland Medical College was withdrawn. The Judicial Council will report on these applications.

The publication of the transactions was delayed by a number of unforeseen circumstances, but this delay was more than compensated for by the vastly improved appearance of the volume. The increased size bespeaks increased activity and broadened functions.

In less than one week after adjournment last year, each college in membership received the proposed new curriculum and notification of changes made in the Constitution and By-Laws, and within two weeks after the meeting a very full report of the meeting was published in *THE JOURNAL* of the American Medical Association. Therefore, the delayed appearance of the volume of transactions did not in any way hinder the transmission of information regarding any decisive action taken at the last meeting. On the whole, interest in the proceedings was stimulated, and far more attention has been given them than heretofore.

In conformity with the plan pursued at other meetings of the Association, your Secretary invited representation at this meeting of all national and state medical societies, medical examining boards, colleges, universities, educational organizations other than medical, and the medical services of the United States Government. The responses to these invitations were many and mostly favorable.

The receipts for the current year were \$1,671.60; expenditures, as per vouchers attached, \$1,598.98; leaving a balance on hand of \$72.62.

(Signed) FRED C. ZAPFFE, Secretary-Treasurer.

On motion of Dr. W. J. Means, the chair was authorized to appoint a committee of three to audit the accounts of the treasurer. The chair appointed on this committee Drs. J. R. Guthrie, T. C. Evans and E. H. Long.

ACTING ON APPLICATIONS

Dr. W. J. Means, chairman of the Judicial Council, reported that the Council had passed favorably on the applications for membership of the University of Minnesota, Northwestern University Medical School and Syracuse University, and moved that the applications of these colleges be accepted. Seconded by Dr. Waite. Carried.

Dr. Means moved that the Association recommend to the Council on Medical Education of the A. M. A., that the Kansas Medical College, Topeka, be placed in Class A of its classified list. Seconded by Dr. Long. Carried.

The secretary then read the amendments which were proposed for action at this meeting, as published in the circular sent to each college in membership.

The chair appointed the following nominating committee: Drs. F. C. Waite, C. M. Jackson and E. LeFevre.

The Committee on Medical Education made a partial report, and was instructed to present a completed report later for action.

The Association then adjourned until 2 p. m.

AFTERNOON SESSION

The Association re-assembled at 2 p. m., and was called to order by the president.

PRESIDENT'S ADDRESS

Dr. H. D. Arnold took the chair, while the president, Dr. Wither-
spoon, delivered his address. (See page 5).

On motion, the address was referred to the Committee on Medical Education to consider the recommendations and suggestions contained therein.

PAPERS READ

Dr. Geo. E. MacLean, president of the State University of Iowa, then read a paper on "Standards of Admission to Medical Schools," which was discussed by Drs. E. LeFevre, R. Winslow, W. C. Borden, H. D. Arnold, G. M. Linthicum, A. K. West, J. S. Ferguson, A. D. Bevan, B. D. Harison and, in closing, by Dr. MacLean.

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, then read a paper on "Administration of Entrance Standards."

Dr. C. M. Jackson, University of Missouri, read a paper on "The Medical Library," which was discussed by Drs. C. M. Hazen, Geo. Blumer, E. H. Long, D. C. Bryant.

The Association then adjourned until Tuesday, February 28, 9:30 a. m.

SECOND DAY—MORNING SESSION

The Association re-assembled at 9:30 and was called to order by the president.

REPORT OF COMMITTEE ON MEDICAL RESEARCH

Dr. Egbert LeFevre, chairman, reported that the committee had nothing special to report as nothing of importance had transpired since the last meeting that needed specifically to be brought to the attention of the Association.

On motion the report was ordered published in the transactions.

REPORT OF COMMITTEE ON EQUIPMENT

Dr. Fred C. Zapffe, chairman, reported as follows:

Your committee has found it unnecessary to make any changes in the list of equipment now in force. It appears to be fairly complete and it is not impossible for colleges to comply with its requirements. The feeling is growing stronger, however, in fact it has grown to be a conviction that what might be called the equipment for clinical instruction does stand in need of regulation. The first two years of the medical course have advanced to a very satisfactory state of development and it, therefore, becomes necessary to give some attention to the last two years, the so-called practical years.

The main activities of a medical college should center in a hospital, a hospital which can be utilized for teaching purposes. The evolution of medical teaching has shown the need for better facilities for clinical instruction and to secure these a teaching hospital is an absolute necessity. Therefore, your committee would suggest that the colleges devote much of their time in the near future to formulating plans which will tend toward securing the necessary appropriations for building or acquiring a teaching hospital.

It is not sufficient for a college to have control in a hospital, because such control extends only to the appointment of the staff and the coraling of such teaching privileges as may exist; these, unfortunately, are an unknown quantity, making of the whole proposition a catch-as-catch-can affair. By a teaching hospital is meant a hospital in which all the clinical material is accessible for study. It does not imply that such privileges are in any way abused, because they should serve not only the student, but also the patient. Better treatment naturally would be given such patients because of the greater possibilities for studying the diseases from which they may be suffering.

The English plan, which consists of a hospital in which medical teaching is done, is a most admirable one, and one may safely predict that the time is not far distant when a similar plan will be in vogue in this country. Many of the medical schools in this Association are already possessed of a hospital, in some of which most excellent teaching is being done. This teaching will be improved when more money is appropriated to defray the expenses of the hospital, which under present conditions is in large measure dependent on income from patients. The adoption of better pedagogic methods, the coming of the trained clinical teacher are entirely responsible for the improvements in clinical teaching, and to these also must be given the credit for the existence of these hospitals.

It is hardly within the province of this committee to deal in detail with the pedagogic side of the hospital, nor with the administrative side. Your committee merely wishes to emphasize the necessity for a teaching hospital and, if possible, to urge that the possession of such a hospital be made a requirement, as much so as microscopes and other apparatus provided for in the equipment schedule.

(Signed) FRED C. ZAPFFE, Chairman.

On motion the report was ordered published in the transactions.

REPORT OF COMMITTEE ON STATE BOARDS

Dr. Fred C. Zapffe, chairman, presented the following report:

No advance of any importance is to be chronicled as coming from state medical examining boards, although plans outlined and adopted in previous years are being successfully carried out. Therefore, progress may be reported. The relations between the boards and this Association are as amicable as ever and every recognition is being given to the work done by the Association. The boards have at all times shown a willingness to accept suggestions, and to cooperate as far as was in their power. Unfortunately, statute limitations and political considerations oftentimes prevent speedy action on the part of the board, no matter how willing it may be to advance its requirements. At present the most important thing to be considered is the enforcing of the entrance requirements as provided for in the statutes. This more than any other thing will help to weed out the dishonest colleges and will strengthen the others. However, that is a matter in which this Association cannot at this time take any action.

The only meeting of state boards during the year was that of the National Confederation of State Medical Examining and Licensing Boards, held in St. Louis last June. While the confederation discussed several very important subjects, particularly the question of clinical instruction, no definite action was taken except on the report of a joint committee on materia medica. This committee presented a list of drugs which has been published in several medical journals and with which doubtless every teacher is familiar. The report of this committee was adopted and the resolution presented by the committee on medical education was the outcome of this action.

(Signed) FRED C. ZAPFFE, Chairman.
WM. J. MEANS.
J. R. GUTHRIE.

On motion the report was ordered published in the transactions.

REPORT OF COMMITTEE ON PEDAGOGICS

Dr. Geo. H. Hoxie, chairman, presented the following report:

Your committee would offer suggestions on four topics and recommend that each member of the Association give the suggestions careful consideration.

1. *The Unit of Credit*.—We believe that in order to develop physicians with the power of independent analytical thought, it is necessary that they be given time and opportunity to read and think outside of class hours. We believe that this outside thinking and reading cannot be done when the student is physically exhausted. We believe that the average student cannot work profitably either in class or by himself more than twelve hours a day for five days in the week, or if we deprive him of the Saturday holiday, for ten hours for six days in the week. That is, we regard sixty hours a week as the optimum number of hours for medical students under average conditions. This, for thirty-two weeks of actual teaching, means 1,920 hours, or for a gross number of thirty-six weeks, 2,160 hours.

In order to establish a ratio between class work and home study, we have sent out a circular to all of the leading colleges of the country. To this we have received forty replies. Of these forty institutions, eighteen

have not established a definite ratio, fourteen call for two hours of preparation for a recitation or lecture, and one hour for a two-hour laboratory or clinic exercise; and seven have only one hour for the first and about one-half hour for the second. In other words, of the twenty-two institutions that have established a ratio, the great majority look on three hours as the unit of time allowance for each class exercise. Should we interpret our Association curriculum of 1,000 hours as equally divided between lecture or recitation and laboratory or clinic exercise, we must calculate that it calls for a total of 2,500 hours each year—a figure which in the light of the reports made on our schools during the past two years seems rarely attained.

For this reason, your committee is of the opinion that the work of our schools would be more efficient if each faculty would establish the ratio we suggest and then hold the instructors and students up to a standard of work justifying the three-hour unit mentioned above.

Your committee believe furthermore that in the adoption of the new curriculum the value of the unit should be determined; and we respectfully recommend that the ratio be stated definitely as that of two hours of preparation or after reading to each hour of recitation or lecture, and one hour of preparation or after reading to each two hours of laboratory or clinic teaching. In other words, we believe that it would be of distinct advantage to credit work by units instead of hours,—each unit representing a period of three hours; and that our school announcements should definitely state how these hours are to be subdivided in each course. Unless our school announcements contain such definitions, some of us will be credited with the intention to deceive even though guiltless of such an intention—for even now there is, as we have seen, great disparity; and the tendency is for this inequality to grow worse rather than better.

2. *The Discussion of Pedagogic Principles.*—We believe that the simple impartation of information is not real teaching, but that we must lead our students to acquire logical methods of thought and argument. We believe that many of our instructors do not keep this purpose in mind; and even if they did, would not know pedagogic principles sufficiently well to bring about the desired result. We suggest, therefore, that the regular faculty meetings be utilized for the discussion of these principles—best under the guidance of some professional teacher brought in for the occasion. This method has been followed by splendid results in at least two of our schools. It is the more practicable because the majority of our schools already have frequent faculty meetings* wherein such discussions could be introduced.

3. *Syllabus.*—A syllabus of the courses of study in the curriculum has become almost a necessity because of the increasing specialization and subdivision. To establish a hard and fast curriculum without such a standardization can lead only to frequent misunderstanding and amendment. Therefore your committee has asked for this meeting and for coming meetings recommends that papers be offered along this line of thought. For example, we suggest such topics as these: "What the surgeons believe should be taught in anatomy"; "What the clinician would like taught in physiology"; "The clinicians' view of the essentials in pharmacology."

* Of the forty schools answering our inquiries, twenty-eight have monthly meetings, five quarterly, two semiannual, and five have only irregular meeting times.

4. *Training for Teachers.*—It has been suggested that the Association consider the subject of the method of training of clinical teachers—in particular, whether experience in private practice is essential for their development. And again, whether clinical teachers can be efficient and practical without private practice. We quote here the opinions of five of the leading clinical teachers of the United States.

DR. H. A. CHRISTIAN: The enclosure torn from the address that I gave at the opening of the Leland Stanford Medical School in large part answers your question in the letter of January 16. I do not believe any particular form of training can be mapped out as a prerequisite for clinical teaching. This applies to the type of man who gives the major part of his time to teaching work and is the head of the department of clinical medicine. To be successful he must have the "geist" and be thoroughly trained. Some of these men will have done private practice in the sense of practice outside of a hospital, others will not. Their clinical experience will have been gained in the hospital. I believe it will be very exceptional for the man who devotes himself largely to private practice in early life to attain to one of these leading positions, for the simple reason that private practice is time-consuming and necessitates using much time at the beck of one's patients, when the man realizes that such time means little development for him. Put two men of equal ability in competition for the professorship of medicine in some place and let one devote his time to work in the fundamental branches, to clinical work in the hospital, and a moderate amount of consultation practice, and let the other man engage in general practice with the best of intentions to put as much time as possible into hospital practice and work in the fundamental sciences, and I believe that you will find in almost every case the first man will receive the position, because he will be by the majority having the appointing power considered the man best fitted for the work. The quotation, alluded to above, is as follows: Clinical professors must be paid salaries, too, in proportion to the time they give to teaching work. Of clinical teachers there should be two classes, those who devote a large part of their time to medical school work and those who devote a small part. In the first group should come at least the heads of the more important departments, such as medicine and surgery. Some advocate having professors, of medicine and surgery who engage in no private practice but confine their work to the medical school and the hospital. It is an advantage, however, to my mind for them to do a limited amount of private work, because much of the best material for study comes through these channels; and, on the other hand, the public has a right to some of the services of these more highly trained men. These men will probably have to be paid more than university salaries for both hospital and medical school work, since they would be men who in private work would earn far larger incomes. In addition to these men devoting the major part of their time to academic work, the services of the men in private practice are needed. They are in a position to teach to students particularly well the art of medicine, if I may use the word without being misunderstood. From their particular experience they have something of value to impart to students and they should be made use of and paid in ratio to the time devoted to teaching. Then, the medical school of to-day requires a very large teaching force since so much of the teaching can be done satisfactorily only in small groups of students.

DR. C. H. HOOVER: In reply to yours of the 16th instant, I can state my ideas of the relations of the professor of medicine to the university in a very few words. That a man should do a medical practice and at the same time conduct a medical department in a hospital and teach students, is impossible, if he is to do any of them in a manner worth while. I spent five years in active practice; and although my feeling at the time was that my efforts were misdirected, yet I doubt if the time were so much mispent as it seemed to be at the time. There are many things to be learned in private practice which one is not likely to learn in hospital work and consultations, but I certainly do not think that a term of years in private practice should be required as preparatory to a teaching post. The professor of medicine should have the option of spending a certain amount of time in private consultations. The university need not determine for him how much time shall be allotted for this purpose. If he is the right kind of man and has ideas, he will work them out or work at them just as certainly as a poet will write poetry, or an inventor will invent. If the professor's ideas are live ones and take possession of him, his research will surely encroach upon the time he gives to consultations. Any attempt to regulate the professor's time beyond demanding that he shall restrict his private work to consultations will result in setting up the university as a taskmaster over the professor, who will be driven to producing a lot of barren research. A man with ideas requires no regulation; and regulation will not provide ideas.

DR. GEO. DOCK: Yours of January 16 was forwarded to me here. I hope the answer will not be too late for your purpose. I do not see how your first question can be answered in any other way than one, if I understand the question. If the teacher is teaching clinical medicine in its broad relations, including diagnosis, pathology and treatment, it seems to me that some training in private practice is just as essential as training in chemistry, bacteriology or pharmacology. Of course, the teacher of a technical method, like physical diagnosis, need not have this, but certainly the teacher of practical therapeutics should. The teacher, of course, is educating men who are likely to be physicians; and there is no reason why he should not have had practical experience in private practice as well as in other lines. On the other hand, the amount of experience the teacher should have had must be limited; otherwise, the man will have neglected some other work quite as essential. Owing to the differences in capacity for work, I do not think it possible to state just how much of a man's time should have been given to private practice, but I should say enough to make him feel as much at home in a sick room as he would in a laboratory.

In regard to the second question: I do not think teachers in clinical medicine should be forced to practice; but on the other hand, think it would be just as bad to force them not to. I think any clinical teacher gets a great many suggestions for teaching in his intercourse with practicing physicians, and with patients and the relatives of patients in private practice. A great deal would depend on the teacher's capacity for work. Both private practice and the work associated with teaching clinical medicine are so exacting that it is impossible for most men to work hard at both. For the majority of teachers, therefore, it would be better for them to limit their work to consultations.

DR. FRANK BILLINGS: I think training in private practice is a decided essential for the teacher of medicine. Second, I believe that if the teacher of medicine has some private practice, especially in consultation, it will add to the value of his teaching to the students. This opinion as to the second proposition needs the modification that the teacher should devote at least one-half of his entire time, or more if necessary, to teaching and investigation in the hospital where his teaching is done. Or, in other words, the amount of his time he spends in private work should be restricted to one-quarter or one-third of his entire time.

DR. L. F. BARKER: The subject of the relation of the teacher of clinical medicine to practice is a very important one and my mind is not yet entirely clear regarding it. In an article entitled *Medicine and the Universities*, published in 1905, a copy of which I am sending you, I suggested placing the clinical chairs on a "university basis," the professors in the clinical subjects to be paid a fixed salary of \$10,000 or \$15,000 per year, with the understanding that they should not engage in any practice outside of the hospital and that fees for private patients treated at the hospital should go to the institution. There is much to be said in favor of such a plan, but since I wrote the article I have had five or six years of experience in a clinical chair and see many difficulties in the way of the plan I suggested and now have some doubt as to its being the ideal plan if too rigidly adhered to, though I think the plan outlined is in the right direction and with certain modifications would be ideal.

In forming conclusions regarding this subject it is necessary to hold in mind what the occupant of a clinical chair should try to accomplish. There are, it seems to me, three main functions.

1. The dissemination among students (by personal teaching) and among the profession at large (by writings and occasional addresses) of knowledge in the subject as it exists at the time.

2. The creation of new knowledge in the branch represented by original research carried out in part by the professor himself, in part by younger men in his department and under his direction.

3. The attraction of patients to the clinic in adequate numbers and variety to supply the material for teaching and investigation and the study and treatment of these patients by the best methods.

Ad. 1. Adequately to teach a subject like medicine or surgery, for example, the professor must have had wide experience, both in laboratory work and in bedside examinations. He must, moreover, be interested not only in the particular corner of the field in which his investigations have been largely made, but also in all parts of the field.

He should, therefore, be a man of broad horizon, with wide sympathies, and be capable of associating with younger men, each of whom may be especially interested in some one part of the field. It is desirable that he should possess all qualities of a teacher, presenting the whole subject in a balanced way, distinguishing the more essential from the less essential, skilful in the application of the known and yet receptive to new ideas bearing upon the domain of the unknown.

Ad. II. In order to make original investigations he must in the first place be a man of imagination, a man to whom new ideas come and one who has a consuming thirst for truth and sufficient mental curiosity and physical vigor to make him a discoverer. He is most likely to become a

discoverer if in addition to the native qualities of mind above referred to he has had a long apprenticeship in chemistry, physics and biology and in the fundamental branches of anatomy, physiology and pathology.

Discoveries in medicine consist largely in the making of new applications of these fundamental sciences to the solution of problems in diagnosis and therapy. In order, however, to make such new applications he must be familiar with the problems to be solved; in other words, his training in the arts of diagnosis and therapy should have been sufficient to bring him up to the limits of the known at least in certain parts of these fields in order that it may become clear to him how best to invade the territory as yet untrodden.

The only way to judge of a man's ability in research is by the examination of his published studies, and it would seem desirable, therefore, that appointees to clinical chairs should have demonstrated their power or original thought and investigation and their inclination thereto before appointment. Owing to the long apprenticeship requisite and the area of the field to be mastered as contrasted with the individual fields of the basal sciences, it is obvious that the average age of appointees to clinical chairs would have to be somewhat more advanced than that of appointees to chairs in the basal sciences.

The result will be shorter period of probable investigative productivity and the necessity on account of the manifold duties of such a chair of expecting the productivity to result more largely from the inspiration of assistants and students to undertake the solving of problems set by the leader in collaboration with him rather than from his personal technical work, though the time of the professor should always be so jealously guarded that he may be continuously engaged in some original investigation carried on by himself.

Ad. III. The functions of the professor under captions I and II correspond very closely to the functions of any professor in a university, but in addition to these very important functions the professor in a clinical branch has to assume still further responsibilities; namely, the diagnosis and treatment of disease in a large number of suffering human beings.

The fact has often been lost sight of that these responsibilities of very grave nature are wholly in addition to the responsibilities which ordinarily pertain to professorial chairs. Their conscientious performance calls not only for the expenditure of much time but also of energy, and the drain on the vitality of the professor due to these particular responsibilities should be considered when the remuneration of the chairs is under discussion and when the division of the professor's labors among his three great functions of teaching, investigating and practicing is being decided upon.

Now it seems to me obvious that a professor who is expected to teach, to investigate and to carry on a practice in his clinic, will have but little time to give to practice outside his clinic, and universities should see to it that men of the type suited to lead in the clinical branches and occupy the chairs thereof, capable as they would be of reaping very large material rewards if they devoted themselves to practice alone to the total or partial exclusion of teaching and investigation, should have the positions made so attractive to them in the way of, in the first place, opportunities for work, and, in the second place, material rewards, that there shall be no doubt that the university will secure the best men and the major portion of their time and energy.

How the end in view can best be realized is the problem before us. The type of man who combines in himself the mental and physical qualities necessary for the adequate performance of the functions outlined above has hitherto been one who has made more claims upon life and society than is customary among occupants of university chairs generally. The knowledge of life and of social relations requisite for the understanding of the mental states, sometimes dependent upon, sometimes calling forth, the abnormal physical states, in the patients with whom clinicians deal is necessarily comprehensive, and the question may be raised as to whether it is compatible with the sheltered, cloistered and restricted existence and experience which it must frankly be granted is often of services in the promulgation of scholarship and investigation in many of the domains of knowledge.

There is something to be said, therefore, in favor of the view that in some way or another occupants of clinical chairs should have an income that will permit them to be free to lead a life in correspondence with the needs of their personalities and not too far removed in comfort and in opportunities of social relationship from the lives of other members of society of equal intelligence, culture and earning capacity.

For this purpose the needs of men vary considerably according to their personalities, according to their family responsibilities and according to the particular environment in which they live. Some men in this country would doubtless find an income of \$5,000 or \$10,000 per year adequate to their needs where others, without being extravagant and making expenditures only for the legitimate welfare of themselves and the family and for the dignity of the clinical branch represented, might find \$20,000 per year insufficient.

In some instances men of inherited wealth might be obtained who could afford to occupy chairs without much financial reward, but if they are men suitable for the positions it may well be questioned whether they would be justified in accepting a less amount of income than one without such inherited wealth, for as principles, in the first place, the laborer is worthy of his hire, and, in the second place, if such reduced salaries or incomes were permitted as arguments in favor of a general reduction of such salaries or incomes many men without inherited wealth would be prevented from occupying such chairs, or could not be induced to take them, and there might be a tendency to a distribution of the chairs among intellectual inferiorities.

It is obvious that very large amounts of money would have to be provided by the state or by private endowment if occupants of chairs in the clinical subjects were paid from \$10,000 to \$20,000 per year, and especially if the additional money were provided for the erection of satisfactory clinics with laboratories attached and for the payment of fair salaries to the large group of assistants necessary for the proper maintenance of the work of teaching, investigation and of practice in each clinical department.

Even in countries where the state has seen the necessity of liberal subsidizing of medical education, as for example in Germany, it has not been possible to provide an adequate income for the occupants of clinical chairs. While the professors of both the fundamental and clinical branches are paid salaries, these salaries are supplemented for all the professors by the so-called *collegiengelder* or special fees which each student pays to the professor for each course that he takes, and the occupants of the clinical

chairs are in addition permitted to do consulting practice and to have private patients in hospitals, the fees of which go to them. In many places family practice is also permitted.

Even if it were possible by private endowment to secure for the occupants of the clinical chairs salaries of from \$10,000 to \$20,000 per year, the question may still be asked whether or not it would be desirable, in the first place, to prevent the professor from seeing any private patients at all, or, in the second place, if permitted under certain limitations to see a certain number of private patients, whether the fees therefrom should go to himself or to the institution which he serves.

Many argue that the professor in the clinical subject should be paid a fixed salary and should agree to limit his work entirely to the free wards of the clinic in which he works, that he should not do either family or consultation practice and that he should have no private patients in the hospital, or, if permitted to see a few there, should turn over the fees obtained from them to the clinic and not retain them for himself. Some of the arguments urged in favor of this view are:

1. The removal of the temptation to make money; in other words, the commercializing of the chair.

2. The compulsion of a simplicity of living essential for scholarship and investigation.

3. The placing of the clinical chairs upon a so-called university basis, comparable in every respect to the chairs in the non-clinical medical sciences.

4. The protection of the professor's time, so apt to be dissipated by private patients and their friends, so that it may be saved for his teaching, his investigation and his practice in the hospital; and

5. The limitation of his practice to the patients in the free wards, with concentration of his attention on the problems suggested there; namely, those which are more largely somatic (other than neural) rather than on the problems presented by private patients, which, though sometimes similarly somatic, are more often dependent upon their neural reactions to the complexities of the social and industrial environment in which they live.

•Others maintain that while the professor has obviously no time for family practice and should have his activities so regulated that he could never make consultation practice or the care of patients in the private wards of his clinic his principal interest and occupation, he can nevertheless with advantage to himself, to his clinic and to medical education and investigation, do some consultation work and enjoy the financial reward which comes from it. This would increase the freedom and the power of the professor and would stimulate both the quality and quantity of his effort, keeping him from the danger of institutionalism. Intellectual superiorities are attracted where the *rewards of all sorts* are greatest, and material rewards must necessarily be considered as well as rewards in the form of opportunities and facilities for work and reputation.

Many clinical puzzles will be brought to such professors for solution and the public and the medical profession at large helped by the work and the example of such a professor. Therapy as well as diagnosis would be more likely to be promoted in a medical school if such an arrangement were made. The contact with the profession and with the public would do much to prevent narrowing of the professor's life. There would be no

danger of commercial exploitation of the chair in the bad sense if men of the right character and calibre were appointed as professors.

Inasmuch as we shall need in the next few years many clinical teachers for the schools now securing endowment and university connections, it is wise for us to consider the criteria by which we shall select these men and the conditions under which we shall ask them to serve. Your committee makes no definite recommendation for action at this meeting, contenting itself with the presentation of these opinions.

(Signed) GEO. H. HOXIE, Chairman.
W. S. THAYER.
CHAS. R. BARDEEN.
E. P. LYON.
H. B. WARD.

On motion the report was ordered published in the transactions.

Dr. Hoxie then offered the following resolution :

Resolved, That the Association request each school in membership to ascertain and file in the dean's office the estimate of each instructor as to the amount of time required, both in the class room and at home, in each course offered in the catalogue.

On motion the resolution was adopted.

Dr. Benson A. Cohoe, University of Pittsburg, then read a paper on "What the Internist Wants the Anatomist and Physiologist to Teach."

Dr. C. B. de Nancrede, University of Michigan, read a paper on "What the Surgeon Wants the Anatomist and Physiologist to Teach." These two papers were discussed jointly by Drs. E. P. Lyon, H. A. Christian, B. D. Myers, A. K. West and J. S. Ferguson.

Dr. F. F. Wesbrook, University of Minnesota, read a paper on "The Fifth Year; A Hospital Year." The paper was discussed by Drs. J. M. Dodson, D. C. Bryant, H. A. Christian, F. C. Waite, H. U. Williams and E. LeFevre.

REPORT OF JUDICIAL COUNCIL

Dr. Wm. J. Means, chairman, presented the following report :

Since the last meeting applications for membership have been made by the medical department of the University of Minnesota, the medical department of Northwestern College of Evanston, Ill., the medical department of the University of Alabama, the medical department of the University of Arkansas, the medical department of the University of Vermont, and the medical department of the University of Syracuse.

Of these the committee recommends acceptance to full membership the medical department of the University of Minnesota, the medical department of the Northwestern College, and the medical department of the University of Syracuse.

The committee recommends that the application of the medical department of Alabama and the medical department of the University of Vermont be postponed for further consideration.

It is recommended that the application of the medical department of the University of Arkansas and of the Hospital Medical College of Memphis be rejected.

It is also recommended that the application of the University of Nashville and University of Tennessee be postponed for another year.

The application of the Maryland Medical College was withdrawn. The application of the Toledo Medical College was laid on the table.

In accordance with the resolution adopted at the annual meeting held in Baltimore, giving the Judicial Council authority to inspect colleges members of the Association that were reported on adversely by the American Medical Association Council on Education, an inspection was made of the Topeka Medical College by Secretary Zapffe, C. M. Jackson and N. P. Colwell. The committee reported that the school has made considerable progress in the last year, and should now be placed in class A.

The Baltimore Medical College was, after a reconsideration of its data, placed in class A by the American Medical Association Council of Education. The Judicial Council did not feel that it was necessary to reinspect this school. The Milwaukee Medical College surrendered its membership rather than be examined.

The Council has made some investigation into the methods of evaluating entrance credentials of students seeking admission to colleges members of the Association, and find that the charges made by Mr. Flexner in his report to the Carnegie Foundation that the colleges were not exacting a completed high-school course for entrance were only too true.

Recognizing the importance of the minimum entrance requirements of graduation from an accredited high-school or its equivalent, the committee proposed an amendment to the constitution on entrance requirements eliminating conditions and demanding a completed course for entrance.

We earnestly recommend the adoption of the proposed amendment. We also recommend that further supervision be given this important matter during the next year.

There were no questions of importance presented to the Council for adjudication during the year.

Respectfully submitted,

(Signed)

W. J. MEANS, Chairman.

WM. P. HARLOW.

R. WINSLOW.

C. M. JACKSON.

J. R. GUTHRIE.

EGBERT LEFEVRE.

On motion the report was accepted and ordered published in the transactions.

REPORT OF COMMITTEE ON MEDICAL EDUCATION

Dr. Wm. J. Means, chairman, presented the following report:

In accordance with a resolution passed at the last meeting of the Association your committee, after a thorough and full consideration of the question of preliminary education, prepared and submitted amendments

to the constitution which were presented to each college thirty days previous to this meeting, making more definite the present high-school standard. We earnestly recommend that these amendments be passed.

The Five Years Medical Course.—After considering the question of a five years course, the committee does not deem it wise to present a schedule for your consideration. The present unsettled condition of medical legislation in the states of the Union, coupled with the uncertainties that exist among the colleges themselves, the subject is in that state of development and uncertainty that precludes the presentation of even a tentative schedule. The questions that confronted us were: (1) Shall the fifth year be a terminal one to the present four years course limited to clinical training, or shall a part of the time be given to the study of medical sciences in the beginning of the course? (2) In the states where legislative enactments have advanced the requirements beyond a high-school standard no provision has been made as to whether the course shall be given absolutely in a literary college or as a preliminary course in a medical college. The trend of legislation, however, has been toward the literary training rather than increasing the medical curriculum. The difficulties in the way are that but very few of the literary colleges are equipped to give a definite premedical course, and very few are willing to change their present curricula to accommodate the medical colleges. While, therefore, we do not deem it wise for the Association to adopt any prescribed schedule for a five years course, we believe colleges members of the Association should urge on their graduates the necessity for a hospital year before entering practice, and that proper inducements should be offered them to take the course.

Concentration Method of Teaching.—The committee has no definite conclusions to report. We learn that many of the colleges have already adopted in part this method, but none are ready to recommend or reject the system. With this indefinite data at hand, the committee suggests that the matter be continued for another year.

Curriculum.—We recommend the adoption of the report of the committee on curriculum presented at the last annual meeting. The proposed schedule is incorporated as an amendment to the constitution, and we recommend its adoption.

Pharmacology and Therapeutics.—After considerable study and due consideration of the subject, the committee respectfully submits the following resolution and recommends its adoption:

WHEREAS, The time devoted to the study of pharmacology, materia medica and therapeutics is necessarily limited; and

WHEREAS, The thorough knowledge of a small but representative group of medicaments is conducive to scientific progress in therapeutics; therefore be it

Resolved, That the Association of American Medical Colleges commends to the attention of medical educators and examiners the limited materia medica lists, published by the joint committee of the Council on Medical Education and of the National Confederation of State Medical Examining and Licensing Board and by the Chicago Medical Society.

Resolved, That the Association urges upon the colleges and the examining boards the necessity for the recognition of the principle underlying

these lists and for the early adoption by the boards of a materia medica list to which licensure examinations shall largely be confined.

President's Address.—The committee respectfully submits the following report:

The committee is in hearty sympathy with the ideas expressed in the first two suggestions, but they believe that the subject is of such importance that it should receive careful study. They, therefore, respectfully submit the following resolutions:

Resolved, That the Judicial Council be instructed to report at the annual meeting in 1912 as to the proper standard to be established for medical schools in various sections of the country; and that the Judicial Council be instructed to confer with the Council on Medical Education of the American Medical Association and with the Carnegie Foundation, in the hope that these three bodies may agree on a minimum standard that may be applied practically at the present time.

Resolved, That the Judicial Council is also requested to report at the same time as to the best methods of carrying out the inspection of members of the Association, as provided in by-laws 6 and 7, and of schools that are candidates for membership in the Association.

The committee is heartily in accord with the sentiment expressed by the president that a wider cooperation of the members in the work of the Association would be of benefit. The question of a fifth year is now under consideration by the committee on medical education, but it finds itself unable to report at the present time. They feel, however, that now medical students should be urged to take a hospital internship as a postgraduate course.

The committee is gratified by the announcement of the president that the Council on Medical Education has extended to the Association an invitation to have a representative present at their deliberations, and we recommend that the president be authorized to appoint such a representative.

Respectfully submitted,

(Signed) W. J. MEANS, Chairman.
 FRED C. ZAPFFE.
 GEORGE H. HOXIE.
 W. P. HARLOW.
 H. A. CHRISTIAN.
 F. C. WAITE.

On motion the report was accepted and ordered published in the transactions.

The Association then adjourned until 1:30 p. m.

AFTERNOON SESSION

The Association re-assembled, and was called to order by the president at 1:30 p. m.

The auditing committee reported that it had examined the accounts of the treasurer and found them correct.

On motion the report was accepted.

The chair here appointed Dr. Wm. J. Means to represent the Association at all the meetings, public and private, of the Council

on Medical Education of the American Medical Association for the coming year.

AMENDMENTS

The proposed amendments were then considered seriatim.

Section 1, Article III, as finally adopted, on motion of Dr. Winslow, seconded by Dr. Gray, now reads as follows:

ARTICLE III: SECTION 1.—Every college holding membership in this Association shall, on and after Jan. 1, 1912, require for matriculation a completed or unconditioned medical student's certificate, to be granted by a state medical examining and licensing board, or a board empowered by statute to grant such certificates, or a certificate of entrance to the academic department of any state university, or a certificate of entrance to an accredited university or college, providing that said certificate is granted on no less than the following requirements:

Subsection (b), Section 1, Article III, was, on motion, amended to read as follows:

(a) A baccalaureate degree from an accredited college or university.

Subsection (c), Section 1, Article III, was referred back to the committee on medical education with instructions to report at the 1912 meeting of the Association.

The recommendation to eliminate subsections (d) and (e), on motion of Dr. LeFevre, seconded by Dr. Lyon, was adopted.

Sections 2, 3, 4 and 8, Article III, were, on motion, adopted in the following form:

SECTION 2.—This examination must be conducted by or under the authority of the board of medical examiners of the state in which the college is located, or by a duly authorized examiner of the college entrance examination board, or the authorized examiner of an accredited university, state or otherwise, or by an examiner whose certificates are accepted by accredited colleges or universities, or by a method approved by the Judicial Council of this Association.

SECTION 3.—The term "accredited" as applied to high-schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the State University of their respective states, or by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities and the Association of State Universities, provided that such accrediting is based on Article III, Section 1, of this constitution.

SECTION 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, except-

ing for the fourth year of their course, but no member of this association shall admit a student to advanced standing without first communicating with the college from which such student desires to withdraw, and receive from the dean, secretary or registrar of such college a direct written communication certifying to the applicant's standing. Credit for time or scholarship cannot be given beyond that of the college issuing the credentials, except by mutual agreement between the colleges.

SECTIONS 5, 6 and 7.—Unchanged.

SECTION 8.—Each student shall be obliged to attend not less than 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

Article V, Section 1, as amended, on motion, now reads as follows:

ARTICLE V, SECTION 1.—The entire course of four years shall consist of at least 4,000 hours for each student, and shall be grouped in divisions and subdivided into subjects; each division and subject to be allotted the number of hours as shown in the following schedule:

DIVISION 1.—ANATOMY, 720 Hours (18 Per Cent.)				
	Total Hours.	Lect. Rec. or Dem.	Lab.	Wk.
(a) Gross anatomy (including applied anatomy)	510	120		390
(b) Histologic and microscopic anatomy.....	135	30		105
(c) Embryology	75	30		45
DIVISION 2.—PHYSIOLOGY AND CHEMISTRY, 600 Hours (15 Per Cent.)				
	Total Hours.	Lect. Rec. or Dem.	Lab.	Wk.
(a) Inorganic chemistry	180	60		120
(b) Organic chemistry	75	30		45
(c) Physiologic chemistry	104	30		75
(d) Physiology	240	140		100
DIVISION 3.—PATHOLOGY, BACTERIOLOGY AND HYGIENE, 450 Hours (11.25 Per Cent.)				
	Total Hours.	Lect. Rec. or Dem.	Lab.	Wk.
(a) Bacteriology	135	30		105
(b) Hygiene and general dietetics.....	45	45		...
(c) Pathology	270	60		210
DIVISION 4.—PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS, 240 Hours (6 Per Cent.)				
	Total Hours.	Lect. Rec. or Dem.	Lab.	Wk.
(a) Pharmacology	105	40		65
(b) Materia medica and pharmacology.....	80	...		...
(c) Therapeutics	55	...		...
DIVISION 5.—MEDICINE AND MEDICAL SPECIALTIES, 970 Hours (24.25 Per Cent.)				
	Total Hours.	Lect. Rec. or Dem.	Lab.	Wk.
(a) General medicine (including clinical microscopy)	640	...		...
(b) Pediatrics	150	...		...
(c) Nervous and mental diseases.....	105	...		...
(d) Jurisprudence, ethics and economics.....	30	...		...
(e) Dermatology and syphilis.....	45	...		...

DIVISION 6.—SURGERY AND SURGICAL SPECIALTIES, 720 Hours (18 Per Cent.)

	Total Hours.	Lect. Rec. or Dem.	Lab.	Wk.
(a) General surgery	510	...	...	...
(b) Orthopedic surgery	45	...	...	...
(c) Genito-urinary diseases	45	...	...	...
(d) Eye	60	...	...	...
(e) Ear, nose and throat	60	...	...	...

DIVISION 7.—OBSTETRICS AND GYNECOLOGY, 300 Hours (7.5 Per Cent.)

	Total Hours.	Lect. Rec. or Dem.	Lab.	Wk.
(a) Obstetrics	195	...	...	...
(b) Gynecology (including some abdominal sur- gery)	105	...	...	...

Colleges may reduce the number of hours in any subject not more than 20 per cent., provided that the total number of hours in a division is not reduced. Where the teaching conditions in a college are best subserved, the subject may be, for teaching purposes, transferred from one division to another. When didactic and laboratory hours are specified in any subject laboratory hours may be substituted for didactic hours.

Article V, Section 3, was, on motion, amended to read as follows:

SECTION 3.—Each college in membership in this Association shall print annually a list of its students by classes.

Article VIII, Section 1, was, on motion, amended to read as follows:

ARTICLE VIII, SECTION 1.—The stated meetings of this Association shall occur annually at such place as the Association may designate by vote, the time of meeting to be set by the officers and judicial council of the Association.

On motion of Dr. LeFevre, seconded by Dr. Waite, the amendments to the Constitution, as stated above, were adopted as a whole.

REPORT OF NOMINATING COMMITTEE

The Nominating Committee presented the following report for adoption: President, Wm. P. Harlow, University of Colorado; vice presidents, H. A. Christian, Harvard University and Chas. H. Haxen, Medical College of Virginia; secretary-treasurer, Fred C. Zapffe, University of Illinois; as members of the Judicial Council, Egbert LeFevre, University and Bellevue Hospital Medical College (term expires 1914), J. A. Witherspoon, Vanderbilt University (term expires 1914), J. R. Guthrie, University of Iowa (term expires 1914) and Chas. R. Bardeen, University of Wisconsin (term expires 1912—unexpired term of Dr. Harlow).

On motion of Dr. R. D. Coale, the secretary was ordered to cast the unanimous ballot of the Association for the election of those

named in the report of the Nominating Committee to the offices mentioned, which he did.

The chair here appointed Drs. Christian and Hoxie to escort the president-elect to his station, which they did. Dr. Harlow briefly addressed the Association, expressing his appreciation of the honor conferred on him, and bespeaking the support of the colleges for the coming year.

On motion of Dr. Witherspoon, it was decided to hold the annual meeting for 1912 in Chicago, at such time as the officers and Judicial Council may designate.

On motion of Dr. F. C. Waite, the secretary-treasurer was authorized to call for a special assessment at once to defray the expense incident to the publication of the proceedings of this meeting in such form as to secure the widest possible publicity. (The Judicial Council later decided that the amount of this assessment should be \$15.00, and that the call should be signed by the president, secretary and chairman of the Judicial Council.)

The president announced that he would appoint the members of the various committees later and that the list would appear in the volume of transactions—to which no exception was taken.

Adjourned.

W. P. HARLOW,
President.

FRED C. ZAPFFE,
Secretary.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The twenty-first annual meeting of the Association was held in Chicago, March 20, 1911, with the following colleges represented by proxy:

University of Colorado School of Medicine.
George Washington University Department of Medicine.
Georgetown University School of Medicine.
University of Illinois College of Medicine.
Drake University College of Medicine.
State University of Iowa College of Medicine.
University of Kansas School of Medicine.
Washburn College Medical Department.
University of Louisville Medical Department.
College of Physicians and Surgeons (Baltimore).
University of Maryland School of Medicine.

Baltimore Medical College.
 Medical School of Harvard University.
 Tufts College Medical School.
 University of Missouri School of Medicine.
 St. Louis University School of Medicine.
 College of Medicine University of Nebraska.
 John A. Creighton Medical College.
 University of Buffalo Medical Department.
 University and Bellevue Hospital Medical College.
 Western Reserve University Medical Department.
 Starling-Ohio Medical College.
 State University of Oklahoma School of Medicine.
 Vanderbilt University Medical Department.
 Medical College of Virginia.
 University College of Medicine.

The secretary then read the minutes of the adjourned meeting held Feb. 27-28, 1911, in Chicago, and on motion of the representative of the University of Illinois the minutes were adopted as read.

There being no further business to come before the Association at this time, the meeting was adjourned sine die.

WM. P. HARLOW,
 President.

FRED C. ZAPFFE,
 Secretary.

OFFICERS AND COMMITTEES FOR 1911-1912

PRESIDENT: Wm. P. Harlow, University of Colorado, Boulder, Colo.

VICE PRESIDENTS: H. A. Christian, Harvard University, Boston, Mass.; C. M. Hazen, Medical College of Virginia, Richmond, Va.

SECRETARY-TREASURER: Fred C. Zapffe, University of Illinois, Chicago, Ill.

JUDICIAL COUNCIL

Wm. J. Means, Chairman, Starling-Ohio Medical College, Columbus, Ohio.

R. Winslow, University of Maryland, Baltimore, Md.

C. M. Jackson, University of Missouri, Columbia, Mo.

Egbert LeFevre, University and Bellevue Hospital Medical College, New York City.

J. R. Guthrie, University of Iowa, Dubuque, Ia.

C. R. Bardeen, University of Wisconsin, Madison, Wis.

J. A. Witherspoon, Vanderbilt University, Nashville, Tenn.

COMMITTEES

EDUCATION:

F. C. Waite, Chairman, Western Reserve University Medical Department, Cleveland, O.

J. A. Witherspoon, Vanderbilt University, Nashville, Tenn.

H. A. Christian, Harvard University, Boston, Mass.

W. J. Means, Starling-Ohio Medical College, Columbus, O.

F. M. Briggs, Tufts College Medical School, Boston, Mass.

F. F. Westbrook, University of Minnesota, Minneapolis, Minn.

Fred C. Zapffe, University of Illinois, Chicago, Ill.

RESEARCH:

Egbert LeFevre, Chairman, University and Bellevue Hospital Medical College, New York, N. Y.

A. S. Warthin, University of Michigan, Ann Arbor, Mich.

W. B. Cannon, Harvard University, Boston, Mass.

PEDAGOGICS :

- Geo. H. Hoxie, Chairman, University of Kansas, Kansas City, Mo.
 C. M. Jackson, University of Missouri, Columbia, Mo.
 C. R. Bardeen, University of Wisconsin, Madison, Wis.
 W. S. Thayer, Johns Hopkins University, Baltimore, Md.
 Geo. Dock, Washington University, St. Louis, Mo.

EQUIPMENT :

- E. P. Lyon, Chairman, St. Louis University, St. Louis, Mo.
 R. Bishop Canfield, University of Michigan, Ann Arbor, Mich.
 Henry Sewall, University of Colorado, Denver, Colo.
 Irving Hardesty, Tulane University, New Orleans, La.
 Paul G. Woolley, University of Cincinnati, Cincinnati, Ohio.

STATE BOARDS :

- Fred C. Zapffe, Chairman, University of Illinois, Chicago, Ill.
 J. R. Guthrie, University of Iowa, Dubuque, Iowa.
 Wm. J. Means, Starling-Ohio Medical College, Columbus, O.

MEMBERS

CALIFORNIA

- Leland Stanford Junior University, Department of Medicine, Palo Alto and San Francisco.
 University of California, Medical Department, Berkeley, San Francisco and Los Angeles.
 University of Southern California Medical Department, Los Angeles.

COLORADO

- University of Colorado, School of Medicine, Boulder and Denver.

DISTRICT OF COLUMBIA

- Georgetown University School of Medicine, Washington.
 George Washington University, Department of Medicine, Washington.
 Howard University, Medical Department, Washington.

ILLINOIS

- Northwestern University Medical School, Chicago.
 University of Illinois, College of Medicine, Chicago.

INDIANA

Indiana University, School of Medicine, Bloomington and Indianapolis.

IOWA

Drake University, College of Medicine, Des Moines.
State University of Iowa, College of Medicine, Iowa City.

KANSAS

Kansas Medical College, Medical Department of Washburn College, Topeka.
University of Kansas, School of Medicine, Lawrence and Rosedale.

KENTUCKY

University of Louisville, Medical Department, Louisville.

LOUISIANA

Medical Department of the Tulane University of Louisiana, New Orleans.

MARYLAND

Baltimore Medical College, Baltimore.
College of Physicians and Surgeons, Baltimore.
Johns Hopkins University, Medical Department, Baltimore.
University of Maryland, School of Medicine, Baltimore.

MASSACHUSETTS

Medical School of Harvard University, Boston.
Tufts College Medical School, Boston.

MICHIGAN

Detroit College of Medicine, Detroit.
University of Michigan, Department of Medicine and Surgery, Ann Arbor.

MINNESOTA

University of Minnesota College of Medicine and Surgery, Minneapolis.

MISSISSIPPI

University of Mississippi, Medical Department, Oxford.

MISSOURI

St. Louis University, School of Medicine, St. Louis.
University Medical College, Kansas City.
University of Missouri, School of Medicine, Columbia.
Washington University, Medical Department, St. Louis.

NEBRASKA

John A. Creighton Medical College, Medical Department, Creighton University, Omaha.
University of Nebraska, College of Medicine, Lincoln and Omaha.

NEW YORK

Cornell University Medical College, Ithaca and New York.
Syracuse University, College of Medicine, Syracuse.
University and Bellevue Hospital Medical College, New York.
University of Buffalo, Medical Department, Buffalo.

NORTH CAROLINA

University of North Carolina, Department of Medicine, Chapel Hills.
Wake Forest College, School of Medicine, Wake Forest.

NORTH DAKOTA

University of North Dakota, College of Medicine, University.

OHIO

Ohio-Miami Medical College of the University of Cincinnati, Cincinnati.
Starling-Ohio Medical College, Columbus.
Western Reserve University, Medical Department, Cleveland.

OKLAHOMA

State University of Oklahoma, School of Medicine, Norman.

TENNESSEE

Meharry Medical College, Medical Department Walden University, Nashville.
Vanderbilt University, Medical Department, Nashville.

VIRGINIA

Medical College of Virginia, Richmond.
University College of Medicine, Richmond.

WEST VIRGINIA

University of West Virginia, College of Medicine, Morgantown.

WISCONSIN

University of Wisconsin, College of Medicine, Madison.

HONORARY MEMBERS

Dr. George M. Sternberg, Washington, D. C.

Dr. Egbert LeFevre, New York, N. Y.

Dr. Henry S. Pritchett, New York, N. Y.

ASSOCIATE MEMBER

Dr. Henry B. Ward, Urbana, Ill.