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AMERICAN MEDICAL
COLLEGES



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ADDRESS OF PRESIDENT

THE NEED OF CO-ORDINATION IN MEDICAL EDUCATION

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It has been observed by many of those who have to administer the requirements for admission to medical colleges, that many students who can present satisfactory credit for a total of one or two years of college work have great difficulty in satisfying the requirements of a definite amount of work in the prescribed subjects. Apparently there is need of a closer co-operation between the colleges and the medical schools, to secure a better co-ordination of the premedical college course with the requirements in prescribed subjects for admission to medical schools. Undoubtedly the great difficulty is that students do not decide early enough in their careers that they want to study medicine and consequently do not make the necessary preparation for it.

THE COLLEGE STUDENT'S CHOICE OF COURSES

In most colleges students are allowed to take almost any combination of a great number of elective courses without reference to their plans for the future. Even if they are looking forward to the study of medicine, they do not know, when they enter the college of arts and sciences, what courses would give them the best preparation. But most of them do not reach any decision as to a professional career until they have attended college aimlessly for several years. If they then suddenly decide to study medicine, they consider that those who are engaged in medical education are most arbitrary and unreasonable because a definite amount of work is required in chemistry, physics and biology or zoology, and entrance conditions will not be allowed in these subjects. Quantitatively, they have had enough college training to prepare them for the study of medicine, but qualitatively, they have not had the right kind of training in these sciences.

In such cases who is at fault? Are the admission requirements of medical colleges too high or too rigid? Should exceptions be made and subject conditions allowed for those who have had two or more years of college work? Doubtless all who are capable of judging will agree that the requirements are not arbitrary or too high, and that subject conditions can not be allowed without establishing dangerous precedents, which, in the long run, will destroy uniformity in the maintenance of definite standards in prescribed subjects. Possibly some consideration could be given to those who have completed the full course for graduation

in a college of good standing, provided the subject is not one like chemistry, which should be an absolute requirement for admission to the medical school. But those who aimlessly take two or three years of college work, without including chemistry, physics and biology or zoology, should be penalized by the requirement of another year of college work to get the necessary training in these sciences.

It is very human to overlook one's mistakes and to think that some other person is at fault. Probably all will agree that the student is chiefly at fault in failing to reach a definite decision early enough as to his life-work and to make the preparation required for the same. But how is this to be corrected? Can we reasonably expect that parents will cooperate or make any effort to get the graduates of high-schools to reach this decision before they enter the college of arts and sciences? Are students entirely capable of making such an important decision at that time? If this condition could only be remedied by the action of parents and students, it would at best require a very long time to bring about such a change, and the results would in all probability be disappointing in many ways.

THE MOST DESIRABLE COURSES FOR PROSPECTIVE MEDICAL STUDENTS

The most hopeful way of correcting this defect in our present system rests with the college. It requires the active co-operation of those who are in a position to guide the student during his premedical college course. It is not too much to hope that educators will co-operate in this matter as they have done during the past ten years in making it possible to get the premedical college training in one or two years.

Students should be advised by catalogue announcements and also by some officer and a special advisory committee of the faculty, at the time of their admission to the college of arts and sciences, as to the most desirable combination of courses for those who wish to prepare for the study of medicine, and especially the subject requirements for admission to medical schools.

This information and advice should be repeated during the registration days for matriculation in the sophomore year. Repetition can do no harm and the advice may be more effective at the beginning of the second, than at the beginning of the first year, as the student is then more mature and should certainly make a definite decision at that time as to his future career, at least if he expects to study medicine. The student who may be undecided when he graduates from high school, and who has an indefinite inclination toward medicine, will usually have secured credit for one of the three science courses required for admission to the medical school, namely, chemistry, physics or biology, by the beginning of the second year in the college of arts and sciences. He

can then determine to better advantage whether or not he has the natural aptitude, inclination and interest which are essential for success in the study of medicine.

ADVANTAGES OF FOUR YEARS OF COLLEGE WORK

Of course, advice given at this time, or a definite decision as to the student's future plans, need not prevent him from taking more than the two years of college work which will be required by practically all medical colleges after January, 1918. Naturally, educators may object that such an effort would encourage students to take the shortest cut by meeting the minimum entrance requirements of medical colleges; that it would discourage them from completing the full college course before beginning the study of medicine, and that those who are able to do so would thus fail to get the benefit of the broad cultural training which comes from four years of college work. It may even be contended that this is an effort to extend the course in medicine to six years by limiting the number of elective subjects and requiring technical courses early in the student's career.

But there is no objection to pointing out the advantages of three or four years of college work for those who are able to make that amount of preparation. Moreover, there is nothing in the plan suggested to prevent the student from taking three or four years of college work, if he completes the prescribed subjects during the first two years. On the other hand, it would prevent the frequent requests for entrance conditions on the prescribed science subjects. These come to medical colleges every year, and for a number of years past, have occupied the attention of national and state organizations concerned with medical education.

NO SUBJECT CONDITIONS

Those who are acquainted with the administration of these requirements will agree that the student needs the training in these sciences *before* he enters the medical school, and that it is not satisfactory to make up such work *after* he has completed one year in the medical school by taking a concentrated course in a summer school. It seems unreasonable, for instance, to require a student to make up a course in biology or physics during the summer vacation to prepare him for the study of anatomy, histology and physiology, after he has completed a large part or all of the work in these subjects in the medical school. It has been necessary to make such arrangements during the transitional period of the past few years, while the standards have been steadily advanced and there have been difficulties in adjusting the college courses to the requirements of the medical schools. However, we have now reached a time when there should be closer cooperation and subject conditions in chemistry, physics and biology should not be allowed for admission to the medical school.

READY TO PRACTICE AT TWENTY-FIVE

If the colleges of arts and sciences will give their support to this effort, there will not be any difficulty in completing the entire training for the medical profession by the time one reaches the age of twenty-five. If a boy graduates from the high school at the age of seventeen, or even eighteen, he will be able to spend two years in college, four years in the medical school, one year in a hospital and he could then begin the practice of his profession at the age of twenty-five.

All who are interested in medical education are agreed that it should be possible for the physician to complete his training and begin the practice of his profession by the time he is twenty-five years of age; that he should not be required to spend twenty-seven or twenty-eight years in preparing for his life-work. Some have contended that the time spent in the public schools should be cut down; that boys should be able to enter college before they are seventeen or eighteen years of age.

In a democratic country, where most of the recruits for the medical profession receive their early education in the public schools and not in private schools, it is difficult to see how this can be done. Theoretically it may be possible to complete the entire course in the public schools in ten years instead of eleven or twelve; it may be possible for pupils of exceptional ability, as shown by their scholarship standing, to complete the course in the elementary schools and high schools in less time than is now required by the average class. But practically, how many school boards would be willing or able to change the entire system for the benefit of a very few, when so many pupils in our public schools now fall by the wayside and do not advance beyond the elementary grades? How many would provide the necessary teachers to advance the upper one-fourth of the class faster than the others are capable of going? If this were done in the large cities with unusual advantages and opportunities, or in educational centers with progressive ideas, could it reasonably be expected from the country at large, at least to such an extent that those who enter the professional schools may do so at an age which is one or two years less than the present average?

The practicability of bringing about such wide-spread changes deserves most careful consideration. It seems highly probable that most school boards would consider that the public school system has to be planned for the majority, and not for the small minority; for the average pupil, and not for the one of exceptional ability; to train boys and girls broadly for the duties and responsibilities of life, and not to prepare a very limited number for professional careers. Many of them are limited by the amount of money available and would find it impossible to make the necessary changes. At best, they would naturally hesitate about creat-

ing new teaching positions when there are so many teachers in the public schools at present who are underpaid for the services rendered.

Even if these extensive changes were practicable, would they remedy the condition? Are boys capable of deciding upon their future careers when they are in the elementary grades or even in the high schools? If the parents have to make these decisions, would there not be many mistakes, misfits and disappointments? If there is difficulty now in getting college students to reach an early decision and make their plans accordingly, is it reasonable to assume that this would be done at an earlier age? Is it not more reasonable to hope for a decision by the individual who is most concerned, after he reaches maturity, during his first or second year in college? This seems to be a more satisfactory method, both to the individual and to the medical profession. It does not involve any educational experiment or revolutionary change. It would merely require the active co-operation of educators in our colleges and universities and it is not too much to hope that such will be given.

COMBINED ARTS-MEDICINE COURSES

The combined arts-medicine courses now offered by most of the endowed and state universities of this country, whereby the B.S. or B.A. and the M.D. degrees may be obtained in six or seven years, is a recognition by educators and university officials of the necessity of making it possible to get both degrees in less than eight years; also, that prescribed college courses are necessary for the study of medicine, while the fundamental medical sciences may be counted toward the baccalaureate degree. The suggestion here made is, therefore, not an innovation. It merely aims to extend principles that are well established; to induce greater numbers to take advantage of opportunities now offered by universities in the combined arts-medicine courses, instead of aimlessly taking elective courses which do not give the same preparation with the least consumption of time. The cultural value of such courses is not underestimated, nor is the value of the baccalaureate degree lessened by those who hope for a more general adoption of such combined courses and for reasonable efforts to get students to take certain prescribed subjects during the first two years in college.

CONTENT OF PREMEDICAL COLLEGE COURSE

Now that all of the medical schools in membership in the Association of American Medical Colleges have adopted the uniform entrance requirement of two years of college work, doubtless considerable attention will be given to the content of the pre-medical college course. While conditions are as unsettled as they

are at present, there ought to be as much latitude as possible. It is highly desirable to include a course in organic chemistry, in addition to the course in general inorganic chemistry which is now an absolute requirement. But before this is done, every effort should be made to secure a closer co-operation on the part of the colleges and universities of the country, so that subject requirements for admission to medical colleges can be enforced without the necessity of allowing entrance conditions for them.

Many medical schools now require credit for a course in organic chemistry for admission, and there is good reason for doing so, as it is essential for an understanding of biological chemistry. The medical curriculum is so crowded that there is no time available for a laboratory course in organic chemistry in the medical school. There cannot be any valid objection to the desirability of making organic chemistry a subject requirement. However, the practicability of enforcing it should be well considered and sufficient time should be allowed for the colleges and universities to give this preparation before it is adopted as an absolute requirement for admission by all medical colleges.

TRANSFER OF STUDENTS

Great advances have been made in medical education during the past decade, largely through the activities of the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges. So much attention has been given to the adoption and enforcement of definite standards of preliminary education, the standardizing of the medical curriculum, laboratory equipment and hospital facilities, the number of teachers, etc., that the requirements for the transfer of a student from one college to another with admission to advanced standing, have not received the consideration this important matter deserves. At the present time there is, perhaps, no question which more urgently needs consideration.

Now that uniform entrance requirements have been attained, and greater uniformity will probably prevail in the future in regard to the curriculum, some definite regulations ought to be formulated, so that students in good standing who desire to attend another college for good and sufficient reason, may be able to do so without unnecessary hardship. At the same time, a student who fails in one institution should not be admitted to advanced standing in another school until he has made up his deficiencies.

THE GENERAL PRACTITIONER AND THE SPECIALIST

Those who are responsible for the arrangement of the curriculum in medical schools should keep constantly in mind the desirability of making it possible for those who are preparing for the medical profession to complete the undergraduate training

and a hospital internship by the age of twenty-five. From time to time proposals have been made to increase the course in the medical school to five years. Doubtless these suggestions have been made largely to accommodate individual teachers who desire to extend their courses of instruction. However, it is impossible to prepare men for the specialties in medicine during the regular undergraduate course.

The medical school should aim to give thorough and well-rounded training in those subjects which are needed by the general practitioner, and which constitute the foundation on which the specialist must build, without attempting to make specialists. The specialist should prepare himself for his particular field of work by graduate study done in hospitals or in graduate courses, but he should not expect the medical school to be diverted from its function of making physicians. The advanced degrees in medicine now offered by some universities will doubtless meet the need for extensive courses in the specialties, without making it necessary to extend the undergraduate course or to further overcrowd the medical curriculum, which is already filled beyond the assimilation limit of many students.

OVERLOADING THE CURRICULUM

This should be kept in mind before undergraduate courses of instruction are multiplied unnecessarily. It is natural for teachers to aim at the ideal in extending existing courses or in offering new ones. Too often the capacity of students and the total amount of work done by them in all subjects is overlooked. The curriculum is usually arranged from the viewpoint of individual teachers, not from the student's point of view of acquiring an enormous amount of information and training in many subjects within a limited time.

So much attention has been directed to giving a certain number of hours in each subject, that little thought has been given to the scope or content of different courses. In many instances time could be saved by avoiding unnecessary duplication in different departments of instruction if more attention were given to the content of existing courses. The overcrowded condition of the roster has probably come about, in part at least, by the efforts of national organizations and state boards of medical examiners to establish definite standards as to the number of hours of instruction to be given in each subject in the curriculum.

A better co-ordination and a closer correlation between the courses in the fundamental medical sciences taught during the first two years in the medical school, with the advanced subjects taught by clinical methods during the last two years, would make it unnecessary to repeat during the latter period, work that should be completed during the first two years.

CO-ORDINATION OF TEACHING

If anatomy is taught from the viewpoint of comparative anatomy or of embryology during the systemic course, without sufficient attention to the practical use of this subject in medicine and surgery, the student finds that he is deficient in his knowledge of anatomy when he comes to the practical application of it in the study of the clinical subjects. Students are often found deficient in their foundation work in anatomy when they come to the study of operative surgery in the fourth year, although the required amount of time has been given to the study of this subject in the first and second years. This is especially true if this subject is taught by the concentration method, as the goal of the student is too often the passing of an examination and not the mastering of the subject for practical use in his clinical work.

Anatomy is such a difficult subject to master that repetition and review are required. It may be necessary to give a course in applied anatomy to refresh one's memory, but the practical application of anatomy to medicine and surgery should be kept in view constantly during the systematic instruction and not confined solely to the course in applied anatomy which precedes the study of operative surgery.

In the same way, pathology should be taught as a foundation upon which all sound clinical study must rest and not as a pure science separate and apart from the clinical branches. There should be the closest correlation between them at all times during the systematic course and this should not be reserved for special advanced courses in the years devoted to clinical study.

If this were done, the course in surgical pathology should consist of conferences between the department of surgery and the department of pathology for the correlation of the clinical and pathological findings in the study of surgical cases, in the same way that clinical and pathological conferences between the departments of internal medicine and pathology correlate the autopsy findings with the clinical aspects of disease, thus completing the study of cases seen in the medical wards. Too often courses in surgical pathology and in clinical pathology have to include a review of fundamental studies of general and special pathology, instead of being devoted to the advanced work, because there is a lack of coordination between the two.

Clinical pathology has to be taught throughout the last two years of the course in medicine which are devoted to clinical studies, because the methods are used constantly and the facilities of the laboratory are essential for the bedside study of disease. Courses in clinical pathology, or applied pathology, and in applied anatomy, or so-called surgical anatomy, are necessary, but it is not so clear that it is necessary to add a course in clinical physiology or applied physiology to the curriculum which is already overcrowded.

If this is done in this subject, why not add courses in clinical bacteriology, clinical bio-chemistry, etc.? If such courses are necessary, does it not indicate that there is something wrong with our present methods, and that there is a lack of co-ordination between the courses in these fundamental subjects and the clinical branches? Of course this refers to required courses for all students and not to advanced work in elective courses.

It would seem entirely feasible to bring about a closer relationship between the laboratory and clinical teaching by rearranging, if necessary, the scope of the didactic and laboratory teaching in the fundamental medical sciences; by giving careful consideration to the content of these courses with a view to preparing students for their clinical studies; by pointing out the relations between the two whenever that is possible, both by the teachers of the fundamental and of the clinical subjects; by training students thoroughly in laboratory methods which are used by clinicians, instead of consuming time with exercises which do not have any bearing upon or relation to the advanced subjects in the medical curriculum; by the closest co-ordination and correlation between the fundamental medical sciences of the first two years with the various clinical subjects of the last two years. In short, medical educators should give attention to the *kind* as well as to the *amount* of instruction given, in order that the undergraduate course may be completed within four years without overcrowding of the curriculum due to a lack of co-ordination.

COURSES FOR MILITARY TRAINING FOR MEDICAL OFFICERS

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Harvard Medical School

It is with considerable hesitation that I speak on this subject, for I must do so with but brief preparation and with no stated paper ready.

At short notice, Dr. Bradford asked me to take his place on the program, and, perhaps, it may be well for me to state at the outset why he should have done this. In the first place, I have been a teacher of medical students for many years; then, I am in the military medical service and have some knowledge of the requirements for that service—more particularly, by reason of my present duties—and, finally, I have been in recent consultation on this matter with Colonel Russell, in the office of the surgeon-general, and with Colonel Straub, department surgeon of the Department of the Northeast. With the latter, I have lately been engaged in a close inspection of the posts throughout the Department of the Northeast, and have acquired considerable familiarity with the needs of the medical service, and the actual situation. The needs in this department correspond with those that may be found in the country at large.

Fortified by the experience of the British and Canadian schools, it seems to me that there is a definite procedure outlined, and that this should be followed.

First, that the medical schools should continue teaching the undergraduates in the usual way, without shortening or abbreviating the course, or in any way lowering the standard of medical requirements; excepting, that it might be possible, with the fourth class, to give that class continuous instruction during the last summer that they might be graduated one term earlier. I am aware that this is contrary to the vote passed yesterday at the meeting of the Council on Medical Education, and the vote of this body this morning.

I confess that I listened with some amazement to the argument brought forward in favor of this vote. In accordance with which, it was suggested that the assistants in laboratory subjects might be trained and immediately taken away—their places to be supplied by new assistants. It seems to me that this could have been suggested only by one unfamiliar with the actual requirements of teaching. These actual requirements are severe, and need the best and most prolonged training that it is possible to obtain. If the procedure is carried out of taking away assistants

as soon as they begin to be useful, the severity of the strain on the heads of departments will quickly become too great, and the quality of instruction will deteriorate with extreme rapidity.

The only alteration suggested in the undergraduate curriculum is this: By reason of present emergency needs in the military medical service, it is strongly urged that a course in practical laboratory diagnostic methods be offered and required in the fourth year. This course to be required of all students, who, during their undergraduate period, have shown any aptitude for laboratory work. It is even urged that this course should be required of all fourth year men, in order that when they have received their commissions, even if they do not attempt to practice the methods themselves, they may at least know something of what is required. Such courses should include the preparation of culture media, and actual work in the identification of typhoid, para-typhoid, meningococcus, pneumonia types, malaria, hook-worm, and certain serological tests.

At the moment, the need for trained laboratory workers in the military medical service is greater than any other. The importance of the determination of carriers of infection by the latest methods is emphasized by every bulletin of sickness in the camps and posts that comes from the surgeon-general's office.

The very grave neglect of such instruction has been shown to you by the figures presented by Dr. Wilson, which should be published broadcast, and their showing emphasized in every medical school.

There should be, also, a course on epidemiology, and what is a matter of serious importance, a short course on military discipline. The need for this latter has been emphasized by my personal experience in the course of inspection only just over.

The faculties of the various medical schools should be prepared to give special courses in such subjects as may, from time to time, be required or suggested by the surgeon-general's office. The sort of thing indicated is well illustrated by the special courses in orthopedics now being given at various schools, the special laboratory courses that have been made up elsewhere and in my own department at home, and the special courses given almost continuously at the Rockefeller Institute in New York.

There are so many grave objections to the proposition to speed up the undergraduate instruction by making it continuous summer and winter that it is earnestly to be hoped it will not become general. Everyone familiar with the situation recognizes the great need for medical men, but, also, those in close touch with conditions, realize that it is better, temporarily, to overwork good men than to increase the supply of those who are hastily and incompletely fitted.

DISCUSSION

DR. LOUIS B. WILSON, Rochester, Minn.: I would like to present, briefly, a few phases of the subject touched on by Dr. Ernst, omitting, much as I would like to go into it, a discussion of the military necessities which he has so well presented. He rather intimated that it is, perhaps, impossible for us to get proper intensive precollegiate training, and that if so, it would be applied only to the premedical students.

You will pardon me for presenting what is a personal case, because we have succeeded in our little city of 13,000 population in accomplishing that which has seemed impossible. Six years ago we cut out the seventh and eighth grades in our public schools, and we instituted a junior and a senior high school of three years each. Students were promoted by subject rather than by grade. We are now turning out students into the best of the colleges. They are passing the college entrance examination board under 17 years of age. We had a boy in Harvard three years ago at 16 years of age, and he carried off all the honors. He was not an unusually bright boy. The thing can be done, but it is not as a preliminary education for men going into the professions that this course is of the greatest value; it is of the greatest value to the boy who is not going into the Army. We do not waste the time of the boy in the seventh and eighth grade, or of the boy going into the college.

Now, as to graduate instruction, a great jump I admit, but a very necessary one, as Dr. Arnold told you. This subject is being considered by the committee on graduate instruction of the Council on Medical Education. The duties of that committee have been enlarged to cover the general topic of graduate medical instruction. Very soon we will ask all of the schools to give us information concerning their facilities for graduate instruction of two characters: first, all of the brush-up courses, and second, those courses which look toward the conference of the degree by the universities in which the medical school is placed. The necessity of taking cognizance of this work at this early stage may not be apparent, but consider that today the medical schools of the United States, or those of the occidental countries, are not in proper running order. Even the schools of the Scandinavian countries are not in proper running order. Their men have gone. A long period will be required for the reorganization of the schools of France, England and Italy, and the medical students of this country will not be willing nor will they be able to go to German schools for quite a while. So you will see the necessity for establishing postgraduate medical instruction in our medical schools, not only for our own people, but for our allies, England, France and Italy. This work must be carried on to a very great extent in this country. Our allies are badly crippled. It will not do for us to wait until the end of the war, because when men are discharged from military medical service they will be looking about for places where they can get proper graduate instruction. And it is with the hope that our committee can collect the information from the various teaching institutions, so that we may present something of an organized plan, that we are considering the publication of a little pamphlet, which will be distributed widely not only in this country but abroad, to show what the opportunities for graduate instruction are in this country. I bespeak on behalf of the committee your cooperation in this work, which we must get well organized before the end of the war.

DR. JAMES EWING, New York City: I am very glad that Dr. Wilson mentioned postgraduate instruction. It has a bearing on what Dr. Ernst said and also on other matters discussed here. At Cornell we have for the past three months devoted all our extra time, and more extra energy than some of us thought we possessed, on extra courses designated "military surgery." They include a detailed study, as good as we can make it, as demonstrative as possible, laboratory and clinical, of the various diseases and conditions which military surgeons see on the battle fields and in camps, and we have had twenty students assigned to this intensive work. In addition, we have a group of about eighty roentgenologists who are studying, primarily, the technic of the roentgen-ray machines and the interpretation of plates. They also receive a certain amount of clinical training and special work in the department of pathology, so that they will have some idea as to what interpretation to make of roentgenograms. We have also a class for additional instruction in bacteriology, so that the department of bacteriology, besides the regular routine work, which is rather intensive, has been occupied in training men in this field. Some of our surgeons are also engaged in outside activities of the same sort, connected either with our school or in conjunction with other schools, in such work as neurologic surgery. Quite a number of schools in New York are giving postgraduate work in military training. The excess of time and energy of all our instructors is already occupied, and if we are required to give additional time to medical students, we must give up this work. We are doing all we can, taking into consideration the force at our disposal. We can teach students in shorter time, but there is a limit to the instructing capacity of the larger well-equipped institutions.

DR. HAROLD C. ERNST, Boston: I listened with much interest to the discussion today as to the increased number of students. What are you going to do about teaching them? As Dr. Ewing said, suppose that all of the juniors are taken away. It is physically impossible for any man to do the teaching of all of his men, no matter what he can do. It is wrong to take away men who are well equipped to teach laboratory work. Let the laboratory force alone. The men who know these methods are competent to teach others. You cannot do all of this work unless you permit the laboratory instructors to remain at work.

ARRANGEMENT OF WORK IN INTERNAL MEDICINE

REPORT OF COMMITTEE ON EQUIPMENT

CHARLES P. EMERSON, M.D., CHAIRMAN

Dean, Indiana University School of Medicine

Last year in our report we traced the development in this country of hospital plans. We tried to show that however excellent and modern the other buildings of the hospital group may be, those for patients have become of practically stereotyped design. It is today considered almost axiomatic: first, that the whole hospital group of buildings should constitute a unit, that is, that each building should be necessary to the whole, and the conclusion is that each doctor, nurse and medical student must use several buildings in the treatment and study of each and every patient. For instance, there is one building or one floor for the laboratory work of several wards, another for hydrotherapy, another for physical therapy, a building of operating rooms only; the women of several services are in one building, the men in another, etc. Second, it is almost an axiom that the buildings for patients shall be small, arranged in rows connected by corridors and that each floor have space for twenty-six patients. Third, that the ward be of uniform design, regardless of sex and service; and, fourth, that only patient and nurse be considered in the arrangement for space.

This plan was developed prior to 1880, before the first pathogenic germ had been discovered, and may have answered well the problem of disease as then understood. The plans of one well-known hospital were published and attracted so much attention that in 1904, thirty years later and ten years after the trustees of that particular hospital had, when erecting a new building, utterly abandoned and repudiated that plan, the architect of the original hospital told us that he had planned sixty-five hospitals according to his original ideas, and that these had influenced the plan of many others by different architects. That this idea of 1874 still influences architects may be seen today by visitors to our newest and best hospitals in many cities, including Cincinnati and St. Louis.

Our plea last year was that the hospital building be the unit and not the group. That is, that each building be a complete clinic. Even a small building can contain enough patients to more than keep one man busy. Why, then, distribute his work in several buildings? Of course a group of such clinics constituting one hospital would have its central administration building, its central heating and lighting plant, etc., but we refer now to the concentration of the professional work.

Not only should each staff find all of its rooms for patients under one roof, but its other work rooms too—the laboratory, the library, the teaching rooms, etc.

Not only should each building house a complete clinic, but each of the floors for patients should itself be a complete hospital, capable of continuing its work should all the other floors except the basement cease work. There is no doubt that even a short flight of steps is a psychological even though unconscious barrier even to an energetic person, and that if the work of intern and nurse is all concentrated on the same level, they will actually do more work than if their patients were on two floors. Since the ward floor can be large enough to more than keep an intern or nurse busy, why make it necessary for them to visit two floors to care for their patients?

Our contention is that each floor house a complete group of patients, forty-two in number, and have its own laboratory, its own reception room which can serve also as a dressing room and if necessary as an operating room; its own diet kitchen; its own store room; its own hydrotherapy establishment.

Next, we tried to persuade you that the original floor unit of twenty-six should be abandoned for one of about forty-two. The reasons were that we no longer fear epidemics as they did in 1874; that each supervising nurse can direct the care of forty or fifty patients and should not find them on two floors; that some of the pupil nurses will walk thirty per cent. fewer miles a day if her six or eight patients are among forty patients clustered about an administration center than among the twenty-six patients in a smaller but longer ward, and, since practically the same administration equipment will serve fifty patients as well as twenty-six, the larger ward unit will mean a saving in per capita overhead expense.

And lastly, we tried to prove to you that instead of a uniform plan for all wards the ward plan should be determined by the service for which the building was intended, and the sex and age of the patients.

ARCHITECT'S PLANS TO CONFORM TO TEACHING REQUIREMENTS

This year we hope to carry this discussion a little further, and ask that medical school faculties demand of architects that the plans also make provision for bedside instruction and the clinical clerk work of medical students. The ward is the laboratory of the medical and surgical departments. The student trained in the ward will be a better doctor and the patients treated in a teaching ward will be better cared for, for where the students are best taught how to treat the patients there the patients receive the best treatment. For the sake of both let us consider the student in our plans.

THE STUDENT'S WORK

All teachers of the clinical subjects will agree that while the student should be required to attend ward rounds in all portions of the hospital, and this he will do gladly, that he should do hard personal work as clinical clerk and this he does not always do gladly; he would rather watch somebody else work. For efficiency's sake seldom more than five patients are at any one time assigned to one student, and these would better be on one floor and this training broadened by shifting him at stated times from floor to floor. He should have his own place in the ward laboratory, his own equipment, and the use of the ward's equipment. Then we can follow his work and hold him responsible for his work and the use of the apparatus. If the patients assigned him at any one time are on several floors, or worse still in several buildings, his responsibility for work and for apparatus will not be taken as seriously as it should be. As a teacher of medicine I take the liberty of urging for the student more actual practice in the technic of the methods used. We show our students how to percuss the chest, how to examine urine, how to count blood, to palpate the abdomen, but that is not enough; the student repeats this a few times and "knows how," and thinks that this is enough. He should practice under good supervision until he can do it fairly well for a fourth year student. You know how to play the cornet; a good music teacher showed you how; perhaps you can, after a fashion; but unless you have practiced considerably you will not play well enough to please your neighbors. I know the medical student's time is limited and know that his intern year is for practice, but must insist that there should be in the fourth year more systematic drilling in physical and clinical diagnosis under good instruction than is in the custom.

One of the most famous internists told me that he seldom if ever read a case report in an American medical journal. "All the work has been done, and all the observations are well recorded," said he, "but my experience in America makes me doubt that the results were correct." Our assistants know how, but they cannot do it accurately for lack of supervised practice.

THE WARD LABORATORY

The ward laboratory should be the student's laboratory. In it he should have *his* place, *his* microscope, his own test tube racks and a few reagent bottles; and a place to keep books, papers, his stethoscope, etc. I protest against the clinical laboratory building—a corner on the ward floor is for the fourth year student far better than a palatial clinical building. Separate the student's working space from the ward by a long corridor or

even a short flight of steps and the student will not, for subliminal reasons, do his best work.

As a medical student I was required to make all urine, sputum, etc., examinations in a laboratory in the hospital to be sure, but three city blocks from some of the wards in which I worked. Since then even hospital ward dining rooms have been given over to the students as work rooms.

Of course, we have worked in the hospitals in France and Germany, with tables for the reagents and urine in the ward rooms themselves, and all examinations of specimens made in full view of the donors. This is possibly carrying the proximity idea a little too far, but I am sure that better and more work was done there than had that table been in the basement, or worst of all in a different building.

LABORATORY EXAMINATIONS AND WARD EXAMINATIONS

In this connection we would mention an unfortunate habit in this country of making a positive and sharp distinction between laboratory examinations and ward examinations. This undoubtedly was due originally to the inability of successful practitioners to keep abreast of the rapid development in laboratory technic. They therefore employed young men, better trained in this work than they, to do their work for them and were content to depend on a written report for their information. Unfortunately, this custom still prevails. Now in the teaching hospital the student should be taught that the examination of a patient's urine is as much a part of the examination of that patient as is the auscultation of his heart or the palpation of his abdomen, and to emphasize the unity of the examination the student should be required to do or to help to do it all himself. Good diagnoses are more often due to hints obtained by a glance than by time-consuming quantitative work. A glance at a specimen may give us information which would never be mentioned in a routine report. What should the routine ward work be for, which we ask the architect to make provision in his plans? In a small ward laboratory the student can make practically the entire urine examination including the functional tests; he can count the leukocytes and erythrocytes, and make and stain the dried preparations. But he should also be required to examine the fresh blood of each case, for in later practice this, which takes about three minutes, will save him many an hour and from many an error. He should examine the sputum of all cases, fresh and stained. A glance at the fresh sputum is often of value, and yet that the American profession has ceased to "glance" at fresh sputum is proven by our recent inability to buy paper sputum cups made of other than red card

board. What a reflection on our clinical teaching that practically the only use made of the sputum is the search for *Bacillus tuberculosis*. Of course if the student makes these examinations the laboratory should contain an efficient sterilizer for the container, glass plates and cups used. The student should examine the stools for mucus, occult blood and parasite eggs. This means suitable laboratory equipment. He should titrate the gastric contents, etc. And yet all this can be done in a small laboratory in direct connection with the wards.

Of course, there will have to be another laboratory not on the ward floor and yet in the same building for examinations requiring more elaborate equipment or special training, such as serum examinations, blood cultures, nitrogen determinations, etc. This work, so far as the student is concerned, may wait until his intern year, and yet he should follow this work on his patients more closely than by the report slip.

THE WARD LABORATORY

So much for laboratory rooms. In the ward itself, or in the corridor, there should be a corner darkened by a screen and with proper light fixtures where the examinations of the eyes, nose, throat and ears are made. A room need not be provided—that would mean too much dead space; four feet of wall is all that is necessary. The specialist in consultation should be present at these examinations, especially if they are of a patient assigned to him, and he should see the lesion described in the report.

Along the corridor of this floor there should be an illuminating box and rack for Roentgen plates of patients on that floor. The student should study these plates. Fluoroscopic examinations of his patients should if possible be made with him present, and this means that the fluoroscope should be in the same building as the patient.

On this ward floor also should be wall space for anatomical charts, etc., and a small book-case where perhaps a dozen useful books are kept. Also a case for the ward instruments—on each floor a sphygmomanometer, an electric ophthalmoscope, a perimeter, the box with tools for neurological examinations, etc. These do not require a room—better not. It does mean, however, that the architect plan the corridor connecting ward rooms a little larger than ordinary in order that, like the corridor of the modern dwelling house, it may serve also as living room. If it be urged that this contemplates more work than a student can do, we would urge to reduce the number of patients assigned him to a number such that he can actually do or help to do complete examinations and lengthen the ward walks that he may pick up more from the patients or other students.

DISCUSSION

DR. G. CANBY ROBINSON, St. Louis: I agree with everything Dr. Emerson said, particularly in regard to the routine that senior students should carry out in the examination of patients. Of course, it is necessary that these students must have the facilities necessary to carry out this work. In our hospital in St. Louis we have a laboratory attached to each ward where the students can work and have their own place. They see and do many things which would not be the ease otherwise.

DR. LOUIS B. WILSON, Rochester, Minn.: I agree heartily in the propositions put forth in this paper. It seems to me to be important that we have a close relationship between the clinical and the laboratory work. There is too great a tendency to separate these two, as there is a tendency to separate investigative from clinical work. I am glad that Dr. Emerson emphasized the necessity for this close corelationship.

THE ENTRANCE CONDITION AFTER
JANUARY 1, 1918

HARLEY E. FRENCH, M.D.

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This brief paper can claim no merit as being entertaining; unfortunately it is unable to present a great deal of definite data; it is intended to present a point of view, and to elicit discussion and the necessary data from which to draw a conclusion.

Permit me to say in starting that I am in entire sympathy with the new ideal standard for medical entrance advocated by the Council on Medical Education of the American Medical Association—the two years college standard with certain required courses. Since its inception in 1905, the School of Medicine of North Dakota has had requirements for admission somewhat higher than high school graduation. For ten years, or since 1907, it has been on the two years premedical college basis, with a course laid out for premedical students essentially the same as that outlined by the Special Committee of the Council on Medical Education, the Association of American Medical Colleges and the Association of American Universities. The chief difference between our curriculum and that of the Committee is, that we have always required a little more of modern foreign language and of some of the premedical sciences, and allowed less opportunity for election. While we have liked our own standard, I prefer for the general requirement the slightly more flexible outline suggested by the Special Committee, with which you are all familiar. I agree entirely that anything less than this standard of admission fails to give the student the necessary foundation; but while I am glad to see that some medical colleges require a higher standard, and while I advise certain students every year to complete a four years' college course before they begin the study of medicine, I should not like to see a higher standard than two years of college work become general.

The subject of this discussion is the discontinuing of the possibility of entrance conditions after January 1, 1918. Last year you will remember that this Association voted to permit certain conditions until the beginning of 1918. The Council on Medical Education has heretofore also recognized the necessity for certain conditions, but always, perhaps, with the indication that the time would soon come when they would no longer be desirable; in its report, as published in *The Journal of the American Medical Association*, August 18, 1917, page 547, pub-

lished also as a reprint and in the revised pamphlet, "Making the Right Start," the Council outlines the conditions that were permissible last fall, and indicates that first year medical students after January 1, 1918, must be admitted only without conditions. Several medical schools have already announced a policy of admitting only those who satisfy all entrance requirements in every particular. Is it desirable to allow no entrance conditions?

In favor of the policy of no entrance conditions it may be urged:

1. That the student needs every bit of the required college work to enable him to pursue his medical studies satisfactorily.
2. That, like the higher entrance requirements, it is demanded by the best interests of society.
3. That if any entrance conditions are permitted at all, there would be a tendency on the part of both administrative officers and students to abuse the privilege; or that schools cannot be trusted to administer conditions.
4. That it would be simpler; making simpler bookkeeping, reports and records, obviating no little call for the exercise of judgment on the part of enrolling officers and obviating possible conflicts in the student's program.

In favor of recognizing the necessity for continuing the well guarded entrance condition, I would urge:

1. That well prepared and promising students who are slightly deficient in the requirements do present themselves for medical entrance.
2. That the laws of many states and the requirements of state boards and medical schools demanding that the student attend four annual sessions of a recognized medical school will operate harshly on many good students unless some provision can be made for entrance conditions.
3. That there is no sound pedagogic reason why a student of suitable age and general satisfactory preparation cannot carry part, not all, of the first year of the medical curriculum at the same time that he is finishing a small part of the required premedical work; many medical schools are now so related to a College of Liberal Arts that such a mixed enrolment is possible. Or, if the medical school does not enjoy the relation to the College of Liberal Arts that makes such an enrolment possible, that there is no sound reason why the selected student may not carry the first year of medicine with a condition in a small part of the required premedical work, and be permitted to remove the condition in the following summer.
4. That well conducted summer terms or quarters in many parts of the country make it possible for the student to make his standing regular by permitting him to take either the part of the first year of medical work that he failed to carry in the one instance above, or the required premedical work that has been postponed in the other.
5. There have been so many improvements in the ideals and standards of medical education, that a school that is worthy of continued existence might well be trusted to administer entrance conditions.

When I suggested this subject for discussion or for a possible paper, I had thought that should I be asked to prepare the paper, I should send out a questionnaire to ascertain the opinions of the deans of other medical schools, and attempt to get definite figures as to the number of students that would probably be involved. When the call for the paper came, however, the time seemed so short that I decided to omit the questionnaire, and to depend on the discussion at this time to supply more complete data.

REASONS FOR CONTINUING ENTRANCE CONDITIONS

To discuss briefly from my own experience the reasons that I have given for continuing the entrance condition, and incidentally to outline the way I have been accustomed to handle certain cases in the past, I might continue as follows:

1. There are many strong and promising students who present themselves with more or less irregularity in their entrance credits. In the fall of 1917, I reported to the Council on Medical Education as first year medical matriculants eighteen students. Ten of these had survived our own premedical course in the University of North Dakota or had graduated in our own College of Liberal Arts with our medical requirements ever before them. These students were perfectly regular in every way, with total college credits varying from $64\frac{1}{2}$ semester hours to 125 semester hours and the bachelor's degree; all of the ten presented all of the required work in English, modern foreign language, and the premedical sciences. The eight others were enrolled with conditions. One had the bachelor's degree and a year of graduate work from a neighboring state university, he had sufficient credits in English and the sciences, and could be given some advanced subject credit, but he lacked part of the second year of foreign language. A second had the bachelor's degree from a standard college, and had all of the required subjects except a year of physics. A third had 134 semester hours of college work, more than enough to receive the bachelor's degree, but he had failed to satisfy the language requirements of our College of Liberal Arts; he had sufficient credits for medical entrance, except for one semester of German. A fourth presented college credits that would have admitted him to the senior year of the College of Liberal Arts, but, for unconditioned medical entrance, he lacked a second year of French. A fifth presented $70\frac{7}{8}$ semester hours with all required work except four semester hours in biology. So far I am sure all would agree that the cases are worthy, and that in every case conditioned entrance was permissible last fall. The remaining cases are nominally not quite so good. Without stopping to analyze them, I shall simply say that they represent promising students, with by far the greater part of all of the required work accomplished, who were given mixed

arts-medical enrolment as I shall explain a moment later, and attention was called to their status in the report.

Whether we count it five out of fifteen or eight out of eighteen, the point is that under the rules of last fall our proportion of conditional entrances was large. Similar analyses, all based upon our own two year college requirements, could be given for 1916, when four out of seventeen were lacking in a small part of the required work, and for every year the school has been in existence. I should suppose that $33\frac{1}{3}$ per cent. would represent the average of the conditioned matriculations in the past.

What the situation is in other schools I cannot say. A recent letter from the dean of a large state university medical school shows that had the two year entrance requirement with no conditions been enforced in his institution last fall, only 41 instead of 165 students could have been admitted, or that 75 per cent. of the present first year class in that medical school either have conditions or would have them if the entrance requirement were two years of college work as outlined by the Special Committee.

2. With state laws, regulations of state boards, and requirements of probably all complete medical schools all calling for four years of residence and work in a lawfully established and reputable medical college, to say nothing of the fifth or intern year, I consider it an undesirable and an unnecessarily difficult handicap to place on a large proportion of promising students to deny them admission until they can enter without a condition. If there were no legal demands regarding time, there would, of course, be no occasion for this discussion. It is not a sufficient answer to say that the student should have acquainted himself with medical entrance requirements and been prepared. Much of the literature of the Council of Medical Education, and the prominence given to premedical curricula in many colleges and universities are helping to make the situation better, and will continue to do so. In spite of all of this, however, many a good student does not come into contact with the literature and the announcements so familiar to us; many a student, for one reason or another, begins his college work, and, perhaps, graduates in a college that still stresses the humanities, and in which it is difficult to secure all of the desirable courses for medical entrance no matter how alert the student may be; many a student in his early years of college work has not yet decided on his vocation, nor do I consider it either necessary or wise to expect every boy as he leaves high school and enters college to have made up his mind as to what his life work shall be; many good students change their minds even after receiving their bachelor degree. If such a student lacks a great deal of the required work for medical entrance, he must, of course, spend a year or more in

preparation; he should by all means have had the first year of chemistry and of modern foreign language; but why should a student who is, in general, well prepared be denied admission, or required to wait a year, when a condition of from four to eight semester hours of college work in physics, biology, second year chemistry, or second year modern foreign language would enable him to begin his medical studies?

3 and 4. There is no valid pedagogic reason why certain conditions should not be permitted, and summer terms or quarters offer the student the opportunity to make his course regular. While I believe thoroughly in a proper sequence of courses, both in the arts and in the medical curriculum, and while I recognize the value of all of the required premedical work as a foundation for the study of medicine, I see no reason why a strong student cannot handle gross anatomy at the same time that he is studying physics or organic chemistry, or physiology while he is taking his second year of French or German; nor would the situation be materially different should he carry the first year of the medical curriculum regularly, and leave a required premedical subject in which he is deficient to be made up before the second year.

ENROLMENT OF CONDITIONED STUDENTS

Since our school of medicine is closely related to the College of Liberal Arts it has almost invariably been my practice in enrolling a so-called conditioned student to put on his card first of all the subject or subjects in which he is deficient, and then to fill out his enrollment with such part of the first year's medical curriculum as his time and schedule will permit. I enroll him, for example, in physics and gross anatomy and embryology, requiring him to omit the histology; or in second year French or German or in biology and in embryology and histology; and require him to omit the gross anatomy. I do not overload him or permit him to handle the whole first year of medicine with a premedical subject on the side, though some students might well handle such an enrolment. Sometimes, but rarely, I have enrolled such a student in the regular first year medical curriculum and allowed him to postpone a small condition, e. g., four hours of chemistry or language, until the following summer. A medical school not enjoying the close relation to the College of Liberal Arts that we do, would have to handle conditions in this latter way, if at all. We do not generally do so for several reasons: 1. It is better to make up all foundation and required work as early as possible. 2. Our summer term is short, and one cannot well make up a condition amounting to eight-semester hours. 3. The student is sometimes unable, or, at any rate, fails, to make his course regular by the beginning of the second year, and so presents obvious difficulties at that time.

The student is expected to remove the irregularity, rarely a premedical requirement with us, usually a part of the first year's medical curriculum, by work in a summer term or quarter, and in our case this usually means that he goes to some larger neighboring medical school for the summer, since the demand is not sufficient to justify us in offering summer courses in medicine. If the student does this, his work becomes regular for the second year, and if, at the close of this year, he satisfies all requirements, he is given the bachelor's degree in the combination course, and is certified to clinical schools as having completed two years of medicine. If he fails to make his course regular, and returns to us for the second year, he is enrolled in what he has failed to carry of the first year curriculum and so much of the second year's work, as his time and schedule and the prerequisites of the courses of this year will permit. In this case he cannot receive the degree in the combination course, and he is certified as having done only such part of the medical curriculum as he has actually completed; if he receives a degree at all, it is because he satisfies the requirements of the College of Liberal Arts, and this he may or may not do. A summer quarter's work may now make him eligible for junior standing in a clinical school. The student who does not make his course regular must, of necessity, take more time.

Our experience with conditioned students bears out the contention that they should be given an opportunity, and that they can do the work satisfactorily. In my present freshman class in gross anatomy, the two strongest students are men with conditions. In our present sophomore class the strongest man is one who has been regular from the start, but in the classes graduating in the combination arts-medical course in both 1917 and 1916, the strongest students and the winners of Phi Beta Kappa and of a prize for scholarship given by the local medical society were men who entered with conditions, and who made their work regular by attending summer terms or quarters in other schools between the first and second medical years. Going back to 1915, the strongest man had been regular from the start, but it might be noted, in passing, that in his first year at the university, or as an arts freshman, he did not enroll in the premedical curriculum, and that it took work in two summer terms to make his medical entrance regular, as it was, at the beginning of his third year; this fact simply illustrates that the course, or curriculum, leading to medical entrance in the briefest time, is pretty straight and narrow.

I have looked over our list of students for the last five years carefully, and it is my judgment that while the honors are fairly even, the advantage figured from any point of view is slightly but clearly in favor of those who have entered with conditions.

I should not argue from this that to have an entrance condition is a good thing in itself; I should explain the fact by saying that as a class our conditioned students have been a little older and more experienced, a little better prepared in general, though lacking in some particular, and also a little more carefully selected. An enrolling officer must use judgment in any case. We think, for example, that quality in work is quite as essential as quantity in either case, and in our catalogue we announce a plan in our effort to secure quality.

I have discussed our way of handling conditions in the past when they were permissible by the rules of this Association and of the Council to attempt to show that they can be handled without violating the principles of pedagogy. Two years of college work and all of the specified English, modern foreign language, and premedical science are undoubtedly necessary to enable the student to pursue medicine successfully; but I see no inconsistency between this principle and a policy that would allow a promising student with seventy semester hours of college work, for example, but who is short four semester hours of biology, to begin his status as a medical student, and to handle a condition as I have indicated. College physics I consider absolutely necessary for both the study and the practice of medicine, but the only early medical subject for which I should suppose it ought to be considered a pedagogical prerequisite is physiology, which is usually begun in the second semester of the first year, if not in the second year; it cannot well be urged, then, that a condition might not, at times, be permitted in physics. Without discussing any of the other subjects in a similar way, permit me to say that it seems to me that it cannot be urged that the best interests of society demand a policy of no conditions. Society is, indeed, vitally interested in the thorough preparation of medical men; it has been a realization of the needs of society that has brought about the desirable changes in medical education; but the plan I have in mind takes nothing from the student's preparation, and allows no substitutions; only when the student satisfies all requirements is he finally passed or approved.

Whether schools can be trusted longer to administer such a policy, or whether the administrative difficulties, both for the schools and the offices of central bureaus, such as that of the Council, are insuperable, I cannot say. Surely the great objection to a policy of continuing the possibility of the entrance condition must lie here. The matter seems to me so important, however, that I hope it will be given careful consideration.

NOT A PLEA FOR LOWER STANDARDS

I am sure I shall not be misunderstood as pleading for lower standards, or for the weak student who through failure in one or more subjects in his premedical course is unable to satisfy

medical entrance in the briefest possible time. In the past, when conditions were permissible by the rules of this Association and of the Council, the University of North Dakota has attempted fairly to extend its usefulness as I have indicated. It has seemed to me that a School of Medicine, favorably located, should do this. Should the Special Committee or any similar body representing the best judgment in medical education not see fit to re-establish the policy, we shall cheerfully acquiesce.

As indicated earlier in the paper, I have been unable to present definite data from the experience of other schools. It is to be hoped that the discussion will bring out this data. The questions are: Is the group of students, who are, on the whole, well prepared, but who lack in some particular, sufficiently large to merit consideration? Is it fair to them, or necessary in the effort to secure and maintain proper standards, to deny them medical matriculation, or to require them to spend another year on premedical work before they are accepted? Are such students able to pursue the study of medicine successfully? Can provision be made that will, at the same time, be fair to them, fair to those who enter with all requirements satisfied, and operable without abuse?

THE LETTER OR THE SPIRIT?

W. H. MACCRACKEN, M.D.

Secretary, Detroit College of Medicine and Surgery

If I were called on to name an occasionally useful but little appreciated animal, I think my choice would be the goat. Unlike Sidney Smith, who refused to believe in ghosts, because he had seen so many, I feel a hearty sympathy for goats, because I have been one so often. Goats are noted for their willingness, nay, eagerness, to butt in, with a view to upsetting the existing order of things; and while their efforts are not popular, they may, at times, push people out of a beaten track, to which they never quite return. I close this tribute to goats by stating that once more, I am It.

For a number of years we have been laboring to improve the quality of medical education, both in the medical schools and in the preparatory institutions, with a view to producing professional men, rather than workers at a more or less remunerative trade, known as the practice of medicine.

For a long while the principal efforts made were in the direction of improvements in equipment and teaching facilities in the medical schools, but defects in these respects have been overcome so generally that the existing schools have at least fair laboratories, reasonably well manned, and passable hospital connections for their clinical work.

The schools having been drastically purged, and treated with the necessary bitter tonics, we turned our attention to the students, discovering at once that we were trying to make doctors out of a set of illiterates, whom we declared incapable of doing the work required.

This recognized, we took them in hand and prescribed a course of forced feeding, to be increased quantitatively, as the patients became able to stand it. We have them at present on a fixed educational diet, and woe be unto them and us if they depart from it in the least degree. Almost we treat them as the Strassburg geese, the end result being congestion of the liver in the case of the goose, and frequently congestion of the ego in the case of the student. We have standardized our entrance requirements to an extent comparable to the standardizations of a certain great automobile company, and while it is true that the result of standardization to the *n*th power is the Ford car, the question arises, Who wants to be a Ford? By this I mean to imply nothing less than that in the minds of more than a few teachers of medicine standardization is in danger of being over-standardized.

We require for admission to the medical school of today that a student, besides presenting four years of rather rigidly prescribed high school work, shall offer sixty semester hours of work done in an acceptable literary college, this to include eight hours of physics, eight of biology, twelve of chemistry, six or eight of English, and eight of a foreign language. The rest of the sixty semester hours to be filled by such a conglomeration of courses as the prospective medical student may be able to get.

I wish to call your attention to the fact that we require our students to "do time" in their premedical courses, precisely as we expect other types of criminals to "do time" in the penitentiary. If a man steals a cow and we know that he is sentenced to work for two years in the broom factory of the state penal institution, we accept his expiation and never inquire whether he learned to make brooms or not. So the student who aspires to an education in medicine is sent to college, and is instructed to "do time" in the department of physics for one hundred and ninety-two hours, in the department of chemistry for two hundred and eight hours, etc. We go so far as to lay upon his physics the emasculating restriction that it must in no way repeat the course he had in that subject in high school, and we specify that chemistry shall include "organic," but that is about as far as we go, and with the exception of the foreign language we are particularly insistent that this work must be done in a literary college. Otherwise no credit can be allowed. In addition to this, we make the hard and fast rule which some of us live up to, that no student may be admitted to a school of medicine if he has any premedical conditions.

Now, I have found that the strict enforcement of these rules has worked unfortunately in two ways. One, in that it has kept out of the medical school a number of eminently desirable students, and the other, that it has admitted a number of students who have trained for their medical education as a "pork and beans" prize fighter trains for a fight, putting out the least possible effort necessary to "bring home the bacon," which in this case consists of admission to the freshman class. I shall take the liberty of referring to this again.

WHAT PREMEDICAL WORK IS MOST VALUABLE

I have recently made inquiry of a number of physicians of high standing and broad education, with a view to learning what premedical work they have found most valuable to themselves. I did not mail them a questionnaire, as I wished to secure their actual views, with some elaboration. Where possible, I interviewed them personally, with the following result:

In general, they were disposed to think that the time spent on college physics had been a dead loss, and they were practically

a unit in stating that a good course in high school physics supplies all the needs of any practitioner of medicine. They unanimously wished that they had had more and better training in chemistry of all descriptions. On biology it was difficult to secure much of an expression. They all thought it was a good thing, but there was no such definiteness of statement as that pertaining to physics and chemistry. All these men felt that no man could get too much English. The modern foreign language did not impress them as of great importance, most of them stating that any article or book worthy of reference is certain to be reprinted in English almost as soon as it appears in the language of original publication. They made a point also that very few men ever get a reading knowledge of a foreign language during the time devoted to it in college, especially if, as is frequently the case, much of the time be spent on poetry. To me a very interesting thing was that almost with one accord they advocated psychology as a subject to be recommended to every premedical student. Another point on which most of these men seemed very clear was that a graduate of a reputable college is better prepared to study medicine than any man with two years of college preparation, even though this two years include the prescribed subjects.

It may not be amiss to say at this point, that within the past year I have heard more than one prominent teacher of medicine express the opinion that the boys who formerly came to us with a good four years high school preparation, did quite as good work, and in many respects proved more satisfactory students than do those who come to us today crammed with the present premedical college courses.

In the course of my work as a medical school secretary I have made notes on many cases which have come to my notice, a few of which I take the liberty of citing.

Case A.—A student applied for admission to the freshman class of a medical school, and offered as credentials a high school course which comprised more than twenty units, and was made up to a surprising extent of first class instruction in the sciences, chemistry, physics and biology. He had received an A.B. degree from a reputable university, and had earned much of his way through college doing microscopic work, and making chemical analyses. In college, he had been advised to elect the so called "culture courses," and had done considerable work in psychology, history, English and foreign language. He was neither able to register in a medical school, nor could he secure an endorsement from his state board which would render him legally eligible to enter the freshman class. Though his knowledge of the pre-medical subjects was unquestioned, he was not permitted to take an examination in his college work, such a pro-

cedure being barred by the regulations of the state board in question. He declined to spend a year reviewing physics, chemistry, and biology, of all three of which he possessed an adequate knowledge.

Case B.—This case is cited as offering an interesting comparison with Case A. Case B was graduated with fourteen units of high school work, given in a small town school. He then entered the post graduate department of a high school in a small city, which school is an accepted member of the North Central College Association, and completed precisely eight hours of work in physics, eight in chemistry, eight in biology and eight in foreign language, thereby exactly complying with the then minimum requirement of the Association. He was granted a certificate by his state board, and was received as a freshman in a medical college, although he is illiterate, and manifestly unprepared for a professional life.

Case C.—This applicant is a graduate of a state university, had physics in high school, majored in biology, did a considerable amount of work in chemistry during his college career, was never advised to take a course in college physics, became a teacher of sciences in a high school, did good work, and at the age of twenty-nine, applied for admission to the freshman class of a medical college. He was refused admission as a regular student. His state board offered to issue him a certificate conditional on his doing one year of work in physics before he entered medical school. The medical school offered to admit him as a special student, to make subject credit while he was doing his work in physics. He declined both suggestions, feeling that he could not afford to throw away a year.

Case D.—A student applied for admission to the freshman class of a medical school, and was refused on account of a four hour deficiency in physics. The student immediately produced a letter and catalog from a prominent state university, guaranteeing him admission to the freshman class as a regular student on the credentials presented.

Case E.—A student applied for admission offering two years of work done in a reputable literary college. This included histology and bacteriology, but he was somewhat deficient in chemistry. This student in making application for admission, requested advance credit for the work in histology and bacteriology, and was very much surprised when informed that he could not even be admitted, much less receive advance credit. He immediately produced a letter from a university of ideals so lofty as to be almost invisible, promising the advance credit he asked, and explaining that arrangements could be made for securing his chemistry credit during his freshman year.

Case F.—This case is so unusual that it is difficult to believe. A student was graduated from a state university, majoring in biology, and making such credit in physics and chemistry as was required for a B.S. degree. This student afterward received an A.B. degree, and still later an M.S. degree from a university. The applicant was a teacher of sciences in the high school of a large city for several years, and has been for the past four years a teacher of assistant professorial rank in a Class A medical school. Wishing to secure the additional opportunities which a degree in medicine would afford, and being entitled to a large amount of subject credit, this person made application for admission to the freshman class, but could not secure a medical student's certificate, because the state university which conferred the Bachelor's degree was unable to state the exact number of hours devoted to physics and chemistry. This same failure on the part of the state university technically bars this person from the freshman class of the medical school in which he gives entire satisfaction as a teacher.

The above six examples of the results of strict application of the rules are only a few, but "Mony a mickle makes a muckle," and if these have come to my knowledge, as secretary of a comparatively small school, it follows that very many such cases exist throughout the country.

TRUE RELATIVE VALUE OF PRE-MEDICAL COLLEGE COURSES

The foregoing statements lead to the following questions, which I take the liberty of placing before you for consideration.

Have we estimated the required subjects of the pre-medical college course at their true relative value? Is the course in physics, which "follows," but does not repeat the high school work, and which, when all is said, is in most colleges merely a course in applied mathematics, necessary or even desirable as a pre-medical requirement?

A rather prominent teacher of physics, with whom I have recently discussed this matter, expresses himself as follows; "Your medical students do not need college physics any more than a cat needs two tails. What they do need, if anything, is a review of high school physics, somewhat expanded and modified to suit their special requirements, and this is something that few if any of the colleges in this country can offer. Most physics departments recognize this, and regard medical students as a nuisance, because their needs are so at variance with what a department of physics can give." My correspondent adds, "One third of the time usually spent on physics, would, if devoted to physico-chemistry, be of much greater value to the medical student than any year of college physics which he is likely to get."

Concerning chemistry, there are no differences of opinion, and the need for the subject requires no discussion.

The same thing is true of biology, although it is sometimes difficult for a student to secure both zoology and botany during his two year college course.

On the subject of English we are all agreed, though it is doubtful if an analysis of "Nathaniel Hawthorne's Great Stone Face," or Milton's "Paradise Lost," is the best possible training to equip a student for the reading of highly technical books, or the preparation of scholarly theses along scientific lines.

On the question of the foreign language, there need be no disagreement, particularly since we have determined that a man can have quite as good a reading knowledge of a language by being born to it, as by studying it for one hundred and twenty-eight hours in a literary college.

There seems little room for argument concerning psychology, although I believe no actual steps have been taken to establish it as a requirement.

We have been, up to the present, very insistent on our students spending a certain number of hours in each subject in the class room and laboratory of a college. As a matter of fact, is it of vital importance when or how a man acquires his knowledge of a subject, so long as he can prove that he does possess it? Many young men today are receiving better training in physics in the experimental laboratories of our industrial concerns than they can secure in the same time spent in the laboratory of a literary college. Many engineering schools allow credit for work so done. I know a man who, after a course of high school chemistry, became almost an authority on general chemistry, as the result of holding the position of assistant chemist in a large plant with a varying field of manufacturing activity.

If a candidate presents himself for examination before the science department of any recognized college, and convinces the examiners that his knowledge of the subject in which he asks credit is adequate, should not this suffice without asking the questions where, how, when and why he got his training?

The question is also suggested, would it not be wise to admit to the freshman class any student who has a Bachelor's degree from a reputable college or university, and who has majored in some one of the sciences, having had work in the other two while in high school, requiring him, should he show a shortage of hours in chemistry, to correct this deficiency during his freshman year?

Again, in case a person was graduated from college more than five years ago, with all the required subjects to his credit, but finds himself unable to secure a certified statement of the number of hours spent in each subject, should he not be accepted as a student, especially if he has engaged in scientific work, teaching or otherwise, since the time of his graduation?

My list of queries ends with one more question, to my mind not the least important. We are bound by agreement not to admit students with premedical conditions. It is certain that some of us evade our obligations in this regard. Should not a student who has successfully completed sixty semester hours of college work, but who is deficient in some of his required subjects, be admitted as a regular freshman, with one year of time allowed in which to correct his premedical deficiencies?

Should these questions be deemed worthy of discussion and answer by the Association, I would respectfully suggest that a committee be selected to place the conclusions before the Federation of State Licensing Boards. Several of these Boards have recently adopted such iron bound rules that added breadth of interpretation of our own requirements may place our schools in their bad graces. A more liberal policy on their part would, I believe, be conducive to much good.

PLEA FOR BROADENING STANDARDS

I trust I have made it clear, that this paper is a plea, not for a lowering, but for a broadening of standards, and for a more liberal and flexible interpretation of them. The point is sometimes raised that there are too many doctors already. While this is open to question, it seems to me a matter with which we have no concern. If a candidate is for any reason particularly well adapted or prepared to undertake the study of medicine, he should be given every possible assistance and encouragement, just as the obviously unfit should be deterred, even though, on paper, his preparation seems entirely adequate.

Had this paper been a sermon, my text would have been found in Second Corinthians, third chapter, sixth verse, "—not of the letter but of the spirit; for the letter killeth, but the spirit giveth life."

DISCUSSION ON PAPERS OF DRS. FRENCH AND MACCRACKEN

DR. J. M. BALDY, Philadelphia: I came for the purpose of hearing these two particular papers, and I must admit that I have a very great feeling of disappointment. It is true that all questions must come to an issue at some time. Have we not discussed this question quite sufficiently long and spent all the time that is necessary to spend on it for everybody to know everybody else's opinions? And is it not certain that there is no subject as broad as this in which everybody can get together on a common ground? I think it is.

When I began to come to these meetings about five years ago, the Council laid down a certain program of medical education which included a three years' allowance of conditions on a standard which they set, with the distinct promise that these conditions would then be discontinued. I am afraid to admit that like many of my colleagues I have been derelict in the administration of the law in my own state, cherishing the hope that

that promise would be fulfilled and that we would see an end of conditions. Now, it seems to me that at the end of that time this Association, at the suggestion of the Council, I understand, again extended the period of allowable conditions for another year. My board protested against this, and sent word to every dean that after Jan. 1, 1918, we would no longer submit to being put in the position of violating a law which they were appointed to administer. It is true that this same question was shelved in the academic colleges long before we took it up. I know of no educator who makes the special plea that the high school boy should go into college with conditions. He must make good or he has no claims whatever. It is not a consideration of the interest of the individual. It is a consideration of the best interests of the community that is to be served. That is the purpose for which we are appointed as administrators. Why should we go on pleading for something which every educator knows is long since settled and given up? I admit that my views as a state administrator may be biased in view of my legal obligations to the state. In the East we must do something, and we had long ago decided that what we would do would be to carry on our work and that we would not accept any student who came from an institution with a condition, and if he came, we would refuse to recognize the institution.

The Federation of State Boards has decided as the Council has, from year to year, as to what is best, and as this Association has drifted pretty much into the same condition, we thought that we would take up this question. The Federation has just adopted certain rules and regulations which will be enforced by every member of the Federation, thirty-eight in number. Even where the preliminary credentials are good and well administered, there has been a growing tendency, on the part of those who wish to evade this responsibility, of undermining it by the improper administration of advanced standing. This may be astounding to many of you of the higher grade schools who have not gone into the administrative work in the schools of the country.

The following regulations were adopted by the Federation of State Medical Boards on Feb. 5, 1918:

ENTRANCE STANDARDS: Two years of college grade work, in an accredited institution conducting courses in physics, chemistry, biology, English and one other modern language.

(a) The college years shall extend through two college sessions of at least thirty-two weeks each of actual instruction, amounting to not less than sixty semester hours, including final examinations, subsequent to graduation from an accredited high school.

(b) In excellence of teaching and in content the work of these college years shall be equal to the work done in the freshman and sophomore years in standard colleges and universities.

CONDITIONS: 1. No conditions of any kind shall be allowed in the preliminary requirements. In every case the original credentials or certified copies of the same shall be vised by the school accepting the applicant, and the original credentials or certified copies of the same shall be kept on file in the office of the dean, available at all times for inspection.

2. No student shall be promoted to the next higher year who has conditions or failures amounting to more than one major and one minor subject of the year just completed.

3. Any student who is obliged to repeat the work of the year just completed shall repeat all subjects taught in that year.

4. No student who has any condition at the end of his college year shall be promoted to the next higher year. Only one supplemental examination for removal of conditions will be permitted, and then only after actual work under satisfactory instruction.

5. No conditions shall be carried into the senior year.

NOTE: A major subject is approximately 100 hours. A minor subject is approximately fifty hours.

ADVANCED STANDING: 1. No student may be accepted into advanced standing except from a school on the accredited list.

2. No condition of any kind shall be allowed in the preliminary requirements in granting advanced standing. In the case of every applicant the school accepting such student must itself inspect and pass upon the original credentials.

3. In case of application for transfer from one school to another the standing of the applicant in the school from which he comes must be obtained directly from that school itself under its official seal, and must not come through the hands of the applicant.

4. No advanced standing shall be given to an applicant coming from another school having had conditions in more than one major and one minor subject; these conditions must be cleared by examination before applicant may be admitted.

5. No advanced standing whatever shall be allowed where the applicant has failed at the regular examination of the school from which he came, and where having been given a second trial he has failed the second time.

6. No reexamination on conditions shall be given by either school until the school has assured itself that actual work under instruction on all the subjects of failure has been taken by the applicant in the interval between the examination at which he originally failed and the reexamination.

These standards New York, Pennsylvania and New Jersey propose to administer. The time has come when the state boards must honestly administer the laws of their respective states, many of which were made at the behest of the Council and this Association. That is true in Pennsylvania. The Federation was unanimous as to the advisability of having a standard of its own and of administering that standard, irrespective of what the Council or this Association does.

DR. AUGUSTUS S. DOWNING, Albany, N. Y.: We will send next year to every medical school that is on our list, both registered and accredited, an application blank for registration that will set forth the conditions for registration. We have no alternative under the law. We have been very liberal. Last year we took off the list seven very excellent medical schools because they said point blank in their letters of reply to me, in trying to adjust the differences between their requirements and our requirements for matriculation, that they would admit students on conditions. And I said, "Much as I regret it, it will be my duty to recommend the rescinding of the registration of your institution." And we did it!

One of two things is true: Either the rules for admission to medical schools, the entrance requirements of the American Medical Association and of this Association, are too high, and nobody believes that, or else they are not administered properly. If they are too high, let us put them where we can get them. But we are all agreed, and have been for years, in this discussion. New York was ridiculed because for a number of years it was not willing to come up to the two years of college work requirement. We wanted to go slow. In 1917 we made it one year. The Board of Regents criticized me for not recommending two years of college work. The Council criticized me. I said, "Do not let us go too fast. Let us give them a year. Let us make it one year of college work from Jan. 1, 1917." We came here last year and found that the colleges were not requiring English. We admitted the necessity of English. Now, after Jan. 1, 1918, we have two years of college work with English and a modern foreign language, and the three sciences, a minimum of six hours per year of each. That is the minimum requirement, and it leaves open all the cultural subjects that you want to give a man. I would rather a man presented a thorough knowledge in Greek or Latin, but he must know some other language than his own. He cannot get away from English, and we are going to insist on it. A number of institutions that we have taken off our list have advised us that they would be on again next year, and I believe that they will. One went on last week because the faculty voted that after Jan. 1, 1918, they would not allow anybody to enter on conditions. That is why they were taken off last year.

The statutory requirements of New York say "no conditional admissions." We have administered conditions *ad nauseam*. It is a blight to the boy to be admitted with conditions, and it lowers the self-respect of the institution, in spite of all that has been said here yesterday and today. No one has any more sympathy than I have for the boy or man who is deserving of it, and I will strain the rigging until the canvas cracks to do something for him, but it is not his right to study medicine. The public has a right to demand that the physician should be an educated man, thoroughly and scientifically trained, and when a man comes to us lacking the necessary credentials, we tell him that we are sorry for him as an individual, but that it is our business to protect the public. Specified education and training is required of all men and women who wish to enter on the practice of medicine, and we cannot make any exception for the individual who cannot meet the requirements. New York is going to enforce the statutory requirements which are laid down in the interest of the public. Our requirements are such that university colleges of arts and sciences and colleges of arts and sciences not connected with a university are well able to meet them. And I will say to you, gentlemen, representing medical schools, that New York will not register any medical school hereafter that grants conditions. We take the word of the deans. We believe that they are honest men. We accept their statements, which must be acknowledged before a notary. That is the position of New York, and we believe that it is a position in the interests of sound medical education, for the protection of the public, even if here and there, all over the country, there is an individual who suffers because of our interest in the public.

DR. BURTON D. MYERS, Bloomington, Ind.: I think that we need to be just a bit careful in the use of the word "condition." Dr. Downing, I think, means that no one shall be admitted with less than the minimum requirements. Suppose that some institution is requiring fifteen hours of physics, and that such an institution permits men to enter with only ten hours of physics. They would be conditioned in five hours of physics, but they still have four hours more than the minimum. I think that we should say that no student shall be permitted to enter with less than this minimum entrance requirement and leave out the condition.

DR. DOWNING: Let us suppose that a man has an A.B. degree without physics and chemistry. I will ask you whether physics and chemistry and biology are fundamental to the study of medicine. If you answer "No," then you stultify everything you have done in the last five years. If you say "Yes," then, no matter what college may have granted this degree—and they have all kinds of standards—we will say right off that the man with the A.B. degree has not a fundamental education, such as is necessary for the study of medicine, and if you put him into the medical course and let him make up these fundamentals, it is perfectly assinine, after he has had a full course in anatomy, to let him make up a subject which you say is fundamental to the study of anatomy. There is no sense in it. Therefore, if you are going to admit this man with an A.B. degree who has not the fundamentals for a medical education, then you are admitting that our entrance requirements are all wrong and that these subjects are not fundamental to the study of medicine. We have fought this all out in our own medical schools. Our deans are agreed that biology is essential, that chemistry is absolutely essential, that physics is essential, and we are all agreed that a man ought to know a foreign language. When you talk about an A.B. degree let me tell you something you do not know. There are a great many institutions that grant an A.B. degree that Babcock will not accept until he knows the content of the course that led to that degree. Cornell's A.B. can be obtained without one bit of mathematics, without one bit of history. So that when a man obtains an A.B. degree from the school of liberal arts and sciences you must inquire whether he is educated broadly and fit to enter the medical school. The colleges of the country have gotten away from what we know as cultural training, making the content of the A.B. no longer what it used to be, and one is not safe in saying that because a man has an A.B. degree that he is a well-educated, all-around educated, man, because he may lack some of the fundamentals of education. You must define what the college shall be and what it shall do.

DR. N. P. COLWELL, Chicago: I am certain that Dr. Baldy and Dr. Downing have misunderstandings about the procedure in these matters. It was two or three years ago that the one year of college work was made a requirement for the Class A rating in the classification of the Council, and was also made a requirement by this Association. It was impossible to enforce that requirement when twenty-seven colleges jumped to it in one year. A student with thirty semester hours should be allowed conditions, and we fixed the date for allowing conditions until Jan. 1, 1917, but we did not promise to end them then. Then we reduced the conditions and extended them to 1918. Dr. Baldy agreed to that exten-

sion, and there is no effort being made, so far as I know, to have this Association extend the conditions after Jan. 1, 1918. The essayists voiced their own opinions, but so far as the Council is concerned, it will not extend these conditions.

As to the requirement of English: A committee appointed a year ago to draw up the requirement of these two years of preliminary college work included six semester hours of English, but without any knowledge that Dr. Downing had adopted that. So you see we are coming together closer all the time. There is no real difference between us, and there can be no difference which cannot be amicably adjusted by the various agencies. It is not going to be a hardship for any college to give this premedical work; in fact, they all give these courses now. As regards physics, I thought that in New York the student had to have both high school and college physics, but I understand that is not the case. We all have the same end in view and I do not want to see any difference arise through misunderstanding or misrepresentation.

DR. J. H. CARSTENS, Detroit, Mich.: It seems to me that a man with an A.B. degree should be considered as being a sufficiently educated man to enter on the study of medicine if that degree was granted by an accredited institution.

DR. W. O. THOMPSON, Columbus, Ohio: From the standpoint of the college of arts and sciences, as an administrative officer, I want to say this: The people who believe in the college of arts have been scared for twenty years that this college would be wiped out because it stood for certain things that represented culture. They do not think that this college has a large place in the minds of men. They are scared because to ask students to take certain prescribed subjects will terminate the functions of the liberal arts college. The law college says that two years of college work satisfies them, because physics and chemistry or electricity prepare a man as a judge to try a case as well as history does. They teach them the law. The result is that the only degree guaranteed by the universities of the country today, to which there is no significance, is the A.B. degree. It is the most meaningless degree guaranteed by the Ohio State University. It simply means four years of residence in college. An M.D. degree stands for certain things. This Association is insisting that the M.D. degree shall include certain professional training plus certain preparation for such training, and I agree with Dr. Downing that we should know that the foundation is correct. If you insist on this, the arts college becomes a prescribed course in its first two years. You limit them to certain studies, whereas they have gone on the elective idea which prevailed in this country for a long time. Then, when you ask for a certain amount in a given subject, they begin to wonder whether that will fit in with the schedule of other requirements laid down by other agencies which are not in harmony. I want to call your attention to this situation because we are very apt to misunderstand each other. An A.B. degree today is worthless. I have one, but I do not say anything about it. I do not "give a rip" for the degree. It has no significance, but the M.D. degree has significance. We know what engineering degrees, electrical degrees, science degrees, agricultural degrees, veterinary degrees stand for, but the A.B. means nothing. There was a time when the A.B. degree

was the standard of educational culture, but that day is past. I believe that one of these days we will give the degree at the end of the sophomore year, because there is more content by the end of the sophomore year now than there was in the A.B. fifty years ago. All our professional work may well start at the end of the sophomore year. The arts college will become a prescribed course, and the men who take the A.B. degree will not have any particular object in life. The men who will do things will not want that degree.

DR. H. E. FRENCH: I know that no conditions will be allowed after Jan. 1, 1918, but I merely wanted to raise the point whether we are ready for such action.

THE PROBLEM OF STUDENT WORK; LOAN FUNDS

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During the past two years, we, at the University of Colorado, have been somewhat concerned over some of the problems presented by the medical student who must be in some measure self-supporting. It seems possible that certain aspects of these problems deserve more widespread attention than seems to have been given them.

PROBLEM OF SELF-SUPPORT

The problem of self maintenance is, of course, not one peculiar to the student in medicine; it is being met by hundreds of men and women in all departments of education. The nature of the medical course, however, introduces certain difficulties not so evident in other schools. Among these the length of time, with its attendant financial drain, incident to thorough preparation for medical practice or research is important. The necessarily heavy and, at times, over-crowded curriculum materially limits the amount of time available outside regularly scheduled exercises, while lecture, laboratory and clinic have commonly a much more direct bearing on the student's future efficiency than have courses in arts and science. Indeed it may occasionally happen that failure to attend even a very few instruction periods may seriously impair the student's ability to deal with the condition then under discussion for many years in the future. Further, the scope of medicine is such and its ramifications so diversified that the student who does not find time and learn inclination for collateral reading during his residence in medical school remains, save in the unusual case, seriously handicapped for life.

Certain kinds of work seem more dangerous than others and it is, perhaps, a paradox that work in hospitals, to which the student most naturally turns, and for which his training best fits him, should be found most disturbing to his orderly progress, unless performed on very well organized services in which especial attention is paid to sound teaching. The plastic state of the medical student, his eagerness to learn and his desire to appear versed in his subject, combine with his, as yet, immature judgment and discrimination to render him an easy victim to those mannerisms of conduct and treatment, those short cuts to diagnosis and those spectacular procedures with which we are all familiar. This would be less serious did it not lead many times to a certain distrust and disdain of the slower, more meth-

odical and accurate process of thought and action which must serve as foundation for any brilliance he may later acquire. The lengths to which this perversion of normal process may reach may not rarely transform the promising student into an indifferent or even dangerous graduate.

These peculiar difficulties are not shared by other forms of work but diversion of energy and division of interest may produce quite as serious a diminution of his future efficiency. Yet, it is manifestly impossible to debar a student from medical or any other school merely because he must be partly or wholly self-supporting. The war, which activates every problem which it touches, reaches here too. If the need is for more and better trained graduates, here is our hindrance to the end.

DATA FROM FORTY-SIX COLLEGES

In an attempt to learn the experience of other schools in dealing with this problem a questionnaire was sent to each of the 70 Class A colleges in the United States. Ten of these teach only the first two years, and to these the problem is naturally less troublesome, since the financial drain on the student is cumulative through the third and fourth years. Fifty-six useful replies were received, forty-six of them from colleges giving four years.

Replying to the question "Do you permit students to serve for compensation (board, room, money, etc.), in hospitals not under the control of the school?" nine schools replied in the negative. Of the remaining forty-seven in which such work is permitted, eight exercise some supervision as to the character of the work and time spent, either by requiring petitions for permission to engage in such work, or by investigating its character and scope. Thirty-nine schools have no rules on the subject and do not concern themselves with extra-school activities, although four do not consider such work advisable.

Of the replies to Question 2, "If not permitted do you believe that such deprivation works hardship on needy students?" four of those not permitting such work replied "no," though one noted the need for more scholarships, three were non-committal, and two thought such hardship possible but not serious. Of the schools permitting indiscriminate hospital work fifteen replied that a ruling against it would work hardship.

In the answers to Question 3, "If permitted, do you find that such work interferes materially with the quality of the students' school work?" there was more uniformity. Twenty-seven answered "yes" in degrees varying from "greatly" to "in some cases," while Michigan found in one investigation that three-fourths of its failures were among students doing outside work. Nine schools recorded a negative answer.

All who replied to Question 4, "If permitted, do you require that such students maintain any specified average of scholarship?" require no more than the stated passing mark.

A fifth question, "Does your school attempt to control in any way the student's work, for compensation, other than in hospitals?" brought affirmative answers from nine schools, in all of whom such control is exercised by discouraging such work, or by supervision of the student's scholarship. Thirty-eight answered in the negative, of whom several considered such work emphatically beyond the proper concern of the school.

From these replies it would seem fair to conclude that a significant concensus of opinion exists: first, that outside work of any sort does not interfere with the student's preparation in medicine; second, that deprivation of such work does work hardship on the needy student, and third, that it is, however, beyond the rights of the school to dictate his activities outside of school hours, save as they are demonstrably reflected in his scholarship record. It is an interesting and perhaps significant fact that the schools which have made some attempt to control student work are those of small or at least moderate enrolment, whose students are more often individual rather than mass problems.

EFFECT ON THE STUDENT

Now, it is axiomatic that our endeavor should be to make of our graduates broadly educated men, who have not only mastered the fundamentals of medicine but who are equipped by a steady habit of collateral reading, independent thought, and original investigation, to meet the problems of practice and to further advance the science of medicine. Yet, it would seem that a little reflection should suffice to convince us that this endeavor must be frustrated many times, if the student on whom it is expended be under the necessity of spending in remunerative work, many of the hours not definitely scheduled by an exacting curriculum. It may be argued that hospital work is an exception, that he will "pick up" enough there to offset the loss in reading and reflection. This I believe to be a fallacy, at least, unless he be employed in a well conducted teaching hospital, for the very repetition of the same duties and the lack of coordinated teaching applied to them which make him economically useful to the hospital, militate directly against instruction value. Service in an uncontrolled hospital may be and often is a direct cause of deterioration in the student, tempting him to habits of "cock-sureness" and superficiality, and limiting his interests in medicine as a whole, greatly to the detriment of well rounded teaching. Further, we must not forget the teaching of physiology regarding fatigue phenomena, nor neglect to apply to our students the knowledge we so freely urge on our employers of labor. The

student who has spent his evenings doing dressings, his mornings doing laboratory work, and has, perhaps, given a midnight anesthetic, can scarcely be expected to be at his best in class or clinic.

The student's aspect of the case offers no less difficulty, and I suspect that the many failures to answer Questions 2 and 3, were occasioned by unwillingness to face the dilemma thereby created. The boy with slight resources, who wishes to study medicine, has theoretically and should have actually precisely as fair an opportunity to reach his goal as his well-to-do fellow, if both can meet requirements in other respects.

Under present conditions this cannot be the case, however, and he soon finds that he must meet the situation in one of three ways. These, in the order of frequency of adoption, are:

First, to read only so much medicine as may be necessary to learn his fundamentals. Second, to sacrifice time needed for sleep and recreation to the reading which he finds his well-financed fellow has done lightly, or third, he may, if he can find someone to finance him, relieve the situation by borrowing to meet his needs. Occasionally a boy of specialized ability in some line of work may earn enough in the summer to finance his school year, but this is rarely the case. It is likewise unusual that the boy needing help can find a private source from which to borrow in a measure to meet his need, and it is only the occasional man of excellent mind who can support himself, keep up his fundamental school work and do more than a trifling amount of collateral reading or study before his fourth year is reached. The great majority of self-supporting students are accordingly forced, many of them most unwillingly, into the first class, and having assumed the double burden go forward with the handicap.

In the case of the boy who under these circumstances makes a bare passing mark or falls below here and there, the problem is relatively simple. Obviously, if he can know no more than 70 per cent. of medicine, his proper course, economically, is to change his profession or to find a means of financing himself which will permit him to give his whole attention to the subject, even at the cost of leaving school for a few years. The boy whose marks under the load of remunerative work, hover at 75 per cent. to a possible 80 per cent., but rise abruptly to the 90 per cent. when the load is for a time removed, presents a more complex problem. Have we the right to graduate 75 per cent. physicians when we might graduate 90 per cent. ones? Are we on sound economic grounds if we do?

It is exceedingly difficult even if justifiable to tell this boy that he must drop his work because of low marks. He was allowed to enter school unwarned of the amount of time outside the catalogued curriculum necessary to high class work, nor was any inquiry made as to his finances beyond his ability to

pay tuition and laboratory fees. It is easy to argue that this is his concern and that his school has no obligation in the matter. As an abstract proposition this may be true, but practically, it would seem sound economy to add 15 per cent. to the lifetime efficiency of any student, especially one who is in one of his two last years and has proved his fitness for medicine.

SCHOLARSHIPS AND LOAN FUNDS

The solution of these problems is not difficult, but like the solution of so many teaching problems, requires available funds. It is to be found, I am sure, in the creation of adequate scholarships and loan funds from which such students may be aided. The 1917 report of the Council showed that only 38 of our 96 medical schools had scholarships, the average number per school, exclusive of two schools having many scholarships each, being less than five, while 13 of these schools and 10 additional ones reported loan funds, leaving just half of our medical schools unprovided with any means of aiding the needy student. The total amounts available under these funds is important but unfortunately does not appear. Twenty-seven Class A schools have no such funds.

The details of the administration of funds are beyond the scope of this paper, but it might well be emphasized that if loans are to accomplish their greatest good a scholarship clause should be included, and the recipient should understand that his grant is made not solely from humanitarian motives, but to enable him to do better work and become a more creditable product of his school than would otherwise be possible.

At the University of Colorado a start has been made by the adoption of a rule that students will not be permitted to engage in remunerative hospital work except on written approval, failure to maintain a satisfactory scholarship and attendance record being sufficient reason for requiring such work to be dropped, and by the creation of a loan fund from which eleven students are now being aided. The rules governing this fund require that the trustees shall be agreed as to the scholarship and general fitness of the applicant, and aid will not be continued for any student who cannot show improved scholarship resulting from it.

In conclusion I wish to submit that the student who is well fitted by training and temperament for the practice of medicine may not seldom find himself in a stronger position economically after graduation if he has borrowed money and devoted himself intensively to his medical course, than if his attention has been divided between school and remunerative work. If this be true then the need and duty of making some provision for the aid of these men will engage our attention and energy, especially in this time of national stress.

THE TEACHING OF MEDICINE—A RETROSPECT AND A FORECAST

J. VAN DE ERVE, M.D.

Associate Dean, Marquette University, School of Medicine

Today is the outgrowth of yesterday and the prophecy and promise of tomorrow. The evolutionary processes may be so accelerated at times that they rise to the proportion of a revolution, as actually has been the case in the last twelve years in medical education; but always *that which is and is to be* comes in large measure out of *that which was*. Carlyle's phrase, "The present is the living sum total of the past," and a very similar saying of Johnson's, "The future is purchased by the present," are thought provoking and make wise an unbiased scrutiny of the old to prepare and plan for the new regime.

The genesis of every developmental movement is almost inevitably crude. Form and figure, refinement and ripening, maturity and mastery, imply age and aging. Consummately foolish to sneer at beginning raw and rough. "Look unto the rock whence ye are hewn and the hole of the pit whence ye are digged." Therefore, neither the man who uncompromisedly condemns the medical education of the past nor he who unqualifiedly commends its every feature has the true historic perspective.

Conservation of that which in days gone by has shown itself to be worthy of further development and a boldly aggressive spirit that does not linger long on the confines of past or present achievement but blazes fresh trails through unexplored territory—*that* is the perennially scientific attitude.

Three or four hard-headed facts the immediate past has contributed to the educational vision of the future.

First. A school of medicine is not built around its instructors. By that I mean that advantages and emoluments of one sort or another accruing to the teaching force are a very secondary consideration—in terms of filthy lucre and reflex wholly indefensible, and today by an overwhelming majority of institutions unceremoniously eliminated from their contracts; in the matter of personal medical development altogether warranted and even invitingly urged to secure ambitious and capable men, but still decidedly subsidiary to its main purpose, which, to put it in a half dozen words, is the preparation of men medically to serve the public.

Second—The student, too, is not the primal consideration in establishing and conducting a medical school. We are just beginning to learn that a medical school is a public institution and,

therefore, a public trust, subject to state regulation and let it be emphasized, entitled to state protection and likewise to state support. The humanitarian aspects, its relation to the social and industrial order ought to be the dominant features, its moving spirit. The life and life work of one man as the founder or a few hundred men in medical training cannot weigh up against the staggering medical needs of the great public. The student's career must wait for the community's call and his interests be subservient to the community's need. For a man does not on graduation, as commonly stated, enter upon *private practice* but into *public service*.

A third fact, which only our far-seeing educators and philanthropists are accenting, but one which will soon form an integral part of medicine, is, that in the nature of the case there can be no such institution as a private hospital, and, by the same token, logically, no private patients. By that I mean that no hospital has done well its duty if its service is limited to its patients, it makes no difference whether they are charity or pay. The hospital has not begun to answer its higher purpose when it still clings to the outwork idea that all it is expected to do is to nurse back to health the man who for the time being happens to be ill. "No man liveth to himself or dieth to himself." (That, by the way, is the Good Book's guarantee for posting every man when he dies.)

In the larger and more insistant and dominate interests of communal well being that patient with proper consideration for his personal concern must be used with the thought uppermost to seek out the etiological factors and lay bare the progress and regress of his illness, both to cure him and even more to protect the community from its possible spread or recurrence—directly and immediately through measures available to the attending physician and somewhat remotely in the training of medical students to act as capable practitioners in the next decade. Many voices have been lifted in earnest emphasis to secure this consummation devoutly to be wished. One of the best expressions given this idea is found in an address delivered by Dr. W. F. R. Phillips on "The Relation of the Medical School to the Community," especially pp. 9 and 11 of a reprint from the Southern Medical Journal, July, 1917.

Fourth—It is tragically clear to all of us here that the medical profession along with every other branch that enters into army or navy service in the great war was utterly unprepared to take up the large amount of additional work suddenly thrown upon it. We ought to have foreseen the difficulty and certainly after the war began we ought to have been able to gather ourselves as a medical profession together far more effectively than has been done. We have no definite, well-outlined policy of procedure

almost a year after war was declared. If the dearth of medical men is pronounced across the seas and is beginning to be felt even in our own country the continuous session of the medical school will help matters only temporarily. We cannot expect, year by year, to get a larger crop of apples unless we mulch the roots of the tree. We must get at the roots of the difficulty and conserve and increase our supply from the premedical and high school years.

The history of medical education in the United States divides itself like Ancient Gaul into three parts—ancient, stretching through the colonial days up to the Revolution; medieval, from the Revolution to 1904; and modern from 1904 to the present time.

The character of medical teaching cuts a close parallel with these chronologic divisions. Almost coextensive, at least prevailingly so, with the ancient medicine was the first stage of pedagogic development—the preceptorship, comparable to the apprenticeship in the trade. A young man who would study medicine indentured himself to a physician nearby, at first served as his laboratory “diener” and general factotum, washed his laboratory dishes, compounded his prescriptions, curried his horse, carried his bag and waited outside the door; later, he would be permitted to prepare the patient or even bleed him, pull his teeth or cauterize the wound; bye and bye, when his apprenticeship was near closing, he would make the doctor’s night calls and soon thereafter set up for himself.

The second, the medieval epoch, began with that trio of historic worthies, Drs. Shippen, Morgan, Bond. The figure of Benjamin Franklin looms large in the background and that of Benjamin Rush, only a few years after, steps prominently into the foreground. Dr. Bond’s classic discourse, arguing for the coupling of bedside clinic with didactic teaching, should be emblazoned in letters of gold over the portals of every medical school operating at the present time. All the essentials of medical training are embodied in that comprehensive plan—the medical school as a part of the university and intimately connected for teaching purposes with a hospital. What more in the main are we asking today? What an auspicious beginning for medical education in the United States. Alas! alas! it did not occupy this high level for long. The scene shifts, the curtain rises, enter arm and arm the dogmatist with his authoritative, cocksure cannon and the capitalist minting into money human ills, plunging medical education into darkness of the middle ages. Now by mitosis, now by amitosis, anon by the dubious method of spontaneous generation, numerous medical colleges, far removed from university connection and wholly innocent of hospital affiliation, sprang up over night and began grinding the medical grist at so much per sack.

The third era began in 1907. Into the melting pot of colonial medicine only a few elements had been thrown and the pot par-

boiled merrily on, making little commotion; but at the close of the medieval period so many unknowns were cast into the crucible that every sensible educator looked for an early explosion. Every state in the Union threw in its educational dirt as well as its diamonds and the heterogeneous mass, from 160 odd open medical college doors (one third of the world's supply for one fifteenth of its population) was swept into the sputtering contents until it became a seething cauldron of witch-day fame. The destroying angel in 1904 first sounded his trumpet and a third part of the medical schools were killed "by the fire and by the smoke, and by the brimstone which issued out of the lion's mouth," roaring up and down the land seeking whom he might devour.

Since then we have made strides with seven leagued boots. We have done so by harking back to Bond's famous classic-cooperative effort of bedside teaching with lecture and laboratory instruction—much improved to be sure, manifoldly since his day in diagnostic and remedial power, but on lines projected by this prodigious progenitor of medical educational ideals. In the earlier history of our land (persisting, however, sporadically almost to the close of the mediaeval period) a medical student actually leaned over the patient with his preceptor and learned to differentiate diseases empirically; in the didactic days, he listened like the famous phonograph dog to "his master's voice" and was taught to recognize and classify human ills scholastically by rote and rule; today, and more so, tomorrow, the medic is guided again to the patient by competent hands and keen eyes and ears, made keener and vastly more competent by laboratory methods and modern instruments, articulating and interpreting phenomena noted at the bedside and connoting them with the findings of biochemistry and biophysics and animal experimentation in the schoolroom.

1. In the matter of equipment, the physical plant required, to provide a medical education commensurate with the ills of today and preventing, and, inasmuch as in us lies, aborting the diseases of tomorrow, Dr. Bond's inclusive scheme is still the ideal one, only enormously expanded, enriched and enlarged—particularly on the laboratory side. But we have not gone a step beyond and in our very best schools only distantly approximate the personal attention given the individual student in hospital and home in Bond's days.

Changed conditions in the growth and distribution of our population and changing medical pedagogics are, in my judgment, clearly pointing the way to a reconstruction of equipment and remodeling of our medical schoolbuildings. In the generation immediately preceding the opening of the present century the remarkably rapid settlement of the Middle West and the inpouring of thousands of immigrants from across the seas, the northern

woods and western prairies and later the sunny southland called loudly and insistantly for doctors to serve the cities and towns and rural communities, built and settled frequently in a single month. In response, medical schools multiplied with corresponding celerity and turned out doctors on the wholesale plan. Laboratories were too costly and their instruction too time consuming. The lecturer and demonstrator, the quiz master and quiz compend, the didactic method prevailed. The fanfare and flourish of amphitheater clinics for classes from 100 to 500 applauding students had their inning. All may not agree with me but I believe that the amphitheater is doomed and even the lecture room and class laboratory are passing.

At Marquette we have concentrated all the didactic clinical work in the third year and the fourth year is devoted entirely to ward walks, laboratory diagnosis, history taking and a vast amount of clinical work under competent direction at the County Hospital where the seniors serve the entire year as externs. We do not want to appear bumptious in the least, nor do we feel that we are big enough to set the pace for other schools, but it certainly is working out admirably in our school—the elimination of didactic work in the senior year. Men in the educational and the medical profession, whose names are household words, agree with this plan. “Think of the saving of time,” says Osler, “If the lecture list was snipped in half, or limited to a few subjects such as physiology and pathology and if it were an offense for a senior student to be seen in a lecture room. The lecture has its value—a precious one from some lips, but its day has gone,” and, let us hasten to append, with the lecture *pari passu* of course goes the lecture room. The only large-sized rooms needed in a medical school, will be a gymnasium and a dispensary receiving room and a library.

John Locke’s primary pedagogic cannon is to “arouse interest,” to which we should add *hold it*. If skilled in public address you can arouse a student’s interest in a class lecture; but to hold it and intensify it you must deal with him personally. It is hand-picked fruit that counts and keeps. That takes time and in my opinion it takes room—not more room for the total number, but more room for the individual student—ideally a room for each student, his private work shop from the time he matriculates until he graduates, stocked with all the usual student’s apparatus for practical work in anatomy, chemistry, physiology, pathology, bacteriology, laboratory diagnosis, etc. A third room for each two students common to both, to do such work as one cannot well do alone . . . and all these ranged round within easy access of professors’ rooms. A teaching hospital adjoining, with a large dispensary on the street level completes the picture—a large state or municipal teaching hospital, maintained by general taxation,

as a part of medical school having as its threefold object, first, the caring for the sick: second the making of ample provision for medical instruction and research; and third, the highest constructive preventive work in conserving the health of the community.

2. The character of the preparation demanded of the student for entrance and later has been altering even more than the equipment. Years ago no questions were asked; later an uncertain amount, and very varying, of preliminary training were demanded. We are now carefully sifting the aspiring entrants to feed the medical schools with the finest of the wheat only.

First of all we should insist on a physical test. The duties are so onerous, the tasks so arduous, the demands on physique, mentality and morality so uncommonly severe, that only the sound in morals, the sound in mind and the sound in body can stand the strain. For this reason it would be wise hereafter to ask the applicant to submit, as Minnesota is doing (you will recall a paper by Dr. Beard on this subject last year), to a physical examination as well as a mental and moral test, and warn him away if physically unfit. In the examination for entrance to the medical service of the Army and Navy 20 per cent are rejected for physical reasons, and, not even war time excepted, the stress and strain of that service do not begin to equal that of the general practitioner.

The increasing ravages wrought by the indiscriminate and uncontrolled college athletics directed and managed by the hero worshipper rather than the hygienist call for concerted action on the part of the medical school, at least on behalf of its own students to teach them the distinction between doing and overdoing, and save them from the football kidney and the athletic heart, so ably investigated and written about by Albu in Berlin and Bardeen of Madison.

Second, the mental test for starting a medical course is receiving a good deal of attention just now. The tremendous pressure under which both student and teacher must work these days, the high intellectual level a student must have reached before he can understandingly enter on the study of medicine, necessitate deeper and wider preparation than heretofore. There must be what Dr. Babcock calls "Science-mindedness." To follow with some degree of discrimination the new literature in immunity, metabolism, hydrogen-ion concentration, vitamins, etc., compels, if we do not care to run the risk of losing our students in the treacherous paths of labyrinthian nomenclature, a preparation of not less than two college years devoted to the sciences fundamental to medicine and the mental disciplinary subjects intended to bring a maturity of judgment and the scientific outlook of which Dr. Babcock has written.

I do not think, by the way, that we will for a long time to come demand more than two years for college entrance and in order that our students may not begin their life work too far on in age it would be well to take a year out of their grade and high school preparation, which could be done without sacrifice of any kind.

To ascertain a student's preparation it is perfectly clear that an array of high school and college credits does not tell the whole story, that quality of subject-matter and even grades secured are far more vital than quantity, that in justice to all interests involved it is sound pedagogic wisdom to permit departure from the conventional academic range of entrance requirements, barring a few exceptions, such as chemistry, physics, biology, on which there is specific and universal agreement among secondary and higher schools of learning. It is agreed on all hands, I feel sure, that an examination by the interested parties of the medical school may become the open sesame to the robber's den of forty thieves luring the lame lambs to their ultimate destruction after fleecing them of all the coin in the realm and looting the dear public of its educational jewels in the pedagogic setting of high standards by giving what we call an "equivalent examination." This "equivalent examination" is defined by Flexner as a "device that concedes the necessity of a standard which it forthwith proceeds to evade by the most ingenious and ingenuous methods."

The state, whose function it is to regulate the preparation for and the practice of medicine, should appoint a competent officer, not connected with any medical school, who will sympathetically, but rigidly enforce entrance requirements. Honesty and a measure of educational discipline are the primary essentials in the make-up of such an examiner.

What really, aside from a certain definite scientific content, do we look for in a student who wants to enter the medical school by way of mental qualifications? I cannot refrain from quoting an excellent definition of education given by a man who has spent a lifetime in educational circles, laid down in an address read at the annual meeting of college presidents of Wisconsin by Rev. C. B. Moulinier, S. J., on "The Law of Supply and Demand in Education," wherein he defines education as a science, an art and a method. A science, inasmuch as it has axioms and principles for a foundation, experimental facts and reasoned truths worked out into a body of organized knowledge for its inherited and growing corpus doctrin. An art, inasmuch as it has something to do, both useful and beautiful and the principles, precepts and rules by which to accomplish its task. A method, inasmuch again there are principles, order and sequence in all that it does right and well.

This is thought that is commonplace to us all. It is relevant to our purpose, however, to particularize a bit on what education has to do as an art. (1) It has to impart true knowledge—the

tested truths of the past and present, as the meaty grain winnowed from the straw and chaff of error developed in its growing—the seed-thought that will grow into the hundred-fold harvest of the summer and autumn of life; (2) it has to develop power—of observation, accurate and sure; of judgment, cautious and reserved; of reasoning, keen and correct; of imagination, clear and picturesque; of the esthetic sense, healthy and refined; of expression, forceful and original; (3) it has to strengthen character by instilling principles of correct ethics, methods of personal and independent study, habits of individual and responsible toil.

This definition of education applies to preparation for the study of medicine as it does for entering on any other university course. We must get away from the stultifying influences of Germany in this regard, patterning after which, because the “Made in Germany” legend was everywhere in evidence, we have come to look on education from the viewpoint of units. So many units were equivalent to a college course, so many additional units justified a Ph.D. degree. Even a Milwaukee paper sees Germany’s influence in education, in an editorial, “Education and the War,” saying: “Never again will we take things from Berlin without scrutiny. Education, a comparatively stable thing, is undergoing a change along with the rest of our institutions. Tomorrow will see sweeping improvements. The time will come, is fast coming, when we shall consider ability to think clearly, precisely and sanely of equal or greater importance than mere acquisition of knowledge. A man who can think, who can use the facts and information he has, will be considered educated. All others, however great may be their useless fund of knowledge, will be held imperfect, mentally deformed. An educational institution will then be a hothouse where innate ability may be brought to a more speedy fruition than would be possible in a cold world. The world will seek to develop thinkers rather than fact-crammed plodders.”

Third, the moral test has been conspicuous by its absence, but in view of some statements made on the floor today and yesterday by some of our state board men, and in view of the definition of education just given, which includes the development of character, certainly this test cannot be neglected and is of the utmost importance.

In the training of the individual student should enter in some measure the character of his contemplated location. Flexner is of the opinion that since students intend largely to practice medicine in their own states local conditions are best heeded if arrangements are made to provide the requisite facilities within each of the characteristic state groups. New Orleans would emphasize tropical medicine, Pittsburgh occupational diseases, etc.

If the colleges of agriculture, that is, that of Wisconsin, develops seeds especially adapted to Wisconsin, soil and climate—No. 7 corn for southern Wisconsin, Golden Glow for the central half, No. 8 for the northern part; has pedigreed wheat, barley, rye, buckwheat, etc., why not prepare some of our doctors for conditions peculiar to certain state groups—some for contract practice, some for public health and sanitation, some to answer industrial medical needs, some for work in the reconstruction camps of the war, the maimed, halt and blind?

Limiting the number of students in any given school is gaining ground, and some of the larger institutions have already published the limiting number. It is a self-protective measure on the part of the school.

The migration of students, a subject about which Dean Lyon has written so acceptably, uncommon as it is in this country, except among the discards and failures looking for lines of least resistance, ought to be encouraged.

3. Let us turn our attention for a moment to the teaching force, the nucleus of the educational cell—far more important in the making and marring of a medical school or any other school than equipment or student body or course of study offered. In grading medical schools so far only the number of full-time men count, the equipment bulks disproportionately large, the entrance requirements and curricula fill the zest of the inquiry. Some day the grading will be done not by the number but by the character of the faculty and use it as the biggest factor in determining the school's efficiency in response to public needs.

Yes, I know that the enthusiasm, devotion and intellectual standing of a faculty cannot altogether offset, especially in a medical school, lack of necessary equipment and buildings. I grant you these latter are indispensable, but ultimately the success of any school lies in the spirit and consecration of its teaching staff as the essential, inherently vital and fundamental unit of its efficiency, and in so judging it is not the university degree nor the years spent in the laboratories of the master but the teaching power, the teaching capacity, coupled with a love of research on the part of the faculty members as individuals and the fine team work they do that rise far and way above all other considerations as the determining forces in molding the character of future doctors and giving color and tone, strength and standing to the institution they create and develop.

In the choice of men to fill these high places two extreme types of instructors will be avoided—in a felicitous phrase borrowed from Osler the "metallic and the mullusoid"—on the one hand the harsh, stern, repelling, heartless brute who dwells with fiendish glee on the smallest mistakes a student makes and places every new matriculant in the category of a hopeless idiot; and,

on the other hand, the teacher without a spinal column, the invertebrate mollusc, so soft and slushy that he never conditions or fails a man, and so sensitive to the good will and favor and, perhaps, future referred work of the student with whom he immediately deals, that he forgets, until too late, the more remote but certain and merciless condemnation of a helpless and innocent public on whom he foists a physician utterly unprepared to take human life in his hands.

I have already called attention to the fact that the relation of the professor to the pupil must be an individual one—one of companionship, not cocksure dogmatism, walking on a level—the instructor, perforce, always a little ahead. In the building scheme outlined before, the close proximity of teacher and student will permit the former once or twice a day to make his leisurely rounds, directing, encouraging, inspecting each student as he labors in his own workshop, his quizzing disguised in conversational questioning (a sort of scientific Socratic dialogue) demonstrating deftly as the need arises, supplementing from his own rich experience, illuminating the dark and smoothing the rough places and ever accessible across the hallway from the student's room for a conference about the work in his department.

Instruction and examination of the student must progress hand in hand, day by day, replacing the fatal Chinese method of education, having as its sole aim the passing of the examination, by the Greek ideal that knowledge, to be productive, must be disinterested and not constantly clouded with a test of results.

The relation of a medical faculty does not begin or end with a medical student. Its members will increasingly become to the rest of the profession and to the public the leaders in an aggressive and experimental idealism and the sustained interest in public health instruction, and as an exigency of the day, the teaching of military hygiene. The establishment of graduate schools of health, the use of the newspaper in writing articles for popular consumption on such topics, for example, as "Disease and Its Prevention," which appeared in the *Minneapolis Journal*, open a large field of usefulness.

The full-time clinical instructor is just as certain to be a *sina qua non* of the future medical teaching staff as the first two year men are at the present time. And, whatever they may be at first, eventually, in common justice, the salaries of clinical full-time men will be determined, as is now the case with laboratory teachers, on purely academic grounds, taking cognizance of productive effort, of teaching capacity, expressive power, sympathetic leadership, optimistic outlook for the willing workers and merciless exclusion of the shallow shirkers among the students.

Let us address ourselves briefly to the curriculum—the menu of the mental pabulum offered the student. "Well-defined stan-

dards," says Dr. E. E. Brown, U. S. Commissioner of Education, "are at bottom the permanent need of scholastic honesty."

In comparing curricula, past and present, we are amazed at two things—the inadequate number and character of courses demanded in school years gone by, and the impossible number of hours scheduled and even more impossible number of subjects of ever-increasing complexity and mind-burdening terminology listed today. Add to this "Rabelaisen Onomatomania" the "excessive formalism," to use Lowell's sentence, "in maintaining high standards," and we need not be prophets nor the sons of prophets to foresee a return to a simple but liberal minimum of essentials. The titanic tests of memory now exacted will be replaced with a colossal effort to train the student to do a lot of independent thinking. To do this we must give the student more time out of his class room for library and study.

In the matter of curricular content, the correlation and sequence of courses, and the tender of electives deserve discussion. The chasm that yawns between the first and the last two years must be bridged. At Marquette, if you will allow another reference to my own school, we are giving a course in anatomic and neurologic physiology in the first quarter of the third year just before the students start their clinical neurology, and it is proving an excellent move in the interests of co-ordination of courses. A uniform curriculum is simply like that in the Puritan schools, one primer, one catechism and one rod for all the children. It reminds one of the French physician who, when he entered the hospital one morning with a brown taste in his mouth, ordered, with a wave of his left hand, a cathartic for all on that side of the hospital, and, with a wave of his right hand, an emetic for all on that side of the ward. To relieve the monotony, prevent the paralysis of individuality, flexibility, elasticity and buoyancy in the otherwise unvarying routine, a certain range of liberty to choose both instructors and subjects must be permitted.

In the last decade insistent voices have been raised to include in the curriculum courses on preventive medicine. So far the goal of medical education and practice has been, summed up in two words, *diagnosis* and *treatment*, and on these have converged and from these have emerged practically all the efforts to train men to deal with disease, not its elimination, but its alleviation.

The old maxim, "An ounce of prevention is worth a pound of cure," is waking from its long Rip Van Winkle sleep. The people are daily talking of it; universities are making the conservation of the peoples' health and the prevention of disease a specific course offered as a big part of the curricula in their medical schools, and the whole medical fraternity is lending the propaganda willing ear and fluent tongue.

It may take fewer doctors proportionately than now. If so, the heroic sacrifices of which the profession is capable, and has so often evidenced, will weed out from its ranks the superfluous number. I do not think it will mean a reduction in numbers; it will mean a somewhat different type of doctor.

The physician will again, as of yore, become the preceptor, not of a likely young fellow who wants to inherit his cloak and case and clientele, but the health teacher of the community, listening not to be called by the ill, but calling the ill to listen, and calling, without being called, the well to harken and heed the laws of health; to produce and administer antivaccines, or, if too late for these, antitoxins; to scatter with lavish hands the seeds of sanitary information, disseminate freely the knowledge of drink and food values, protect the individual against his own misdirected inclinations, and by personal effort and eye-to-eye teaching, conserve and compact all the assets of a normal community for the common health of the commonwealth.

MINUTES OF THE TWENTY-EIGHTH ANNUAL MEETING, HELD
AT CHICAGO, FEB. 5, 1918, UNDER THE PRESIDENCY OF DR.
W. S. CARTER, GALVESTON, TEXAS, UNIVERSITY OF
TEXAS, DEPARTMENT OF MEDICINE

MORNING SESSION

The meeting was called to order by president Dr. W. S. Carter, at 9:30 a. m., in the Congress Hotel.

ROLL CALL

The roll call showed that forty of the sixty-two colleges in membership were represented:*

University of California Medical School.—Frank W. Lynch.
University of Colorado School of Medicine.—Chas. N. Meader.

Emory University, School of Medicine.—A. M. Muckenfuss.

University of Georgia, College of Medicine.—W. D. Cutter.

Northwestern University Medical School.—C. W. Patterson,

Rush Medical College.—John M. Dodson.

University of Illinois, College of Medicine.—H. B. Ward,

A. C. Eycleshymer.

Indiana University, School of Medicine.—Chas. P. Emerson,

B. D. Myers.

University of Iowa, College of Medicine.—J. F. McClintock.

Tulane University, School of Medicine.—Isadore Dyer.

University of Maryland, School of Medicine; College of Physicians and Surgeons.—J. M. H. Rowland.

Medical School of Harvard University.—Edward H. Bradford, H. C. Ernst.

Tufts College Medical School.—Frank G. Wheatly

Detroit College of Medicine and Surgery.—W. H. MacCraken.

University of Michigan Medical School.—Reuben Peterson.

University of Minnesota Medical School.—E. P. Lyon.

St. Louis University, School of Medicine.—H. W. Loeb.

University of Missouri, School of Medicine.—Guy L. Noyes,

A. Ross Hill.

Washington University Medical School.—G. Canby Robinson.

John A. Creighton Medical School.—Jas. R. Clemens, H. Von W. Schulte.

University of Nebraska, College of Medicine.—Irving S. Cutter.

Columbia University, College of Physicians and Surgeons.—Samuel W. Lambert.

Fordham University, School of Medicine.—Joseph Byrne.

Syracuse University, College of Medicine.—John L. Heffron.

* The first named is the official delegate.

University of Buffalo Medical Department.—Thos. H. McKee.
 University of North Dakota College of Medicine.—H. E. French.

Ohio State University, College of Medicine.—W. O. Thompson.

University of Cincinnati, College of Medicine.—Roger S. Morris.

Western Reserve University, School of Medicine.—C. A. Haman.

Hahnemann Medical College and Hospital.—W. A. Pearson.

University of Pennsylvania, School of Medicine.—Geo. Gailey Chambers.

Medical College, State of South Carolina.—W. F. R. Phillips.

Vanderbilt University, Medical Department.—B. F. Hambleton.

University of Texas, Department of Medicine.—William S. Carter, R. E. Vinson.

Baylor University, School of Medicine.—E. H. Cary.

Medical College of Virginia.—A. L. Gray.

University of West Virginia, Medical Department.—J. N. Simpson.

Marquette University, School of Medicine.—J. Van de Erve.

University of Wisconsin, College of Medicine.—C. R. Bardeen.

VISITORS

The following colleges not in membership in the Association were also represented:

University of South Dakota, College of Medicine.—C. P. Lommen.

University of Virginia, Department of Medicine.—Theodore Hough.

Woman's Medical College of Pennsylvania.—Martha Tracy.

Long Island College Hospital.—Otto V. Huffman.

Leonard Medical School.—Chas. F. Meserve.

College of Medical Evangelists.—Percy T. Mangan.

Texas Christian University, Medical Department.—W. M. Winton.

Laval University.—Arthur Vallie.

University of Toronto.—N. A. Powell.

Eclectic Medical College, Cincinnati.—J. K. Scudder.

Hahnemann Medical College (Chicago).—W. H. Wilson.

OTHERS PRESENT

N. P. COLWELL, Council on Medical Education of the American Medical Association; LOUIS B. WILSON, Mayo Foundation of the University of Minnesota; H. D. ARNOLD, representing the Surgeon General of the U. S. Army; KENDRICK C. BABCOCK; W.

P. HARLOW; HERBERT HARLAN, Board of Medical Examiners of Maryland; J. H. CARSTENS; ARTUR DEAN BEVAN; J. M. BALDY, Board of Medical Examiners of Pennsylvania; GEO. H. WRIGHT, Maryland Homeopathic Examining Board; FRANCIS W. SHEPARDSON, Director Department of Education and Registration of Illinois; AUGUSTUS S. DOWNING, University of the State of New York; W. L. BEEBE, Minnesota State Medical Association; E. C. KINSMAN; C. E. CANTRELL, Texas State Medical Association; NORMAN M. MACLEOD, Rhode Island State Board of Health; C. S. BACON; C. M. MCCONN; V. E. EMMEL; WM. H. BROWNE; GEO. P. DREYER; WM. H. WELKER; and F. H. FALLS.

W. J. MEANS, chairman of the Executive Council, and FRED. C. ZAPFFE, secretary-treasurer of the Association were also present.

MINUTES OF PREVIOUS MEETING

The minutes of the previous meeting were called for. The secretary submitted the minutes as published in the volume of Transactions for 1917, pages 47-67, and, on motion, duly seconded and carried, the minutes were adopted as printed.

REPORT OF SECRETARY-TREASURER

The chair then called for the reading of the report of the secretary-treasurer. Secretary Zapffe submitted the following report:

The membership of the Association now numbers sixty-two; one of these colleges is an affiliated member, and two are holding honorary membership. Fifty-six colleges are in Class A of the classification made by the Council on Medical Education of the American Medical Association, three are in Class B, and one college, not situated in the United States proper, is unclassified. The three colleges in Class B are: University of Southern California, University of Oklahoma and the Meharry Medical College. The unclassified college is the University of the Philippines.

CHINA MEDICAL SCHOOLS

Since the last meeting your secretary has had considerable correspondence with Dr. Edward H. Hume, chairman of the Council on Medical Education of the China Medical Missionary Association and dean of the Hunan-Yale College of Medicine of Changsha, Hunan Province, China, with reference to an association of medical colleges which has been formed in China on the basis of this Association. Five colleges are now in membership: the Hunan-Yale, Mukden, Union, Pennsylvania-St. John's and Shantung Christian University medical schools. The requirements for membership are: a four years' medical course, preceded by college work with laboratory work in physics, chemistry and biology, based on high school graduation. This is a most decided step in advance so far as the China schools are concerned and will go far to make possible intelligent cooperation between these schools and the medical schools of this country.

EMERGENCY RECOMMENDATIONS FOR MEDICAL COLLEGES

The reports of conferences held soon after the last annual meeting between the Council on Medical Education, the Federation of State Medical Boards and this Association on the call of the then chairman of the Council, Dr. Bevan, were mailed to the membership last April after the proceedings had been approved by the majority of the officers and the Executive Council of this Association. Therefore, it is not necessary to report further on these meetings at this time, other than to include in the minutes of this meeting a copy of the letter sent to each college at that time.

PREAMBLE

The Medical Board of the Council of National Defense appointed a special committee, called the Medical School Committee, to report on the medical college situation and to make recommendations which might be of service in organizing the medical profession for war. After an investigation the committee, on April 15, 1917, reported that in its opinion the regular courses of medical instruction should be interfered with as little as possible; that it is the duty of the medical student to complete his course, because he can be of more service to the country as a trained medical man than in any other capacity. The committee believe that, because of the national emergency, the following modifications may properly be considered:

1. Recognition of the continuous teaching plan as an equivalent of the old four-year course in medicine.
2. Recognition of work done by a student with a Red Cross Teaching Unit according to the Italian Plan as the equivalent of work usually done in the school and hospital at home.
3. Recognition of substitute work as intern in teaching hospitals as an equivalent of an equal amount of work in the fourth year of the medical school.

REPORT ON RECOMMENDATIONS

In order to bring this matter at once to the attention of the state medical boards and of the medical colleges, a conference was called, April 21, 1917, by Dr. Arthur Dean Bevan, chairman of the Council on Medical Education of the American Medical Association, of the secretaries of the Federation of State Medical Boards, of the Association of American Medical Colleges and of the Council on Medical Education.

At this conference the recommendations submitted by the Medical School Committee were carefully considered and endorsed. The members of this conference feel especially that *the present national emergency does not justify any radical change in the present scheme of educating medical students. Changes in procedure may be necessary, but the lowering of educational standards is not justified.* They suggested:

1. That for the present at least the continuous teaching plan be limited to the senior and junior classes, and that the period of actual instruction should not be shortened to any degree.
2. That the work done in the Red Cross Teaching Units under the Italian Plan be recognized as acceptable, provided that on inspection by the Federation of State Medical Boards, the Association of American Medical Colleges and the Council on Medical Education, it is found to be of satisfactory character.

3. That intern work in a teaching hospital be recognized as an equivalent of the work of the senior year, provided that this work is done in a hospital approved by the state board to which the candidate applies for licensure.

Finally, it was agreed that this report be submitted to the officers of the Federation of State Medical Boards and of the Association of American Medical Colleges, and to the members of the Council on Medical Education of the American Medical Association, with the request that these recommendations be approved, when they will be sent to the state medical boards and to the medical schools, and that these be urged to take such measures as are necessary to carry out these propositions during the national emergency.

ARTHUR DEAN BEVAN,
Chairman of the Conference.

WALTER L. BIERRING,
Secretary, Federation of State Medical Boards of the United States.

NATHAN P. COLWELL,
Secretary, Council on Medical Education of the American Med. Assn.

FRED C. ZAPFFE,
Secretary, Association of American Medical Colleges.

GOVERNMENT SERVICES MEDICAL SCHOOLS

Copies of the resolution passed with reference to taking into the Medical Corps of the Army and Navy the graduates of certain schools on a suggested basis were forwarded to the respective surgeons-general and the receipt thereof acknowledged. No further action is required, especially in view of all that has happened since the last meeting.

Tenders of honorary membership were forwarded to the Army and Navy medical schools, pursuant to action taken at the 1917 meeting. An acceptance has been received and the colleges enrolled in the membership roster.

The replies received from the deans in answer to the secretary's letter asking for suggestions for program indicate that there is need for taking up at great length and in detail certain subjects which hitherto have been only touched on at the meetings. First of these is the great problem of pedagogics.

PEDAGOGICS

Ever since the meeting of 1907 your secretary has included in the annual program one or more papers on pedagogy, and while these papers were well received, the discussion has usually been exceedingly meager. Perhaps lack of time has in the main been responsible for this, but, on the whole, judging from letters received, another reason was the fact that this matter has not received sufficient thought as being one of the most important aspects of medical education. Every effort has been made to establish standards for matriculation, course of study and graduation, to say nothing of licensure, while little has been done for the teacher and his teaching. Therefore, the awakening finds us standing in need of the assistance which always comes from a free interchange of ideas as to how the subject content of the medical curriculum should be placed before the student.

It seems that medical pedagogy might well receive the greater share of attention on the program of the annual meetings for some years to come. In fact, is it not true that the discussion of medical pedagogy should be one of the great problems in which this Association should take not only a part, but a leading part, in the future?

CONTROL AND ADMINISTRATION OF MEDICAL SCHOOLS

Another topic which was suggested for discussion, one which has never been touched on before either by this or any other organization, is the control and administration of medical schools. Inasmuch as the delegates to this meeting are men directly concerned with these two problems, it would seem that much assistance could be given them by making a detailed study of this subject which will lead to the submission of a constructive report. The time for taking up this task was too short to enable any one to prepare anything of value for presentation at this meeting, but a committee might be appointed to which this study would be assigned, with instructions to report at the next annual meeting.

CURRICULUM

The curriculum has also been the subject of much correspondence. Elasticity, concentration, correlation and electives are the particular phases of this problem which have been mentioned. At the 1916 meeting the Committee on Education and Pedagogics was instructed to report on this question in 1917, but owing to the unsettled state of the subject content of the two years of college work requirement, the committee did not make any report. It is, however, prepared to report at this meeting.

Comparatively few colleges have given much thought to any of these topics, and yet these few have worked out plans and methods of application which have yielded very satisfactory results, which, if published, would be of considerable value to the membership. This is particularly true of the subject of electives in the medical curriculum. Not over five schools have made provision for electives. Their experiences in this field are exceedingly interesting, and doubtless will lead to the wider adoption of election in courses.

THE COLLEGE REQUIREMENT

Correspondence has also been received with reference to the administration of the two years of college work requirement as published by the special committee appointed to formulate the subject content of this requirement. Two subjects in particular were mentioned: chemistry and medical French or German. One state university called attention to the fact that a strict enforcement of this requirement would have thrown out practically all of 164 applicants for admission to the medical school. It was stated that few students were prepared to offer twelve hours of chemistry and that none had a knowledge of medical French and German. The latter subjects are not taught in the colleges of arts and science, therefore credits cannot be earned to satisfy the requirements. Other schools have doubtless had similar experiences.

In the state of Illinois nearly half of the high schools have dropped German from the curriculum since the beginning of the war with Germany, and outside of Cook County only a very few high schools are teaching French, which makes it well nigh impossible for even the well-intentioned student to offer these subjects for matriculation in the medical school.

It will be remembered that at the 1917 meeting of this Association the language requirement for the high school credit was changed to "a modern foreign language."

DEGREES IN MEDICINE

Another very interesting subject which will have to be given serious thought at this time is that of degrees and graduate degrees.

In his report read to the Association at the 1909 meeting, your secretary touched on the subject of advanced degrees, suggesting two undergraduate courses leading to a degree. One to consist of one year in science subjects (the high school requirement was then in force), four years in purely medical subjects, and one year in hospital work, and that on the satisfactory completion of this course the degree of M.D. be given. By also taking two years of work in college, he might be given his baccalaureate degree, as is done at the present time. The other course would consist of four years of medical work after the preliminary two college years and lead to the degree of M.B. The underlying thought in making this suggestion was, as stated in the report at the time, that the student choosing the first course would probably become a practicing physician, whereas the student choosing the second course would probably become a research worker and a teacher.

And now word has been received that some such plan as this, modified, of course, to meet present requirements, is being considered by the Medical Faculty of Columbia University. It may be determined to recommend to the trustees that at the end of the present four years' course in medicine the degree of Bachelor of Medicine be conferred, as contemplated by the laws of the State of New York, and that the degree of Doctor of Medicine be withheld until the Bachelor of Medicine has had one year as service as hospital intern, to meet the requirements of such states as have adopted the hospital intern year as a requirement for licensure. This would not only meet requirements, but it would enable the Bachelor of Medicine who did not wish to look forward to practice to take up advanced study and research in laboratory subjects and qualify himself for appropriate university degrees of Master of Science in medicine and Doctor of Philosophy.

The plan has many advantages, not the least of which is that it is a distinct step in advance toward the attainment of graduate degrees, a matter which is now under discussion by several medical faculties, and one of which, the University of Illinois Medical Faculty, has for several years exemplified a practical working of a plan which leads to advanced degrees. Medical faculties are face to face with this problem, and surely it should receive some discussion by this Association. A foundation has already been laid by the Council on Medical Education through the activities of its chairman and a special committee appointed by the Council to consider this question.

THE QUARTERLY BULLETIN

These few suggestions emphasize forcibly the necessity of full and careful discussion which can only be done by extending the time of the annual meeting to two or even three days, and may your secretary presume to suggest that it might be well to revive the BULLETIN of the Association, which was published some years ago, but unfortunately was short lived? In this BULLETIN many of these subjects could be discussed profitably during the interval between the annual meetings and with greater satisfaction than in any other publication. The expense of publication would not be great and could easily be met by the funds on hand. The old BULLETIN was a quarterly. Two or three hundred dollars a year surely would more than cover the expense of publication and mailing.

Cash on hand Feb. 1, 1918, \$600.91.

FRED C. ZAPFFE,
Secretary-Treasurer.

On motion, duly seconded and carried, the report and the financial statement were referred to an auditing committee to be appointed by the chair. The chair appointed as such committee, Drs. Henry B. Ward, Frank M. Lynch and John T. McClintock, with instruction to examine the accounts and to report on the suggestions contained in the report.

At this juncture the chair announced the appointment of the following nominating committee: Drs. A. C. Eycleshymer, Alfred L. Gray and G. Canby Robinson.

REPORT OF EXECUTIVE COUNCIL

The report of the Executive Council was then called for. The chairman of the Council, Dr. Means, submitted the following report.

The Executive Council has held a number of meetings at which all of its members were present. The discussions on all questions brought before the Council for adjudication were very full, and taking cognizance of the rights and privileges of all concerned. Therefore, the decisions submitted to you for your final action are believed to be fair and just.

COLLEGE OF PHYSICIANS AND SURGEONS, LOS ANGELES

One year ago the Association adopted the following recommendation concerning the continuation in membership of this college:

There still remains some doubt concerning the acceptability of this college. It is recognized that this school has many points of excellence and that the prospects for future developments are exceedingly good. The principles on which objections are based are: (1) The lack of financial support on the part of the University of Southern California; (2) the absence of evidence of administrative control of the activities of the college; (3) the limited laboratory and library facilities.

The Executive Council recommends that the college be retained in membership one year, pending improvements along the lines before suggested, and that the Council shall notify the president of the University of Southern California to the effect that, unless these conditions be rem-

edied, the college will be dropped from membership without further notice at the expiration of one year.

To determine whether the suggested improvements had been made and a closer university administrative régime had been put into effect, an inspection was made Jan. 26 and 27, 1918, by Dr. W. S. Carter. The college was inspected in November by Dr. Colwell, representing the Council on Medical Education. The reports of these gentlemen do not differ in essentials. Both found things to commend, especially along the lines of clinical facilities and clinical teaching. It seems, however, that while there has been some improvement in laboratory facilities, there still remains considerable to do to bring them up to the efficiency required for a standard medical college.

The reports further indicate that the relation between the University of Southern California and the medical college is in name rather than in substance. There is no evidence that the university has contributed one dollar toward the support of the medical college, nor is there any evidence that the fees collected from students passed through the treasury of the university. President Bovard insists that the university is responsible for the maintenance of the medical college and will make good any deficit, but so far the records of the university do not show any such contributions. It is evident, therefore, that the college has depended on the income from students. It is estimated that this will amount to about \$18,000 this year; the estimated expense of the college is \$42,000. The president, in a letter to Dr. Carter, claims the deficit will be met by the university. The Council refuses to give the college a higher rating than B.

In view of these reports the Executive Council does not believe that the college has complied with the suggested changes and improvements requested one year ago, and therefore recommends that the college be suspended from membership for one year, with the privilege of renewing its membership if improvements suggested in former reports are made.

HAHNEMANN MEDICAL COLLEGE, CHICAGO

The Hahnemann Medical College of Chicago has applied for membership in this Association. The school was inspected by Drs. Eycleshymer and Zapffe, who found much to commend, but some deficiencies, which, in their judgment, can easily be overcome; therefore, the Council recommends that the school be given notice of such deficiencies, and that action on the application be deferred for one year.

OFFICIAL EXAMINER OF CREDENTIALS IN VIRGINIA

Whereas, the law of the state of Virginia requires that the superintendent of public instruction pass on the entrance credentials of applicants for licensure in Virginia, the medical college of Virginia requests that he be made the official examiner of credentials of matriculants in this college.

The Council recommends that the request be granted.

JOINT INSPECTION OF COLLEGES

WHEREAS, Recognition of the graduates of Class C medical colleges for position in the Medical Reserve Corps is refused by the Surgeon-General's Office; and

WHEREAS, These colleges are asking for a higher rating from the Medical Department of the U. S. Army; and

WHEREAS, A request has been made by that department asking for assistance from the Council on Medical Education and the Association of American Medical Colleges toward determining the present educational worth of the college; therefore, be it

Resolved, That the Association extend its help in the inspection of said colleges, and that the Executive Council is hereby instructed to cooperate with the Council on Medical Education in this work and to render any other service requested by the Medical Department of the U. S. Army through the Surgeon-General.

HOLDING OF CONTINUOUS SESSIONS

The Executive Council recommends the adoption of the following resolution as endorsing a war emergency measure which the Surgeon-General of the U. S. Army may be compelled to impose on medical schools in order to meet a demand for a larger number of medical officers:

The Association of American Medical Colleges endorses Dr. H. D. Arnold's plan for continuous sessions for such colleges as can and are willing to put it into effect, but without in any way lowering the present standards of education.

ENDORSEMENT OF THE OWEN AMENDMENT TO SENATE BILL 1786

The Executive Council recommends the adoption of the following resolution:

WHEREAS, The medical profession is called on by the National Government to furnish the physicians and surgeons to take care of the sick and the wounded and to protect as far as humanly possible the health of our armies now and hereafter to be engaged in battle with the enemies of liberty and humanity; and

WHEREAS, The profession has responded and is responding to the call of duty and patriotism, and the best and ablest members of the profession are cheerfully and eagerly giving their services; and further,

WHEREAS, Under existing law the highest rank and responsibility that these ablest of our members can obtain is that of major; and further,

WHEREAS, This rank is not compatible in military practice with the most efficient service that can be rendered to our armies; therefore, be it

Resolved, That the Association of American Medical Colleges approves the amendment to Senate Bill 1786, proposing to amend the National Defense Act by fixing the ratio of Army Medical Officers offered by Senator Owen of Oklahoma, July 20, 1917. Be it further

Resolved, That copies of this resolution be sent to the Secretary of War, the Surgeon-General of the Army, the president of the Senate, the speaker of the House of Representatives and to Senator Owen.

EMERGENCY COUNCIL ON EDUCATION

The following communication was referred to the Executive Council by the secretary:

FEB. 5, 1918.

DR. FRED C. ZAPFFE,

Secretary Association of American Medical Colleges.

Dear Sir:—January 30, representatives of eleven national educational associations met in Washington, D. C., in the offices of the Bureau of Education and organized an Emergency Council on Education.

The associations represented were:

1. Association of American Universities.
2. Association of State Universities.
3. Association of American Colleges.
4. Association of Urban Universities.
5. American Association of Agricultural Colleges and Experiment Stations.
6. Catholic Educational Association.
7. National Educational Association.
8. National Educational Association Department of Superintendents.
9. National Council on Education.
10. American Association of University Professors.
11. Society for Promotion of Engineering Education.

The object of the Council thus organized is to place the resources of the educational institutions of the country more completely at the disposal of the National Government and its department, to the end that through an understanding cooperation: (1) their patriotic services may be augmented; (2) a continuous supply of educated men may be maintained; and (3) preparation for the great responsibilities of the reconstruction period following the war may be anticipated.

By a vote of this Council I am authorized to extend to the Association of American Medical Colleges an invitation for membership and representation in this Emergency Council on Education.

BURTON D. MYERS,

Temporarily representing the president of the Association of American Universities.

It is the plan to organize an Executive Committee of five with a secretary continuously in Washington. A temporary organization was effected as follows: President Rawlins, Association of American Colleges; President Campbell, secretary of State Universities; Bishop Schoen, Catholic Educational Association; Dean Ames, Association of American Universities; Dr. Finnigen, National Educational Association.

The Executive Council recommends: That the invitation for membership and representation in the Emergency Council on Education be accepted, and that the secretary of the Association of American Medical Colleges be authorized to send the membership fee of \$100 to the temporary secretary-treasurer of the Council, President Campbell of the University of Oregon, representative of the Association of State Universities.

LOWERING STANDARDS

Inasmuch as information has come to the Executive Council from various sources that certain medical colleges and medical associations have discussed the question of lowering the standards of medical education for the duration of the war for the purpose of increasing the number of medical students and medical graduates, the Executive Council recommends that the Association place itself on record as being opposed to any such procedure.

W. J. MEANS.
W. S. CARTER.
ISADORE DYER.
C. R. BARDEEN.

S. W. LAMBERT.
JOHN L. HEFFRON.
FRED C. ZAPFFE.

The report was then considered item by item.

On motion of Dr. John L. Heffron, seconded by Dr. W. F. R. Phillips, the recommendation to suspend the Medical Department of the University of Southern California from membership for one year was adopted.

On motion of Dr. W. J. Means, seconded by Dr. W. F. R. Phillips, the recommendation to defer action on the application for membership of the Hahnemann Medical College of Chicago for one year, was adopted.

On motion the recommendation regarding the examination of credentials in Virginia was adopted.

On motion of Dr. W. J. Means, duly seconded, the resolution bearing on cooperation with the Council on Medical Education of the American Medical Association was adopted.

Dr. W. J. Means moved the adoption of the recommendation providing for continuous sessions in medical colleges as a war emergency measure. The motion was seconded by Dr. W. F. R. Phillips.

Dr. E. H. Cary offered the following substitute: That a committee of five be appointed to join with the Executive Council to represent the Association of American Medical Colleges at Washington, with power to provide ways and means for meeting the present emergency. If the government desires the speeding up of medical education, its wishes shall be fulfilled and the membership of this Association be notified accordingly.

Seconded by Dr. J. Ewing.

Dr. John L. Heffron offered as a substitute the following:

Resolved, That the Association of American Medical Colleges approves the plan of continuous sessions in medical schools as a war measure, and will carry it out as soon as the Surgeon General of the U. S. Army indicates its necessity and presents a demand for putting it in force.

Seconded by Dr. Chas. N. Meader.

After a rather spirited discussion for and against these several measures, the question was called for. A rising vote was taken, and the result was as follows:

Vote on Heffron substitute: Ayes, 16; nays, 20.

Vote on Cary substitute: Ayes, 6; nays, 32.

Vote on original recommendation of the Executive Council: Ayes, 32.

The chairman declared the original recommendation as having been carried unanimously.

On motion of Dr. W. F. R. Phillips, duly seconded, the recommendation to endorse the Owen amendment of the National Defense Act was adopted unanimously.

On motion of Dr. W. J. Means, seconded by Dr. B. D. Myers, the recommendation to accept the invitation to join the National Council on Education was adopted.

On motion, the resolution regarding lowering of standards was endorsed.

On motion of Dr. W. F. R. Phillips, duly seconded, the report of the Executive Council was adopted as a whole.

REPORT OF COMMITTEE ON MEDICAL EDUCATION AND PEDAGOGICS

The report of this committee was called for, and the chairman of the committee, Dr. Edw. H. Bradford, submitted the following:

The committee has had under consideration the question of teaching versus research in our medical colleges. That both are proper and necessary functions of medical faculties is clear to all. The committee commend the desire of qualified men to have such arrangements of program and such assistance as will enable them to be productive in science. Teaching hours should be reasonable and all possible encouragement should be offered to investigation. The best teaching is undoubtedly done in a research atmosphere. At the same time, the committee deplors the tendency to consider teaching of secondary value, as mere drudgery and unimportant as part of a scientific career. Good teaching is not only absolutely necessary, it is also honorable and should be considered in the choice and promotion of faculty members. Often the research man can advance productive scholarships more by stimulating capable students than by his own private investigations. Only by the adoption of this point of view can the supply of science teachers be kept up. In any case, nothing should be permitted to lower the quality of teaching offered to medical students.

The premedical courses in chemistry should be such as to prepare students for the courses in biological chemistry, physiology and pharmacology. The recent developments of physical chemistry in relation to these sciences demand a reconsideration of the entire content of premedical training in chemistry. If possible, the premedical group of students should be registered from the beginning in courses specially arranged to prepare for medicine. The first year's work should emphasize chemical principles, give a thorough laboratory training in general chemistry and some qualitative analysis. The second year should include a short course in organic chemistry and a reasonable training in quantitative methods, especially volumetric. An introduction to physical chemistry must be included in the second premedical or first medical year.

The committee recommends that any student who furnishes a satisfactory credit for completion of one year of work in physics in a standard accredited four years high school may satisfy the college requirement for physics by presenting a six hours credit in college physics. In the absence of such a high school credit in physics, the requirement of eight hours credit in college physics must be met.

The committee recommends further that the two preliminary college years shall include didactic and laboratory courses in physics embracing at least six (6) semester hours, in chemistry embracing at least twelve (12) semester hours, and in biology (to be changed to zoology, effective Sept. 1, 1918), at least eight (8) semester hours, and courses in a modern foreign language other than English, preferably French or German, at least eight (8) semester hours.

The committee further recommends that Article III, Section 1, college requirements, should be changed, substituting 6 instead of 8, reading, "At least six semester hours in chemistry and in biology."

It is suggested that to prevent sudden disarrangement of medical requirements that if the licensing board or registering board of any state propose to add new requirements that the Association of American Medical Colleges be so informed and that the change be considered by a combined committee of the Federation of State Medical Boards and the Association of American Medical Colleges before the change is put into effect in any individual state.

The following changes in and additions to the curriculum are recommended:

DIVISION II.—Drop item (a) Inorganic Chemistry and after 1920 drop item (b) Organic Chemistry.

DIVISION III.—Item (a) Bacteriology to include Serology and Immunology. Item (b) be changed to "Preventive Medicine," including "Public Health."

DIVISION IV.—That under (a) there shall be included Materia Medica and Pharmacy. Item (c) be omitted.

DIVISION V.—Item (a) reading "General Medicine" that "Clinical Microscopy" included in the above item be changed to "Laboratory Diagnosis," and be included in Division III, item (c); that item (d) read "Medical Jurisprudence," omitting the words "Ethics and Economics."

DIVISION VI.—Item (c) to read "Urology."

DIVISION VII.—That item (b) be omitted and included under item (a) Division VI.

	Hours
Materia Medica and Pharmacy.....	60
Medicine	600
Laboratory Diagnosis	80
Physical Diagnosis	80
Pediatrics	150
Diseases of Nervous System and Mental Diseases..	150
Surgery	510
Urology	45
Obstetrics	140
Gynecology	105
Orthopedics	36
Eye	50
Ear, Nose and Throat.....	50
Dermatology and Syphilis	72
Roentgenology	36
Total hours	2,119

(Signed)

E. H. BRADFORD.
 IRVING S. CUTTER.
 W. F. R. PHILLIPS.
 K. C. BABCOCK.
 E. P. LYON.

On motion of Dr. B. D. Myers, duly seconded, the report was received, and that portion dealing with the physics requirement was adopted.

REPORT OF SPECIAL COMMITTEE ON STANDARDS
OF ADMISSION

Dr. W. F. R. Phillips, who represented the Association on this committee, submitted the following report:

As your representative on the special committee on preliminary educational requirements for admission to medical schools, constituted last February by the Council on Medical Education of the American Medical Association, I beg to submit the following report:

Up to the present moment, there has been no formal organization of the committee, nor has there been any personal meeting of its members in committee. Whatever has been done has been accomplished by a correspondence carried on in a somewhat irregular and unequal manner; there has been no systematized and coordinated exchange of ideas and opinions. This report is, therefore, more a narrative of what your representative has done as an individual than a report of what the special committee has done as a committee. As such, I shall make it as brief as practicable.

Shortly after being appointed as your representative, I received a communication, dated Feb. 21, 1917, from Dr. N. P. Colwell, secretary of the Council on Medical Education of the American Medical Association, advising me that the other members of the special committee were: Dr. K. C. Babcock, dean of the College of Liberal Arts and Sciences, University of Illinois; Dr. Theodore Hough, dean of the Department of Medicine, University of Virginia; Prof. George Gailey Chambers, director of admissions to the Undergraduate Schools, University of Pennsylvania, and Dr. Colwell, himself, as representative of the Council on Medical Education of the American Medical Association. At the same time, Dr. Colwell requested me to communicate to him my personal views on the matter of preliminary educational requirements. He also advised me that he was communicating with university presidents and others in position to express expert opinions, and that on the receipt of these opinions they would be tabulated and a copy sent every member of the committee.

Complying with Dr. Colwell's request for my personal opinions, I communicated them briefly to him as follows:

"Relative to the subject-matter of the two premedical college years, my own personal opinion is briefly: Prescribed subjects: One year of physics and a year and a half or two years of chemistry, the chemistry to include inorganic, and to be of such extent and thoroughness as to permit the student entering at once on physiological chemistry on admission to the medical school. I would not prescribe any other subjects. I would, however, advise: First, a course in English, a thorough course in it; second, a course in Latin; third, a course in general history, especially the history of civilization and of science; and fourth, a course in zoology, not biology, one that would give the student a fair general knowledge of, say, the frog, the pigeon and the cat, dog or rabbit; but most emphatically no course that would attempt to cover all the creatures of Noah's ark, such as some of the courses apparently essay and fail in.

Further, I would advise the student that the modern foreign languages should be cultivated if time is available, because he will often find a knowledge of them of service in his personal relations with his patients and in facilitating his keeping in touch at first hand with what his professional colleagues in other countries are doing."

Subsequently, in reply to another communication of Dr. Colwell's again asking for my opinions, I restated them substantially as above, but with this addition:

"In my letter of February, I did not state my position on the question of the ratio of lecture to laboratory work in the subjects requiring laboratory instruction; my position is that this should be left to the individual college to decide for itself; just as we must leave the thoroughness and honesty of the entire instruction to the common sense and good faith of the institution. When we find the product is not up to standard then we can refuse to recognize it. This whole educational matter is nothing more than the recognition of the fundamental obligation of truthfulness, and we cannot emphasize this fact too strongly or too frequently."

In this communication I also took occasion to suggest the great desirability of a personal meeting of the committee and a thorough exchange of views and opinions before any conclusions were made.

In July I received from Dr. Colwell a draft of the preliminary educational requirements that were to be demanded for admission to medical schools, a tabular presentation of the views of some forty educators, and some extracts from and abstracts of what were evidently their replies to an inquiry as to the educational preparation to be presented for admission by intending medical students. There was also inclosed with this draft a suggested list of collegiate institutions to be known as "Approved Colleges" for premedical educational purposes.

The draft of the proposed preliminary requirements was so far from according with my judgment that I dissented from the greater part of it. Later, this draft was submitted in a modified form, which, however, was but little less objectionable in my judgment than in its original shape.

This modified draft was published as the committee's report in the educational number of the *Journal of the American Medical Association*, August 18, 1917. In the manner in which this report is worded and published it is made to appear that I concurred fully with it, whereas, as a matter of fact, I protested strongly against many of the provisions of the report and the propriety of its publication before its submission to the respective bodies to which the committee was responsible. Further, I specifically requested that, if the report must be published before such submission, I should be recorded as dissenting from "so much thereof as recommends as prescribed subjects more than physics and chemistry," this with reference to the content of the two years of collegiate requirement. My request was not complied with. A little later, I was asked by Dr. Colwell to submit what he styled my "minority report," which I did as follows:

PROVISIONAL REPORT ON THE MINIMUM STANDARD OF PRELIMINARY
EDUCATIONAL TRAINING FOR ADMISSION TO MEDICAL SCHOOLS

The applicant for admission shall present satisfactory evidence of possessing the mental discipline and the information and knowledge represented by:

1. The satisfactory completion of 14 units of a standard high school followed by

2. The satisfactory completion of the freshman and the sophomore years of a recognized collegiate institution which demands not less than 120 semester hours for its baccalaureate degree and not less than thirty semester hours for the satisfactory completion of the work of every year. The freshman and sophomore studies taken and completed shall be such as the institution would credit in full if taken in course for its baccalaureate degree. Among the studies taken and satisfactorily completed, must be chemistry and physics. The work in physics shall represent not less than six semester hours and that in chemistry not less than nine semester hours. In both physics and chemistry there shall be included laboratory work, which shall average not less than two semester hours for physics and three semester hours for chemistry.

This report is based on the proposition that its purpose is to prescribe the minimum measure of educational training and specific knowledge that is indispensable to the study of medicine. In arriving at this minimum, among other premises, the following are made:

1. That the acquiring of the methods of study are educationally more important than the nature of the subjects studied.

2. That a student having completed a high school course of fourteen units and the freshman and sophomore courses of a collegiate institution will of necessity have at least the minimum mental training and discipline to enable him to study medicine.

3. That the necessity for prescribing specific subjects to be studied preparatory to beginning a professional course is, that the professional curriculum is planned on the presupposition of the possession of certain specific knowledge which can be acquired in the collegiate institution but which may not comprise the curriculum ordinarily selected by the general student or prescribed by the institution in course for its baccalaureate degree.

4. That the subjects not of necessity included in the freshman and sophomore years of a collegiate curriculum, and which are yet indispensable to the prosecution of the medical curriculum, are physics and chemistry.

5. That as students frequently are undecided as to the choice of their future careers till well advanced in their collegiate studies, and often not till after their collegiate work has been completed, and as maturity of character and definitiveness of purpose are factors of greater importance than the subjects of study, no subjects should be prescribed as indispensable to entering on the study of medicine that can not be acquired by an additional year spent at college in preparation thereof.

6. That the minimum standard for admission must be one that the generality of collegiate institutions afford the opportunity of acquiring.

7. That the establishment of a minimum standard does not prevent any medical school from establishing a higher standard for admission to its courses.

This "minority report" has never been published, for reasons that I know not.

In December last, I received from Dr. Colwell another modification of the report published in August. As compared with the published report, this recently modified report does not essentially differ from the

published report, except in the matter of the college chemistry requirement. In the published report, the chemistry requirement is twelve semester hours, six of which must be in laboratory work. In this modified report the chemistry requirement is changed in respect to the ratio of lecture to laboratory hours only; the laboratory hours are reduced to four semester hours; that is, whereas the original ratio was one lecture hour to one laboratory period, the modified requirement is two lecture hours to one laboratory period. This is a change that I am heartily in accord with.

In conclusion, the position I have assumed regarding what should be the preliminary educational requirements for admission to medical schools and which are briefly stated in the provisional ("minority") report sent to Dr. Colwell at his request, and which has been given above, represents of necessity my own personal opinions, for I was sent as your representative without any instructions. Therefore, if it be your pleasure to continue me as your representative on this special committee, I shall much appreciate an expression of your opinion regarding the position I have thus far taken. I wish to represent you so far as I am able to do so consistently with my own convictions of what is educationally sound and right, and, if I can not do so then fairness to both the association and to myself demand that I give place to some one else more truly representative of your opinions and ideals in this special matter.

W. F. R. PHILLIPS.

On motion of Dr. John L. Heffron, duly seconded, the report of the committee was received, ordered published and the committee continued.

The report of the Committee on Equipment was called for. On request of the chairman of the committee, Dr. Chas. P. Emerson, the reading of the report was deferred until the afternoon session (see page 18).

REVISION OF CONSTITUTION AND BY-LAWS

The report of the committee on revision of the constitution and by-laws was called for. The secretary, Dr. Zapffe, a member of this committee stated that the report was completed, but that because of its length and importance, and because unanimity of opinion had not yet been reached on some of the questions involved, the committee requested that the report be received, ordered printed and submitted to each college in membership in the Association for the purpose of giving sufficient time for making a thorough and careful study, and if desired, a revision of some or all of the report, with notification that consideration of this report will be a special order of business at the next annual meeting of the Association, and that final action on the report be deferred until then.

On motion, duly seconded, the report was received and the request of the committee concurred in. (For report see page 84).

REPORT OF AUDITING COMMITTEE

At this juncture, the auditing committee submitted its report, which was as follows:

Your committee has examined with care the report of the secretary-treasurer and finds suggestions of marked interest in regard to the lines of discussion which will be of especial value to this association at the present time. It wishes to call special attention to the question of the organization and administration of medical schools as one that might profitably be discussed at some early session.

The committee recommends further that this association establish a committee of five to consider the question of different degrees in medicine, to confer with allied organizations having similar questions under consideration, and to formulate a report for presentation to this association at some future date.

Since experience has shown that the prolongation of the meeting is hardly practicable, and since, moreover, the printed page gives wider opportunity for participating in discussion and for understanding the problems at issue, therefore

The committee recommends, finally, that under the advice and assistance of the Executive Committee the secretary be requested to reestablish the Quarterly Bulletin as the official organ of the association for the announcements of its news and the presentation and discussion of its special problems.

HARRY B. WARD.

FRANK W. LYNCH.

JNO. T. McCLINTOCK.

REPORT OF NOMINATING COMMITTEE

The Nominating Committee submitted the following report, and moved its adoption:

For President: DR. W. J. MEANS, Columbus, Ohio.

For Vice President: DR. EDW. H. BRADFORD, Boston.

For Secretary-Treasurer: DR. FRED. C. ZAPFFE, Chicago.

For Executive Council: DR. ISADORE DYER, NEW ORLEANS, and DR. IRVING S. CUTTER, Omaha.

A. C. EYCLESYMER.

ALFRED L. GRAY.

G. CANBY ROBINSON.

On motion of Dr. W. F. R. Phillips, duly seconded, the report was accepted, and the secretary was instructed to cast one ballot for the delegates present for the election to office of the nominees. The secretary cast this ballot, and the Chair declared the nominees duly elected.

On motion, duly seconded, an adjournment was taken until two o'clock.

AFTERNOON SESSION

The delegates reassembled at two o'clock and the meeting was called to order by President Carter.

The vice president, Dr. Bradford, then took the chair while the president read his address, entitled "Need of Coordination in Medical Courses."

Dr. Harold C. Ernst, Boston, read a paper entitled "Courses for Military Training for Medical Officers."

This paper was discussed by Dr. L. B. Wilson, J. Ewing, and, in closing, by the author.

Dr. Chas. P. Emerson followed with a paper entitled, "Arrangement of Work in Internal Medicine." (NOTE: This paper was offered as the report of the Committee on Equipment.)

The paper was discussed by Dr. G. Canby Robinson and Dr. L. B. Wilson.

At this juncture, President Carter invited the President-Elect, Dr. W. J. Means, to assume the Chair and conduct the proceedings for the remainder of the meeting. Dr. Means complied with this request and addressed the Association in a few well chosen words, which were received with much applause.

Dr. J. Van de Erve read a paper entitled, "The Teaching of Medicine: A Retrospect and a Forecast."

Dr. Harley E. French followed with a paper on "Entrance Conditions After Jan. 1, 1918."

Dr. W. H. McCracken read a paper entitled "Administration of the Two Years Requirement."

These papers were discussed jointly by Drs. J. M. Baldy, A. S. Downing, B. D. Myers, N. P. Colwell, W. O. Thompson and H. E. French.

On motion, duly seconded, the paper by Dr. Chas. N. Meader, entitled "The Problems of Student Work," was read by title and ordered published in the transactions.

Here, Dr. E. P. Lyon moved the appointment of a committee representing the State Medical Examining Boards and the Association of American Medical Colleges to consider and make recommendations in regard to any exceptional cases which may arise in an institution.

The motion was seconded by Dr. MacCracken and carried.

NATIONAL SECURITY LEAGUE

Under the head of New Business, the secretary read an invitation received from the National Security League asking the Association of American Medical Colleges to appoint delegates to the Congress of National Service to be held at the Hotel LaSalle in Chicago, Feb. 21-23, 1918.

On motion, duly seconded and carried, the president was authorized to appoint two delegates, which he did. The delegates are Dr. A. C. Eycleshymer and Dr. Fred. C. Zapffe.

UNIVERSAL MILITARY TRAINING

The secretary then read the following communication, received from the Universal Military Training League:

Dr. Fred C. Zapffe,
3431 Lexington Street, Chicago, Ill.

Dear Sir: We are interested in knowing that the Association of Medical Colleges will have a meeting in Chicago within a few days and I am writing to inquire if you will not put us in touch with several leaders of the association who will be willing to help in securing some action identifying the association more closely with the movement to secure universal military training in this country.

It is probably unnecessary to call your attention to the fact that as this movement has been studied profoundly, the opportunity to unify our people, develop character and respect for law and order, as well as a broader conception of the obligations of citizenship, has given us all a new conception of our own duty in supporting the work.

The training camps have afforded a convincing demonstration of the benefits which accrue to the men, physically and mentally, at the same time creating habits of self control, strength of character, and a sense of mutual responsibility.

The program now contemplates a six months' training for all young men before they begin to share in the government of the United States, and lectures on citizenship, vocational guidance, etc. Inasmuch as only about one-half of 1 per cent. of the citizenship ever attend college and few go beyond the grammar schools you can realize how important this wholesome plan of action becomes.

I realize how busy you must be at this time and trust this will reach you when you can give a moment to make suggestions, at least advising us with whom we may get in touch.

Very truly yours,

R. L. CRAMPTON,
Vice President.

On motion, duly seconded and carried, this letter was referred for action to the Executive Council.

(NOTE.—The Executive Council at its meeting expressed itself as being heartily in favor of this movement and adopted the following resolution:)

RESOLUTION ON UNIVERSAL MILITARY TRAINING

WHEREAS, The present test of the Nation's strength has called attention to certain fundamental weaknesses of our people, as well as the inability quickly to defend the Nation, Therefore be it

Resolved, That the Federal Government should provide that every young man, who is not wholly disqualified, shall receive at least six months' intensive military training before being entitled to exercise the functions of citizenship. It is further

Resolved, That the membership of this association exert its influence in favor of universal military training and the preservation of the army cantonments for this important constructive service to the Nation.

(A copy of this resolution was ordered sent to the Universal Training League, which was done.)

There being no further business to come before the Association, an adjournment was taken, subject to the call of the Executive Council.

(Signed)

W. S. CARTER, President.
FRED. C. ZAPFFE, Secretary.

MINUTES OF THE ORGANIZATION MEETING OF THE EXECUTIVE COUNCIL

The Executive Council held its organization meeting immediately after the adjournment of the regular meeting of the Association. The following members of the Council were present: W. J. Means, C. R. Bardeen, Irving S. Cutter and Fred. C. Zapffe.

On motion of Dr. Cutter, duly seconded, Dr. W. S. Carter was elected chairman of the Council for the ensuing year.

On motion of Dr. Bardeen, duly seconded, Dr. Means was appointed delegate to the Council on Medical Education of the American Medical Association, and Dr. Zapffe was appointed delegate to the Federation of State Medical Boards.

On motion of Dr. Cutter, duly seconded, an honorarium of \$500 was voted to the secretary-treasurer for the ensuing year, and \$200 to the chairman of the Executive Council.

On motion, the following recommendation with regard to universal military training was adopted: (See page 82).

The president, Dr. Means, appointed the following committees:

Committee on Education and Pedagogics: Dr. W. F. R. Phillips, chairman; Dr. Irving S. Cutter, Dr. A. Ross Hill, Dr. E. P. Lyon and Dr. W. O. Thompson.

Committee on Equipment: Dr. Chas. P. Emerson, chairman; Dr. Alfred L. Gray and Dr. Hanau W. Loeb.

Committee on Medical Research: Dr. Frederic S. Lee, chairman; Dr. R. M. Pearce and Dr. W. B. Cannon.

Committee on Undergraduate and Graduate Degrees: Dr. A. C. Eycleshymer, chairman; J. R. Angell, L. F. Barker, F. G. Novy and E. P. Lyon.

Delegate to National Educational Council: Dr. B. D. Myers.

The Council then adjourned.

(Signed)

W. S. CARTER, President.
FRED. C. ZAPFFE, Secretary.

REPORT OF COMMITTEE ON REVISION OF CONSTITUTION
AND BY-LAWS

ARTICLE I

This organization shall be known as the Association of American Medical Colleges.

ARTICLE II

The objects of this Association shall be the betterment of medical education and medical teaching.

ARTICLE III

SECTION 1. Any medical college conforming to the requirements of the Association, as expressed in this constitution and the by-laws, is eligible to membership.

SEC. 2. A medical college desiring membership in this Association shall make application in writing to the secretary, expressing its readiness to be inspected by two persons delegated by the Executive Council, and to defray the expenses of such inspection. The application must be accompanied by a remittance of \$50. The application, the report of the inspectors and all other information and evidence bearing on the applicant for membership shall be submitted to the Executive Council for consideration. The Executive Council shall report its findings to the Association at the next annual meeting for final action. A majority vote of the accredited representatives present is required for election to membership. If the application is accepted, the \$50 sent with it will pay the dues for the current year; if the application is rejected, this money will be returned to the applicant.

SEC. 3. Each college in membership is entitled to one representative at all regular meetings of the Association, and to one vote on all questions. The dean of the college shall be the accredited representative, unless otherwise provided by the college authorities.

SEC. 4. The annual dues shall be \$50, payable in advance, not later than February 1. The year shall be estimated from September 1 to August 31 of the next ensuing year. Colleges in arrears after February 1 shall be dropped from membership and can be reinstated only by making formal application to the Executive Council, and at the same time depositing with the secretary all arrearages. The power of reinstatement shall be vested in the Executive Council, subject to the approval of the Association at a regular session. Should the application for reinstatement be rejected, the money deposited shall be refunded.

ARTICLE IV

SECTION 1. Every college holding membership in this Association shall on and after Jan. 1, 1918, require for matriculation written evidence of the completion of at least fourteen units of secondary school work, as hereinafter specified, in a standard accredited high school or other institution of standard secondary school grade, or have the equivalent as

demonstrated by examinations conducted by the College Entrance Examination Board, or by the authorized examiner of a standard college or university accredited by a recognized accrediting agency, and two years of college work in a standard college, as hereinafter specified.

THE HIGH SCHOOL REQUIREMENT.—(a) Completion of a standard four years high school course embracing two units of mathematics; three units of English; two units of one foreign language; one unit of history, and six units of further credit in language, literature, history or science, making the total units at least fourteen (fifteen units after January 1, 1921).

(A) Required, 8 units.	Units
Mathematics, elementary algebra and plane geometry.....	2
English	3
One foreign language	2
History	1
(B) Elective, 6 units.	
English language and literature (in addition to the required work).	1 to 2
Foreign languages, additional, Latin, German, Italian, French, Spanish or Greek (not less than 1 year in any one).....	1 to 3
Advanced Mathematics, advanced algebra, solid geometry and trigo- nometry ($\frac{1}{2}$ year each)	1 to 1½
Natural science, chemistry 1 year, physics 1 year, and biology, botany, physiology and zoology ($\frac{1}{2}$ to 1 year each).....	½ to 3½
Earth science, physical geography, geology and agriculture ($\frac{1}{2}$ year to 1 year each)	½ to 1½
Astronomy ($\frac{1}{2}$ year)	½
Drawing ($\frac{1}{2}$ to 1 year)	½ to 1
History, ancient, medieval and modern, and English (1 year each).	1 to 3
Economics ($\frac{1}{2}$ year)	½
Manual training (1 year)	1
Bookkeeping ($\frac{1}{2}$ to 1 year)	½ to 1

THE COLLEGE REQUIREMENT.—(a) The two preliminary college years shall extend through two college sessions, each consisting of at least thirty semester hours, extending through two years of thirty-two weeks each, exclusive of holidays, in a college approved by a recognized accrediting agency. (b) In excellence of teaching and in content, the work of these preliminary college years shall be equal to the work done in the freshman and sophomore years in standard colleges and universities. (c) The two preliminary college years shall include didactic and laboratory courses in physics, chemistry and biology, English and a modern foreign language, as hereinafter specified, and additional elective subjects to total at least sixty semester hours.

The subjects included in the two years of college work should be in accordance with the following schedule:

Required Subjects:	Semester Hours
Chemistry (a)	12
Physics (b)	6- 8
Biology (c)	8
English composition and literature (d)	6
A modern foreign language, preferably French or German (e)	6
Electives:	
Advanced botany or advanced zoology	3- 6
Psychology	3- 6
Advanced mathematics including algebra and trigonometry	3- 6
Additional courses in chemistry	3- 6
Other Suggested Electives:	
English (additional), economics, history, sociology, political science, logic, mathematics, Latin, Greek, drawing.	

* A semester hour is the credit value of sixteen weeks' work consisting of one lecture or recitation period per week, each period to be not less than fifty minutes net, at least two hours of laboratory work to be considered as the equivalent of one lecture or recitation period.

(a) *Chemistry*.—At least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work. Qualitative analysis may be counted as general inorganic chemistry. The remaining four semester hours may consist of additional work in general chemistry or of work in analytic or organic chemistry.

(b) *Physics*.—Eight semester hours, of which at least two must be laboratory work. This requirement may be satisfied by six semester hours of college physics, of which two must be laboratory work, if preceded by a year (one unit) of high school physics.

(c) *Biology*.—Eight semester hours; of which four must consist of laboratory work. This requirement may be satisfied by a course of eight semester hours in either general biology or zoology, or by courses of four semester hours each in zoology and botany, but not by botany alone.

(d) *English Composition and Literature*.—The usual introductory college course of six semester hours, or its equivalent.

(e) *Modern Foreign Language, Preferably German or French*.—A reading knowledge of one of these languages is strongly urged. If the reading knowledge in one of these languages is obtained on the basis of high school work, the student is urged to take the other language in his college course. It is not considered advisable, however, to spend more than twelve of the required sixty semester hours on foreign languages.

(d) By an approved college is meant one whose standing is vouched for by some standardizing agency in whose methods the association has confidence. Premedical courses given in or by medical schools, will not be considered as acceptable unless they have been approved by some agency having to do with the standardizing of colleges of liberal arts and sciences, nor will courses given in veterinary, pharmacy or dental colleges be considered as an equivalent for the college requirement.

SEC. 2. 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, 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.

SEC. 3. Candidates for the degree of doctor of medicine shall have attended four courses of study in four calendar years, each annual course to be of not less than thirty-two teaching weeks, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

SEC. 4. A college which gives less than a four years' course of study, but does not graduate students, and is possessed of the required qualifications, may be admitted to membership.

SEC. 5. Each student shall be required to attend not less than 80 per cent. of the exercises in each study in each annual course for which he seeks credit. The college shall require that students be in actual attendance in the college within the first week of each annual session and thereafter. Actual attendance at classes should be insisted on, except

for good cause, but under no circumstances should credit be given for any course of study where the attendance has been less than 80 per cent. of the full time. No student shall be graduated unless he shall have attained a passing grade in each and all subjects of the curriculum.

ARTICLE V

SECTION 1. The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division and each subject to be allotted not less than the number of hours as specified in percentages in the following schedule:

DIVISION I

ANATOMY, 684 Hours (19%)

	Minimum % of 3,600 Hours
1. Gross anatomy, including clinical or applied anatomy.....	} 19%
2. Microscopic anatomy	
3. Embryology	

DIVISION II

PHYSIOLOGY AND CHEMISTRY, 468 Hours (13%)

1. Physiology	8%
2. Chemistry, organic and biochemistry.....	5%

DIVISION III

PATHOLOGY AND BACTERIOLOGY, 468 Hours (13%)

1. Pathology, including necropsies	8%
2. Bacteriology, including serology and immunology.....	3½%
3. Preventive medicine and public health.....	1½%

DIVISION IV

PHARMACOLOGY, 396 Hours (6%)

1. Materia medica and pharmacy	} 6%
2. Pharmacology.....	

DIVISION V

MEDICINE AND MEDICAL SPECIALTIES, 900 Hours (25%)

1. General medicine, including laboratory diagnosis.....	15%
2. Pediatrics	4%
3. Nervous and mental diseases	3½%
4. Dermatology and syphilis	2%
5. Medical jurisprudence	½%

DIVISION VI

SURGERY AND SURGICAL SPECIALTIES, 648 Hours (18%)

1. Surgery	11%
2. Orthopedic surgery	2%
3. Urology	1%
4. Ophthalmology	1½%
5. Otolaryngology and laryngology.....	1½%
6. Roentgenology	1%

DIVISION VII

OBSTETRICS AND GYNECOLOGY, 216 Hours (6%)

1. Obstetrics, including obstetric surgery.....	4%
2. Gynecology	2%

When teaching conditions demand it, a subject may be transferred from one division to another, but under no condition shall the minimum number of hours for each division be less than as stated above.

SEC. 2. Each college in membership in this association shall print the following in every annual catalogue:

1. A calendar of the annual session, giving the dates of terms and recesses, vacations and commencement.
2. A list of the board trustees or officers of the institution, especially if it is a privately incorporated institution, with their occupations and terms of office.
3. A list of the faculty of the institution, which should be properly graded, especially if different powers are conferred on different grades of instructors.
4. An introductory historical statement which should give a brief account of the development of the institution.
5. A brief general statement as to the organization of the institution.
6. A general statement as to the equipment of the institution, such as buildings and laboratory, library, hospital and dispensary facilities.
7. A brief financial statement showing the income and expenses and the sources of revenue.
8. The requirements for admission.
9. The requirements for advanced standing.
10. The rules for promotion and classification.
11. The requirements for the degree.
12. A statement covering fees and expenses of the course.
13. A statement regarding scholarships and aids to meet the expenses.
14. A statement regarding state board examinations in the state in which the institution is situated.
15. A statement regarding the courses of study, beginning with a general statement of the aims of the curriculum and a condensed curriculum, and followed by a brief description of each course, arranged under departments. The condensed curriculum should be arranged in the form of a table so that the number of hours per term and per year assigned to each subject may be readily available. The statements describing courses should be brief and should state the nature of the instruction, and without elaboration the general content of the course, with the name of the instructor, the time consumed and the period of the college year in which the course is given.
16. A statement regarding the privileges accorded to students of the school, especially if the school is connected with a university which permits medical students to share in privileges with other students.
17. A list of the graduates of the preceding year with honors and prizes.
18. A list of the students in the school at the time the catalogue is published.

ARTICLE VI

SECTION 1. In addition to the representatives of colleges in attendance at regular meetings, who are termed active members, there shall also be associate members and honorary members. Associate members shall consist of former representatives and representatives of chartered post-graduate medical schools and members of state boards of medical examiners. Distinguished teachers in medicine and surgery may be elected to honorary membership.

SEC. 2. Only duly delegated and accredited active members in actual attendance, whose annual dues are paid, shall have voting power, but associate and honorary members may participate in all other proceedings and may be elected to any office.

ARTICLE VII

SECTION 1. The officers of this Association shall be a president, vice president, secretary-treasurer and an executive council of seven members, consisting of the out-going president, the president, the secretary-treasurer and four elective members, two to be elected to serve one year, and two to be elected to serve two years, and thereafter, two to be elected at each annual meeting to serve two years. All the remaining officers to be elected to serve one year or until their successors are elected.

SEC. 2. The president shall preside at all meetings and perform such other duties as parliamentary usage in deliberative assemblies and the by-laws of this Association may require.

SEC. 3. The vice president shall preside in the absence of the president, and perform such other duties as may be prescribed by the Association.

SEC. 4. The secretary-treasurer shall record the proceedings of the meeting of the Association, and edit and publish the same. He shall collect the dues and assessments from the members. He shall take charge of all moneys that may be received from all sources and deposit the same in a bank in the name of the Association of American Medical Colleges. He shall make the annual report to the Association, and perform such other duties as may be required of him by the Association and the Executive Council.

SEC. 5. The Executive Council shall organize after each annual meeting and elect a chairman. After such organization it shall appoint the following standing committees and representatives: 1. Education and Pedagogics. 2. Research. 3. Equipment. 4. Representatives to other organizations, and such other committees as may be deemed necessary. The council shall have and exercise direct supervision, general control and management of the business affairs of the Association, subject to the direction and approval of the Association. It shall have the power to fix the salaries of the officers and disburse funds for purposes pertaining to the affairs of the Association. It shall have the power to investigate any charges made against members of the Association for violation of the rules and regulations of the Association and to settle disputes between members. It shall inspect and examine colleges making application for

membership, and shall inspect colleges in membership in the Association that have been discredited by other evaluating organizations. It shall have power to fill vacancies occurring in any of the elective offices during the year.

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 Executive Council.

SEC. 2. A majority of the active members whose dues are paid shall constitute a quorum.

ARTICLE IX

SECTION 1. This constitution shall not be altered or amended except by written notice to all members at least thirty days previous to a stated meeting and by a vote of two-thirds of all the active members present at such meeting.

BY-LAWS

SECTION 1. The meetings of the Association shall be governed by Robert's Rules of Order except as provided for in the constitution and by-laws.

SEC. 2. There shall be a committee of three to be known as the Visitation Committee, said committee to consist of the president, secretary and chairman of the Executive Council, whose duty it shall be to see that all schools which are members of this Association be visited and investigated by a member of this committee, or by some one designated by the committee at least once every five years, for the purpose of determining whether the members are enforcing the laws of this Association.

SEC. 3. If any school or schools shall, in the judgment of this committee, be found not to possess the qualifications necessary to membership in this Association, the Visitation Committee shall present a detailed report on the same to the Executive Council for consideration. The Executive Council will submit its report to the Association in annual meeting assembled for final action.

SEC. 4. At the end of each annual session there should be issued to each student a certificate of the work done by him that year. This certificate should be signed and sealed by the proper official; should show the dates of the beginning and end of the session, the studies pursued, the number of hours in each, divided into lectures, laboratory or clinical, and the grade made by the student.

SEC. 5. No college shall be permitted to accord to any one any beneficiary scholarship except as provided for in the endowment funds of said college. The facts in regard to such a scholarship shall be fully set forth in the annual announcement of the college offering it.

SEC. 6. No college, a member of this Association, shall employ any paid solicitor for the purpose of inducing the attendance of students, nor shall any such college offer to anyone, either directly or indirectly, any reward or inducement for securing the attendance of students.

SEC. 7. Rules of the Executive Council:

1. All complaints, charges and other questions must be submitted in writing through the secretary of the Association or directly through the chairman of the council, and signed by the complainant.

2. All charges and specifications must be presented to the accused for answer. In all cases the written answer must be filed with the chairman of the council within ten days from the receipt of the copy of charges by the accused.

3. All counter charges must be submitted to the accused for answer and pleadings in the same manner as the original charges and the council will take no notice of any evidence not submitted through its chairman in regular form and order.

4. All decisions of the council must be rendered in writing, signed by each member taking part in the determination of any question.

5. In the intervals between the annual meetings, the council may act on all matters submitted in due form, each member communicating his decision to the chairman, who shall, within ten days from the date of any decision, file a certified copy with the secretary and notify all the parties interested.

6. It will be the duty of the chairman of the council to file and preserve all original complaints, charges and other matters referred to the council, and to deliver them to the secretary on the first day of each annual meeting next ensuing the date of final decision.

(Signed) W. J. MEANS.
C. R. BARDEEN.
FRED. C. ZAPFFE.

OFFICERS AND COMMITTEES FOR 1918-1919

President: DR. WM. J. MEANS, Columbus, Ohio.

Vice President: DR. EDW. H. BRADFORD, Boston, Mass.

Secretary-Treasurer: DR. FRED. C. ZAPFFE, 3431 Lexington Street, Chicago, Ill.

EXECUTIVE COUNCIL

DR. WM. S. CARTER, Chairman, Galveston, Tex.

DR. SAMUEL W. LAMBERT, New York.

DR. CHARLES R. BARDEEN, Madison, Wis.

DR. ISADORE DYER, New Orleans.

DR. IRVING S. CUTTER, Omaha.

DR. WM. J. MEANS, Columbus, Ohio.

DR. FRED. C. ZAPFFE, Chicago.

STANDING COMMITTEES

Committee on Education and Pedagogics

W. F. R. PHILLIPS, Chairman, Medical College State of South Carolina, Charleston.

A. ROSS HILL, University of Missouri, Columbia.

IRVING S. CUTTER, University of Nebraska, Omaha.

E. P. LYON, University of Minnesota, Minneapolis.

W. O. THOMPSON, Ohio State University, Columbus.

Committee on Equipment

CHAS. P. EMERSON, Chairman, Indiana University, Indianapolis.

ALFRED L. GRAY, Medical College of Virginia, Richmond.

H. W. LOER, St. Louis University, St. Louis, Mo.

Committee on Medical Research

FREDERIC S. LEE, Chairman, Columbia University, New York City.

R. M. PEARCE, University of Pennsylvania, Philadelphia.

W. B. CANNON, Harvard University, Boston.

MEMBERS

ALABAMA

University of Alabama, School of Medicine, Mobile.

CALIFORNIA

Leland Stanford Junior University, School of Medicine, Palo Alto and San Francisco.

University of California, Medical School, Berkeley, San Francisco and Berkeley.

*University of Southern California, Medical Department, Los Angeles.

COLORADO

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

CONNECTICUT

Yale University School of Medicine, New Haven.

DISTRICT OF COLUMBIA

Georgetown University Medical School, Washington.

George Washington University, School of Medicine, Washington.

Howard University, School of Medicine, Washington.

Army Medical School, Washington.

Navy Medical School, Washington.

GEORGIA

Emory University, Medical Department, Atlanta.

University of Georgia, College of Medicine, Augusta.

ILLINOIS

Northwestern University Medical School, Chicago.

Rush Medical College, Chicago.

University of Illinois, College of Medicine, Chicago.

INDIANA

Indiana University, School of Medicine, Bloomington and Indianapolis.

IOWA

University of Iowa, College of Medicine, Iowa City.

* Suspended from membership for one year.

KANSAS

University of Kansas, School of Medicine, Lawrence and Rose-
dale.

KENTUCKY

University of Louisville, Medical Department, Louisville.

LOUISIANA

Tulane University of Louisiana, School of Medicine, New
Orleans.

MARYLAND

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

MASSACHUSETTS

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

MICHIGAN

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

MINNESOTA

University of Minnesota, Medical School, Minneapolis.

MISSISSIPPI

University of Mississippi, Department of Medicine, University.

MISSOURI

St. Louis University, School of Medicine, St. Louis.
University of Missouri, School of Medicine, Columbia.
Washington University, Medical School, St. Louis.

NEBRASKA

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

NEW YORK

Columbia University College of Physicians and Surgeons, New York City.

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, Department of Medicine, Buffalo.

Fordham University, School of Medicine, New York City.

NORTH CAROLINA

University of North Carolina, School of Medicine, Chapel Hills.

Wake Forest College, School of Medicine, Wake Forest.

NORTH DAKOTA

University of North Dakota, School of Medicine, University.

OHIO

Ohio State University, College of Medicine, Columbus.

University of Cincinnati, College of Medicine, Cincinnati.

Western Reserve University, School of Medicine, Cleveland.

OKLAHOMA

University of Oklahoma, School of Medicine, Norman and Oklahoma City.

PENNSYLVANIA

Hahnemann Medical College and Hospital, Philadelphia.

University of Pennsylvania, School of Medicine, Philadelphia.

University of Pittsburgh, School of Medicine, Pittsburgh.

PHILIPPINE ISLANDS

University of the Philippines, College of Medicine and Surgery, Manila.

SOUTH CAROLINA

Medical College of the State of South Carolina, Charleston.

TENNESSEE

University of Tennessee, College of Medicine, Memphis.

Vanderbilt University, Medical Department, Nashville.

TEXAS

Baylor University, School of Medicine, Dallas.

University of Texas, Medical Department, Galveston.

VERMONT

University of Vermont, College of Medicine, Burlington.

VIRGINIA

Medical College of Virginia, Richmond.

WEST VIRGINIA

University of West Virginia, School of Medicine, Morgantown.

WISCONSIN

Marquette University, School of Medicine, Milwaukee.

University of Wisconsin, Medical School, Madison.

AFFILIATED MEMBER

Meharry Medical College, Nashville, Tenn.

ASSOCIATE MEMBERS

Dr. Jas. R. Guthrie, Dubuque, Ia.

Dr. Wm. P. Harlow, Boulder, Colo.

Dr. Geo. H. Hoxie, Kansas City, Mo.

Dr. Wm. J. Means, Columbus, Ohio.

Dr. W. F. R. Phillips, Charleston, S. C.

Dr. Henry B. Ward, Urbana, Ill.

Dr. Fred. C. Zapffe, Chicago, Ill.

HONORARY MEMBERS

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

Dr. Kendric C. Babcock, Urbana, Ill.