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ASSOCIATION OF AMERICAN MEDICAL COLLEGES



PROCEEDINGS OF THE THIRTY-THIRD
ANNUAL MEETING, HELD AT ANN AR-
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fuse you a diploma". Had he then realized how large a program this was doubtless he would have made this announcement a little more quietly. And yet how to treat the cheat and the personally immoral man I am sure we all will agree. But how about the upper levels of his professional character? Has he the right attitude toward his patient and society in general? At the onset we should admit that that which we call "unfitness" may be more apparent than real and due in large degree to the student's faulty training. The faculty may have set him a bad example or so crowded the curriculum that he cannot get the spirit of the subject (of this we shall speak later), but be this as it may, the result is just as serious as though it were an inherent moral defect and it is the faculty's problem to train carefully the student with a view of developing in him the right professional moral qualities.

But is there need of any such discussion? We believe there is. To us certain great and serious problems seem to confront the medical profession and it rests with the medical teachers of today how successfully the physicians of tomorrow shall meet them.

There are two general propositions which we could urge as selfevident truths. If you accept them, then we can discuss this question with profit: deny them, and this paper will have but little interest for you. First, that one of the essential characteristics of our profession is that it is sacrificing service. The merchant or banker may honorably choose his calling for the gain there is in it; but not the doctor. He chooses medicine because he believes that in that profession he best can use his talents in the service of his fellowman. His practice may bring him wealth, so much the better, but always he must steadfastly hold his service as foremost and his remuneration as incidental; never the reverse. This has been fundamental in the faith of our fathers in medicine. Let us continue to hold that ideal before our students.

And, second, we hold this truth to be selfevident; that opportunity brings with it an unavoidable responsibility. The man who has the most knowledge of and the greatest skill in any science the application of which would benefit his fellow men owes more to his fellow men than those who have less.

One of the most important aspects of medicine today is the so-called "public health movement" made possible by the recent great advances in bacteriology, pathology and preventive medicine. Many of these purely scientific laboratory discoveries have imposed upon the medical profession new and quite unexpected moral responsibilities and obligations. For illustration: before the cause of typhoid fever was known a physician might rightly claim that his duty so far as that fever was concerned was limited to the individual typhoid patients; but when it became clear that typhoid fever was spread by impure water and soiled milk, then the physician had no right to confine his attention to the sick. He owed it to the well not only to tell them but also to convince them of the truth of these discoveries and then to aid them in the creation of public utilities and in the passage of suitable legislation, and the more accurate and extensive his knowledge on this subject the more responsibility should he assume. A few doctors may believe this but the leaders in this great movement have not been doctors but public spirited laymen, nurses, sanitary engineers, insurance actuaries, school teachers, naturalists, military men, social service workers, charity workers and half educated medical cranks.

Our medical societies appoint legislative committees more to kill hostile bills than to support bills in the interest of public health. Indeed, the general practitioners appear actually hostile to the public health educational movement. Let a well trained medical man from another city make an address on public health before a woman's club of this city and the chances are that few of the local medical men would attend and that they would take care never to invite that man to address their local medical society. And yet the doctors are not really hostile to this movement, but they are quite indifferent, and one reason is that they know mightly little of hygiene, preventive medicine and public health for we never taught them much. One solution would be not more courses in this subject but better courses in fewer subjects so that the students really appreciate the spirit of medicine. Then many of them would gladly and enthusiastically lead in this movement. As it is now, one of the members of this conference, Dr. Alexander C. Abbott, stated in emphatic terms two years ago, "If the medical profession does not assume the leadership in pre-

ventive medicine and hygiene, then this leadership would pass out of our hands", and Dr. Wyckliffe Rose at that same meeting told this Association that the International Health Board of the Rockefeller Foundation had great difficulty in finding physicians well enough trained for its service. In his excellent book on Public Health and Hygiene (1920, p. 569) Dr. William H. Park of New York allows his collaborators to say some ugly things of our graduates, among which are the following: "Departments of health * * * * * constitute about the only power that compels physicians to study and to keep up with the times."

"The holding of health institutes constitutes another excellent means of reaching the physicians * * * * * such courses should be free to all registered physicians".

"Under certain conditions a more lasting impression can be made" (on the practicing physician) "by strict law enforcement and the exaction of a penalty". (p. 573). Far better that we should save them from that disgrace.

Let us consider another aspect of the public health movement and one which is growing rapidly in importance, the so-called social service movement which already is a powerful factor in the hospital world. It is well that we remember that in part the origin of this movement was a protest against the daily medical routine of our hospitals and dispensaries.

At a recent meeting in New York attended by practically all the leading hospital social service workers of this country, during a discussion of the general aims of this movement a professor of psychiatry exclaimed—"We must humanize the doctor". A well known clinical professor of medicine caught up the word and said, "Repeat that again please, Doctor, I want the social service workers to understand what you said. We must humanize the doctors because doctors are inhuman". "Yes", repeated a clergyman, "We must humanize our hospital staffs", and finally a woman, nationally well known in this field, said with great emphasis "We must save the medical students", and we all know that she meant, save them from our influence. Smile at the criticisms and pretension of these young women, nurses, clergymen and hospital superintendents if you will, but ignore them we should not.

A third great public health movement is illustrated by those national societies organized to combat some one disease or group of diseases. All of these have among their leaders a few prominent medical men who specialize in these subjects but for the most part they are lay organizations. The societies of mental hygiene are establishing at strategic points psychiatric clinics, for the very reason, as they frankly admit, that the practicing physician knows nothing about mental hygiene, and little of the early recognition of mental disease or its treatment. The Society for the Prevention of Cancer is preaching from platform, pulpit and press the dangers of malignant diseases, and by inference the inability of the general practitioners to aid, for their message is, go at once to surgeons. And the same is the message of the societies for social hygiene, for the control of heart disease, the National Antituberculosis Society, the Society for the Prevention of Blindness, the infant welfare societies, etc. As one might expect the rank and file of practitioners view these societies in no friendly spirit.

But there is still another reason why we should urge more attention to the moral qualities of our graduates. The farther medicine advances the more important in the diagnosis, etiology, prognosis and treatment of disease would seem to be the mental state of the patient, and this applies to those who have typhoid fever, tuberculosis and pneumonia as well as to those suffering from psychoses. The forward looking doctor is beginning to realize that to do the most possible for all patients he must be able to control fears as well as germs; to reduce dislocated ideas as skilfully as he does dislocated joints, and that to do this requires not only careful special training, but what is just as important, the sympathetic personal interest of a physician in whom a sensitive, critical patient can find no guile. We cannot lightly set aside the history of our profession and this teaches that from the first medical practice and religious organization have grown up side by side. This has been fortunate for our profession since were it not for the many modern hospitals maintained by the churches of this country modern surgery and medicine would have had more difficulty in reaching their present development.

If I suggest that the physician should appreciate the spiritual needs of his patient, and should try to supply them in the same

spirit in which he arranges roentgen ray examinations for, and consultations with specialists in ophthalmology or surgery, do not think that I am recommending a substitution of the religious for the scientific. We only say that the well trained physician will be anxious to use all of the means and agencies which would assist him in the care of his patient, and that if any of these means are not in his power, he will arrange that others shall do it for him.

What can we do to correct this? First, we should remember that the real product of our medical schools is the general practitioner and that he is and must be the corner stone of the medical profession. We should also bear in mind that the reason for the development of specialists is that the general practitioner needs them in his work. But just as soon as specialists individually, or as officers of a national society, offer their services direct to the public and just as soon as the public learns to appeal to the specialist directly for help, thus ignoring the general practitioner, the medical situation becomes unfortunate. We of the schools pay too much attention to the specialists. The family doctor,—that is our job. We should do everything in our power to qualify him to win the confidence of the public and not feel that every public health official, specialist and public health society is his rival and enemy, and that his professional salvation will depend upon his ability to escape from general practice into one of the specialties.

Second, all reforms of students must begin in the faculty. Our students learn far more from the teachers' example and attitude, often unconsciously expressed, than from their spoken words.

Third, the important thing needed now is to teach the medical student not alone the medicine and surgery of the twentieth century but also the responsibilities which should accompany it. The weakness of our graduates of today is that they have the professional power of the twentieth century but the more convenient ethics of the mid-nineteenth, and the result is disastrous.

Fourth, we should early convince our students of the sacrificial character of their calling. We should at the onset say to them, "If you are seeking a lucrative profession, please try some other

school, but if you are entering your profession in the same spirit that the medical missionary sails to his foreign field, determined to sacrifice yourself in service whatever the gain or loss may be, then you are welcome". That is the challenge we got in 1895 when we entered the Johns Hopkins Medical School and it made a profound impression on us.

Fifth, let us foster this sacrificial spirit during the entire medical course. This will grow spontaneously unless some positive influence counteracts it, and these influences always are at work. There are two groups of teachers whose moral defects should eliminate them from or at least weaken their influence in the teaching force: the avaricious man who measures his success by his receipts, and those research workers to whom each patient is a laboratory animal.

Sixth, our wards should be organized and run more according to the plan of the clinical schools of Louis, Laennec, Bright and Stokes and less according to that of the German physiological school, which was the model of our medical schools before the war. We are not in any way belittling research. That is the life of the school. That should be the criterion according to which teachers are appointed and promoted. Each student should be trained in the research methods since each new patient will be a new problem. Only along the lines of research can accurate diagnosis be made and an individualized therapy for each case outlined. And yet we repudiate the modern idea that only in the laboratory does one see clearly and that at the bedside he gropes blindly; that whatever is true of a dog or guinea-pig is true of a man; and that a diagram of the chromosomes of the banana fly illustrate the reason for the moral obliquity of the Jones family of southern Indiana. If we are to educate students as good family doctors, we must make our wards more anthropocentric and less zoocentric. That is, the medical clinic must be the center of the medical department. This means we must so deal with our patients that we teach our students to deal with them first as suffering individuals and second as interesting cases. The students should be trained not to be scientists but practitioners who can and will use the best scientific methods as tools in their service.

Seventh, the medical department should be under the direction of a real clinician whose first care is the treatment of the men and women patients in his care.

Eighth, each medical clinic should have connected with it an active social service department which has the same standing as the roentgen-ray department, the laboratory of clinical bacteriology, etc., and the student should be requested to follow the investigation of these workers in the cases assigned him as well as those of the other medical assistants. The object of this department is to assist in the diagnosis by the accurate study of the patient's environment and in therapy by assisting in restoring the patient to his place in active life. It is the social worker who will teach the student the great difference between curing a case of typhoid fever and getting a patient with typhoid fever well. She will teach him that it is splendid to make an accurate diagnosis and praiseworthy to give good advice, but does he actually "get it across?" Is his patient able to follow his advice? Is he willing to work with his patient in order to prevent any factors from disturbing the progress of his patient's recovery? Is he ready to move every stone in order that he may see his patient well? That is the true test of the doctor.

Ninth, that we should aim to develop in our students not alone the philosophical approval but the enthusiastic championing of the idea that the better their knowledge and the greater their ability, the greater also their responsibility to the public as well as to the individual patient; not the grudging assent that they should take a little interest in public health movements but the enthusiastic desire to lead in this movement. And this means that the medical school itself as an organization must lead in all these movements.

And, finally, we should encourage the development of strong Y. M. C. A. departments and similar societies in the school. The faculty should attend these meetings and show a strong religious background in all of our own practice. I remember so well a classmate who as intercollegiate medical Y. M. C. A. secretary visited all of the medical schools. In some schools the faculty helped him to meet the students; in others they allowed him to meet the students; but in one school they not only refused him

a room and an hour for such a meeting, but even tore down the notice of the meeting to be held off the campus after the school day was over. It may not be an accident that the two professors and the one social worker who twenty-one years later wailed "we must humanize the doctors", "we must save the medical students" all were connected with that same university.

PROBLEMS OF THE TWO YEAR MEDICAL SCHOOLS

HARLEY E. FRENCH

Dean University of North Dakota School of Medicine
University, N. D.

Eighteen or twenty years ago when the two year medical schools began to be established there seemed unquestionably to be a place for them. It is easy to understand why this should be so. There was at that time a rather sharp line drawn between the laboratory and the clinical fields. This was in the early days of the revolution which we have seen take place in medical education. The laboratories constituted the point where the poorer schools of that day showed their weakness. From our point of view we might criticize the clinical teaching perhaps only a little less, but at that time laboratories were just old enough to have demonstrated their usefulness in teaching, practice and discovery, and not old enough to become well provided for, except in a few places. Their importance could be seen by all and poor provision for them was recognized as the prime element of weakness. The laboratories, moreover, were considered the most expensive and the most difficult department to maintain. It was here that we had the first full time teachers and where we still have the most of them. The leaders of medical education, therefore, welcomed the idea of the entrance of the universities into the field to assist in both the financing and the establishment of standards.

Today we have come to doubt the wide distinction once recognized between the laboratory and the clinic. We have advanced in our ideas regarding clinical teaching until we find that the clinic as well as the laboratory is decidedly expensive to maintain. Clinical schools are not only much reduced in numbers but are limiting their admissions.

The two year schools, therefore, have their own problems, and they present a problem that I shall attempt to present briefly. The problems or the difficulties may be grouped thus: (1) The difficulty in securing and holding qualified teachers. (2) The possible difficulty in securing adequate clinical facilities to satisfy the best interests or the demands of our curriculum committee. (3) The transfer of men to clinical schools. (4) What to do in the face of the recommendation of the Council on Medical Edu-

cation that four year courses be established in all states where adequate finance can be obtained.

1. Of the first of these, the difficulty of securing and holding desirable teachers, little need be said. It is a difficulty all schools have felt, particularly during and since the war. The two year school probably feels it a little more keenly than the larger schools since most men would prefer the associations of the larger city, the larger school and the clinic. The difficulty is, perhaps, subjective rather than objective, that is, it is one felt by the responsible officers; at least the two year schools seemed to have been able to keep their places reasonably filled so far. It goes without saying, however, that failing to retain a satisfactory corps of medical teachers or failing to deliver the product, students well trained in the preliminary years of medicine, the two year school must cease.

2. The second point, the stress put upon the unity of medicine, or the close relation between the laboratory and the clinic, came in for discussion at our meeting last year and will be handled by others later in this program. For the purpose of this paper, we may admit that the sharp line at one time drawn between the laboratory and the clinic was artificial and mistaken, and that the intersection of the one upon the other is desirable.

At the same time, much may be said for the fairly separate laboratory school with certain highly desirable but withal limited clinical contacts. The necessary laboratory work is sufficient to fill two years nearly if not quite completely; surely, clinical work should not be projecting backward to curtail the work in the fundamental sciences. The student must master the laboratory branches if he is ever to do so in the early years; some laboratory instruction should and will, no doubt, be given in the third, fourth and intern years, but I think we all feel that the man is an exception who will ever master the laboratory subjects if he has failed to do so in what I must still call the preclinical years. He will have his internship, graduate study and years of practice to perfect himself in clinical knowledge and in technic. A certain amount of clinical contact is needed in the early years to whet the student's interest and to enable him to understand the importance of the fundamental work he is doing and its rela-

tions to the practice of medicine. It is a grave question, however, whether a university contact is not more valuable in the early years than any extensive hospital or clinical contact. Parenthetically I might add that it is the third and fourth year student and the intern that need the contact of the laboratory much more than the first and second year student needs the clinic.

To secure the desirable contact in the early years much depends upon the teachers; the good teacher of anatomy or physiology is doing this work every day. In addition to this it is common in both two year and four year schools to have some elementary clinical work. A glance at forty-five catalogs reveals the fact that perhaps 90 per cent. of the schools offer some clinical work in the first and second years, of this physical diagnosis is by far the most common, surgery the next, obstetrics the third, and medicine, very probably physical diagnosis, fourth. Few schools offer any clinical work earlier than the third year. One or two devote about one term to clinics. The work in almost any of these courses is, no doubt, elementary. Its importance is in the contact rather than the subject matter in perhaps all but physical diagnosis and here subject matter could surely not be more important than the contact. Too much importance, therefore, should not be attached to this specific subject.

Some contacts of this kind should be possible in every two year school. Much must depend upon the size of the town in which the school is located, whether or not there is a university hospital and the teaching ability of men in practice. In North Dakota, in an urban population of eighteen thousand, we are very fortunate in having courses in physical diagnosis and elementary surgery.

3. The placing of students is beginning to be difficult. A few years ago the reduction in the number of schools, plus the increase in entrance requirements, brought the two year schools very reasonable demand for their tuition. For a time no difficulty was experienced in transferring students to clinical schools. Today the reduced number of schools, plus the limited possibilities for clinical instruction, place the two year schools in a position that is precarious. The condition is perhaps not yet critical, probably all two year students of last year that were worth while were

able to go on with their work somewhere, but there was much disappointment with our students and with those of other schools that they could not go to their school of choice and often not to even their second and third choice.

Medical enrollment has dropped a little this year, possibly it was higher last year as a reaction from the war. The expansion of some of the two year schools into complete schools will also operate to make conditions better, but, on the whole, unless there is some change, we can probably expect that it will be more and more difficult for our students to secure entrance to other medical schools to complete the work of their third and fourth years.

One result of this condition is that the student applies to two or three or more schools, hoping for the best but unwilling to risk not getting in somewhere. The student cannot very well be blamed for this, but it is unfortunate and unsatisfactory to both student and schools. It might be that some kind of central clearing office or committee could be devised to take care of this difficulty. Permanent or definite affiliations are undesirable and I think impossible.

A more serious result will be a reduction in the enrollment of the two year schools because the ambitious student who has the means will try at once to get into the complete school. Many a strong student who is needed in medicine will fail to take the course. The two year schools, or some of them, will probably cease to exist.

4. I agree entirely with the general recommendation of the Council on Medical Education that full four year courses be established in all states where adequate finances can be obtained. It is a matter of duty to both its citizens and its youth that the state perform its share in medical instruction and research. Moreover, it is a matter of enlightened self-interest that it do so both in providing a service for its people and in conserving its leadership which might otherwise be scattered.

There are perhaps, a few states that are doing nothing for medical education that might well establish and maintain full four year courses. Some of the states now having two year schools will be able to extend the courses to four years, and, on

the whole, this will be desirable, highly so in the case of some of these states. With the present experience no more two year schools will probably be established.

There are some states, however, with two year schools in which expansion to complete courses is out of the question for an indefinite time. This is true for two reasons, first, the lack of finance, second, the inability of finance were it available in any ordinary amounts to provide the required clinical facilities.

My own state, for example, has a population of about 650,000, about one-fourth the population of Chicago, considerably less, probably about one-half, the population of Detroit. It has no large cities, the largest, Fargo, has a population of less than 25,000; Grand Forks, the seat of the university, has about 15,000 population. Its university has certain lands, but these have not proven to have the wealth of mineral and timber that some state universities have enjoyed. It is an agricultural state and with no other large industries. While it has not much abject poverty, it has no very wealthy people. There are none who have made great fortunes in newly developed resources or in industries. The first considerable gift or donation the university has ever received was \$10,000 to the student loan fund announced one week ago.

Our university with more than 1500 students has reached the development in which for some time to come it should have a new building every year, certainly one every biennium, simply to take care of the normal and reasonable growth. A law school building, with half of its room available for other departments, is nearing completion, but the growth of the university in the last two years has been such that with this new building, we shall be more crowded than we were two years ago. Dormitories are badly needed. A ten-year building program would surely be filled with provisions for needs more urgent than buildings and hospitals for a complete medical school. The legislature is adjourning today, just what it will have done in the way of appropriations, I cannot say, but I anticipate fair appropriations for maintenance, including a very reasonable increase for the work in medicine, but all hopes for appropriations for buildings have been abandoned long ago.

I have always looked forward to the time when the university could begin to do something in clinical work, and I have hoped and counseled that the state should keep the university in mind as it gives any thought to provisions for certain hospitals, psychopathic, for crippled children, a second tuberculosis sanatorium, and the like. I could be quite hopeful for certain development in this direction, and I have recommended that a start be made toward a university hospital in this ten-year period. But should all come about as we could wish, the clinical provision for many years would amount to (1) a health service for students; (2) a service to the people of the state, particularly in diagnosis and in the treatment of certain and limited kinds of disease; (3) a limited amount of clinical teaching for undergraduates and (4) graduate and practitioners' courses in certain lines. The latter might be very possible. Such clinic facilities might strengthen our work in the laboratory sciences in that it would increase the desirable contact. We might perhaps arrange for certain courses to make up a third year. It would certainly be desirable in any case for the student to supplement his clinical work by courses in a larger institution. I cannot conceive of our having clinical material in either variety or amount to enable us to give a complete four year course properly for many years.

Specifically what we should lack, and what any school in a city of less than 10,000 must lack—a handicap very difficult to overcome—would be sufficient clinical material in four or five very important lines, namely, (1) obstetrics, with its dispensary; (2) the acute communicable diseases; (3) the ambulatory cases of a large outpatient department, patients that lend themselves to repeated examinations and minor treatments; (4) emergency surgery, fractures and injuries, such as occur in large industrial centers.

This is not to say that I do not hope for and expect in North Dakota, as time goes on, a reasonable development of community and county hospitals as well as state and university hospitals both at public expense and by private endowment. Nor does it mean that I am opposed to clinical teaching in the university if it could be adequately provided for. It is to say, however, that at the best the variety and amount of clinical material available

would in all probability be inadequate for a satisfactory complete medical course.

In conclusion, I may not have solved all of the problems of the two year school. There is no occasion for sentiment either for the student or the efforts put forth in two year schools. These schools must stand or fall upon the efficiency of their work and the development of medical education. I believe, however, that a few states having two year schools, and possibly one or two having no medical schools, should establish and maintain complete four year courses. I think that probably most of the two year schools should not attempt such expansion. Unless a state is able to maintain clinical instruction in a big way, as Michigan and Iowa are doing, clinical study is something that must be provided for in cities of a few hundred thousand population at least. In cities, clinical material is not only concentrated, and abundant in variety and amount, but there is more wealth to endow hospitals and schools. Nor should we think that this means a failure on the part of smaller states to do their reasonable share nor that the cities are doing more than their proportion. The population, wealth and importance of no city is due entirely to local conditions. Chicago, for example, serves and is served by every state in the Union, particularly by every state in the upper Mississippi valley.

Most of the two year schools should be encouraged to go on in their present lines, if their work measures up to reasonable standards. The building of university hospitals and the location of certain state institutions with reference to these medical schools should be encouraged by both the authorities of these schools and the leaders of medical education. This should be done for many reasons but not with the idea that these schools will necessarily be enabled thereby to establish four year courses.

If more provision for clinical instruction is needed, as seems to be the case, the efforts of the leaders of medical education should be directed toward the schools of the large cities. Either the satisfactory schools should enlarge their facilities for clinical instruction or schools that are less favored at this time should be strengthened and made satisfactory, or both these conditions should be brought about.

DISCUSSION

DR. CHARLES R. BARDEEN, Madison, Wis.: I agree with what the author has said. The two year schools perform a good service. A great advantage of the two year school is that the medical laboratories, as a rule, are in very close touch with the departments of chemistry, physics and biology. Some of our best schools lose this close touch because they have had to put the medical laboratories away from the university campus in order to be near available hospitals. It is very important for the two year school to keep in touch with clinical medicine. For this reason it is probably more important for the two year school than for the complete school to have men with medical training in charge of the laboratory branches. The two year school, if it keeps in touch with the practice of medicine along the lines mentioned by the essayist, can perform a very good service. If the clinical facilities in many of the larger cities were better organized than they are now, students from the two year schools might be taken care of.

Any state that has the population and wealth and reasonable opportunity of getting the right clinical facilities should establish a complete medical course. But I agree with Dr. French that it would be wrong to establish a complete course where adequate facilities for clinical teaching are not available, and I agree with him that where the two year course is given it should always have contact with medicine in its practical aspects, and that where that is possible, the two year school should be encouraged.

DR. C. P. LOMMEN, Vermillion, S. D.: In South Dakota and North Dakota the medical problems are very much the same. The problems of our medical school may, therefore, be viewed from the points indicated by Dean French in his paper. We also hope to do something to have the state establish institutions of different kinds which may be made use of in clinical instruction. But it will probably take a great many years before the state will have institutions which can be used for instructional purposes; and at the very best it will take at least twenty years before we reach the place where we could have anything like adequate facilities for clinical instruction in South Dakota.

I wish to emphasize two points in Dean French's paper. One of these is the desirability to get some kind of clearing house to help in placing students from two year schools. It seems to me that this plan is worth considering. The second is the suggestion of one or two clinical institutions organized for the purpose of taking care of the product of the two year schools. It would seem that in a place like Chicago, and possibly in a convenient center further east, such schools might well be organized

At the present time, the question of placing our students is quite a difficult one. We have twenty students to place for the coming year. As I have inquired at the different medical schools where these students would like to go as to the number they might have room for I have received answers like this: none at all, two or three, and so on. In the

light of such a condition we certainly are confronted by a practical difficulty in placing students of two year schools. It is a serious problem, and one which causes a great deal of trouble to the deans in question.

DR. W. S. LEATHERS, University, Miss.: Dr. French has covered the subject very thoroughly. He referred to the difficulty of getting teachers for the fundamental branches. We have had perhaps no more difficulty in getting teachers for these branches in the school giving the first two years of the medical course than would be the case in the regular four year school. Of course, it is rather difficult to find men who are competent to teach the fundamental branches of medicine and who are desirous of devoting their life to these subjects for much less remuneration than would be possible in the active practice of medicine. The financial returns from the specialties in medicine are much more alluring to the average graduate than devoting his time and attention to specialization in teaching one of the fundamental sciences. We have been successful in our own school in getting men to accept positions in these subjects, and it has been our plan to get, if possible, men with medical degrees. Of course, there is no reason why a doctor of philosophy should not be secured for teaching such subjects in the medical schools, but there is an advantage in having the graduates in medicine in the schools giving only two years of medicine in order to make the course as practical as possible from the standpoint of the clinical subjects. This would be overcome in the regular four year school by virtue of the necessity of having graduates of medicine teaching the last two years and, of course, a number of the departments during the first two years are in charge of graduates in medicine.

The transfer of students from the two year schools to the third and fourth years of other medical schools is not giving us any particular trouble. Occasionally students delay in making application for transfer and this necessitates extra clerical work because application has to be made in such instances to more than one school, but in the main the difficulty has not been of sufficient import for serious thought. This may be due, in part, to the fact that the two year medical school of the University of Mississippi was one of the first institutions that began giving the first two years of the medical course, and, naturally, we have formed affiliations with institutions that aid us in obtaining such consideration. It is my understanding that the University of Wisconsin and also the University of Missouri have in mind adding the last two years in the near future, and when this is done it will serve to relieve the difficulty very materially because this will greatly reduce the number of students that apply to other institutions for admission to the third year class.

It has always been our plan to advise students to make a careful study of the medical schools and to select the school that they desire and make application only to this institution for admission. As a rule, students do not have need for making further applications, although a student may decide that he prefers to go to some other institutions after having made application and gained admission to a medical school, but this is only

occasionally and we try to discourage it in every way possible. About eight or ten of the students from the University usually attend Tulane University Medical School. several are admitted to the University of Pennsylvania and to the University of Virginia, Northwestern University and other institutions. There is one outstanding fact in regard to the students who have completed the course in the medical school of the University of Mississippi, and that is that only three students who completed their course at the University failed to get their medical degree within the required time in attending other institutions. It is also of interest to note that our students have been making high average grades in the institutions they have attended. I take it that this statement will be true relative to practically all the two year medical schools because I am of the opinion that the students are given thorough training in these institutions, and every effort is made to equip the men in such a way as to protect the reputation of the school after the students leave and enter other institutions.

I do not think that there is any probability of having a four year school in Mississippi for some time to come owing to the economic conditions of the state. The two year medical school of the University of Mississippi has done a large service from the standpoint of interesting the medical profession in the higher standards of medical education and in enlisting their interest and cooperation because of the fact that they would naturally be interested in the policy of the state university. It has been the means of keeping the profession interested and informed in the advances that have been made in improving the standards of medical education; in other words, the medical school has contributed to educating the profession and keeping it informed relative to the modern ideas of medical standards. It appears to me that the two year medical school which is doing thorough work and is properly equipped is doing a real service for the state. I realize the difficulties that have been mentioned by Dr. French, but I think that these are no greater than other difficulties which may be mentioned in connection with any medical school; in other words, the problems involved are not of such a character that they may not be solved satisfactorily and without discredit to medical standards. Incidentally, there are a great many students in every state that could not attend a medical school unless they were given advantages such as are afforded in the two year medical course of the respective states. It seems to me that there would not be any very great difficulty in making proper provision for these students to take the last two years in other medical schools. This certainly is not a difficulty that could not be solved, provided proper consideration be given the matter. The teaching of the fundamental branches so as to properly coordinate the subject-matter with the clinical subjects depends more largely on the practical turn of the teacher than on any system used to correlate the work. Every effort should be made to develop courses in such a way as to give due consideration to the practical aspects of each subject from the clinical standpoint.

Dr. French has presented in a very thorough way the problem of the two year medical school, and I believe that in face of the difficulties mentioned these schools are rendering large service and giving due consideration to the problems involved with a view of maintaining proper standards in medical education.

JOHN N. SIMPSON, Morgantown, W. Va.: It seems to me that the four year schools have an obligation to the two year schools and can render a good service by accepting the students from them. For years we have been preparing students in the first and second years to fill up the gaps caused by their failing students in their sophomore classes. We expect these schools to help us fill up the gap now existing in our medical program. We have done our part as well as we could, and judging by the records of our students after leaving us we are not ashamed of the result. One of our students stands thirteenth in the senior class at Harvard, one second at Jefferson. At all the different schools with which we have had relations, there have been four failures in twenty years.

Our board of education has established a four year school at West Virginia University, but it will take at least five years before we can build the hospital and put the project through. In the meantime the four year schools must do something to tide us over. When we had not more than fifteen students to locate for their junior work we had no difficulty. Last year we had forty-nine. Thirty of these wanted to go to Jefferson. Dean Patterson of Jefferson told me that he had 300 applications from fifty of the sixty-seven class "A" schools to enter their third year class. There were twenty-seven vacancies and six were given to us. We finally located all our men, but it was not until the middle of August, and they were scattered from Harvard to Chicago and St. Louis.

When the four year schools consider the small percentage of failures of the products of the two year schools, and that we fill up their junior classes at no cost to them, for their previous training, it would seem that they should enlarge their clinical facilities to take care of them, instead of cutting them down. We have not carried our full burden of the cost of medical education in the past, largely due to our lack of clinical facilities but we have provided the most expensive half of the instructions. Unless you can continue to cooperate we will be compelled to close our school and leave the burden entirely to you.

We feel if you will standardize the first two years so that we can know what clinical branches we should introduce, we will meet it, but as it is, each school has its own ideas and it is very difficult to meet all of them. We have introduced in connection with physical diagnosis an elementary course in medicine, also a course in clinical diagnosis and a preliminary course in obstetrics. West Virginia realizes fully her responsibility for the education of her own physicians, and until the plans are fully carried out, we want your encouragement and help.

DR. WILLIAM DARRACH, New York City: The two year schools are doing a splendid piece of work. Personally, I worry about their future.

At Columbia we have in the past admitted to advanced standing a great many students from the two year schools. Recently the problem has changed. The increased demand on the part of the students to enter medical schools has compelled us to limit our classes as to numbers. The limitation of classes requires the selection of students. Whereas formerly we had a fairly large class with a pretty high mortality rate, with the selection of students we have eliminated that high mortality to a large degree, so that now the mortality among the first two year students is much lower than it was and it is decreasing all the time.

Five years ago we had sixty-eight vacancies for the third year. Two years ago we had five vacancies. We are trying to allow for a certain amount of mortality in the first two years so we admit to the first year a little more than we can handle in the third year. By the time the third year comes the number of vacancies that exist will be small. I believe that this is true of the large majority of the four year schools. If that is true, the problem of placing men from the two year school will be increasingly difficult. I can only see two answers to the two year school problem. One is to change these two year schools into four year schools and the other is for them to stop. If a man has two years of medical education and has no chance to go on, his future is very doubtful.

DR. C. P. LOMMEN, Vermillion, S. D.: With reference to the character of students sent out by the two year schools during the fifteen years our school has been in existence we have not sent out a single student who has failed to make good. We have never had any trouble in placing our students until last year. They have gone to two or three places where they have had room for all of them. Last year we could not find places for more than two or three students at any one school. We placed them all, but it can be seen that the situation was difficult. This year the situation seems to be the same.

DR. WALTER L. NILES, New York: Ultimately the number of two year students will increase to the extent we expect in other years, which will provide for a considerable number of desirable students from the two year schools. Our experience has been that the work of the students from the two year schools has been very satisfactory.

DR. FRENCH (closing): I said nothing about the good work of our two year students, but we have had no students who have failed to make good in any of the four year schools. In the same way, we have had no difficulty in placing our students until last year. In fact, most of our students have gone to the Chicago schools, Rush and Northwestern. A few have gone to Harvard and Pennsylvania and a few elsewhere.

The two year medical schools are rendering valuable service to the universities, to the medical profession, and to the laity of the various states in which they are located. They are making it possible for many a superior student to study medicine, and they are bearing a good part of the expense of the laboratory years. Doctor Darrach suggests that

there are two possibilities for them at this time, one to expand and the other to quit. With the four year schools reduced in numbers and limiting their entrance numbers, it would seem that this is true. I should like, however, to emphasize another possibility brought out in my paper and mentioned by some speakers in discussion, and that is organization of the clinical material in the larger cities to take care of more students. The clinical possibilities in such cities as Chicago, Philadelphia and New York are by no means exhausted, and it seems to me that any one or more of three solutions exist, (1) the enlarging of the facilities for clinical instruction of the first class schools in these cities; (2) the strengthening of the work of schools that are now not so popular; (3) the organization of one or more new schools whose chief function should be to provide for the students coming from the two year schools.

THE TEACHING HOSPITAL

CHARLES N. MEADER

Dean University of Colorado School of Medicine
Denver

Instead of the rather broad and ambitious subject, "The Teaching Hospital", inadvertently appearing on the program, it was intended that this paper should concern itself briefly with some of the consideration involved in planning the mechanism of support for a state owned hospital erected as a part of the state university medical school. At first sight this may seem somewhat simple, but as we in Colorado have considered the problem and have sought light from those of you who have had practical experience, it has appeared that, in addition to the varying requirements imposed by varying state constitutions and financial systems, there are many differences of opinion among those who have given thought to the matter. It has appeared to us also that there are certain underlying principles of human and political psychology to be considered, all of which it might be worth while to present as a basis for discussion.

Consideration may first be given to the classes of patients to be provided for; whether one or all of the usual groups of free, part pay, per diem and private patients should be accepted. No question can, of course, arise as to the propriety of accepting the indigent patient, unable to bear any part of the expense of his care. The state general hospital should by definition be primarily for his care and treatment and, analagous to the municipal or county hospital, fulfills its most important humanitarian and economic function in restoring him to the highest attainable degree of comfort and earning capacity. Surprisingly enough, some difference of opinion exists as to the propriety of accepting part pay and per diem patients. For purposes of administration and discussion, the part pay patient may be defined as one who is able to pay in part but not in full the actual per diem cost of his hospital treatment and maintenance, and is unable to pay ordinary physician's and surgeon's fees; the per diem patient may be defined as one who is able to pay the full actual per diem cost of his hospital treatment and maintenance but is similarly unable to pay ordinary medical fees.

Opposition to acceptance of these two classes is based first upon the fact that they are now cared for in varying degrees on a basis of varying payments by existing private hospitals from which they would be diverted and, second, upon the allegation that many would be accepted as per diem patients who could pay a physician's fee. The first argument is unsound because, while the reception of part pay patients by the private hospital may increase its statistics of patients cared for, they constitute a drain on its resources rather than an asset. Moreover, it is scarcely likely that the state hospital will be able to establish a monopoly in doing good; the number of ill and disabled persons requiring some degree of help is too great, and the competition between it and the charity ward of the private hospital is likely to remain, as it should be, a contest as to which shall render the best service. The second argument that competition with the private physician would be introduced by acceptance of per diem patients merits examination.

It is manifest that whether a given person comes within our definition of a per diem patient will depend upon two factors at least, first, the economic conditions prevailing at a given time and their effect upon that patient's economic status, and second, the nature of his illness or disability, whether it requires brief or prolonged hospitalization and treatment. It should be manifest that a third factor is of equal importance, namely *adequacy* of treatment. It will not rarely happen that a patient is able to pay the entire cost, including physician's fees, for casual treatment but is totally unable to finance a complete, adequate study and treatment. It should be the function of the state hospital to set standards of such adequate care, and it should be the duty of the private physician to encourage the hospital in the performance of that function to the end that the primary right of the patient to as prompt and complete a restoration to health and earning capacity as is scientifically possible, be conserved.

That borderline cases will arise in which the hospital admission authorities, aided by the social service department, must balance the interest of the patient and the interests of the physician, does not constitute an argument against the acceptance of part pay and per diem patients by the state hospital. Such patients are frequently as unable without aid to secure proper and

adequate treatment, as are the frankly indigent and their restoration is as important an humanitarian and economic enterprise. The fact that the sums paid by them diminish the amount of public support required is fortunate but is not the primary argument for their acceptance.

The private patient, by definition able to pay not only the per diem cost of hospital treatment but also his physician's and surgeon's fee, is an even greater source of disagreement. One of the chief arguments for his admission rests upon the statement that the state hospital, affiliated with the medical school, offers peculiarly excellent opportunities for the study and treatment of his case to which he, as a taxpayer of the state, should not be denied access. Granting the excellent facilities which are or should be offered by the state hospital, it is not at all clear that it is either necessary or desirable that they should be furnished by the State to those able to finance the development of similar facilities for themselves. Were there anything in the nature of these facilities which made their acquisition impossible by private enterprise, the argument might be sound, but the present existence of not a few private hospitals offering comparable service is proof that more may be developed as the demand warrants, and the use of public funds to provide for those able to provide adequately for themselves would seem unjustifiable. The one sound argument in favor of the admission of private patients to a state hospital would seem to be that it is necessary in a given case, or perhaps in all cases, in order that the income derived from them may sufficiently supplement the hospital budget, to enable it to command the services of a staff otherwise beyond its financial reach. Whether such income is received directly by the hospital as a fee for professional services, to be later paid out to the staff as salary, whether it is collected by "loading" the per diem rate paid by the private patient, or whether the fee be paid directly to the staff member, the benefit from it accruing indirectly to the hospital in the form of a saving in the salary which it must pay, it should be clearly recognized that the reception of such patients brings the hospital into apparent competition with the medical profession of its state. The term "apparent competition" has been used advisedly for analysis would usually show that the total income received by the staff member charged to be thus favored is

not more and, indeed, must frequently be much less than he would receive in private practice in the same commonwealth. Nevertheless, the ranks of such apparent competition may be widespread and it would seem that if a policy of having private patients contribute to the support of a state hospital is adopted, the reasons therefore should be stated frankly, and the probability of incurring more or less general professional opposition reckoned with in arriving at the decision.

A further reason advanced for the reception of private patients is that the fees paid by them may eke out the hospital maintenance budget in times of niggardly provision of public money. With such contingency in view, it is probable that the state hospital, particularly if it must depend upon legislative appropriations, should secure to itself the right to take private patients, but it may well be questioned whether such right may be wisely and justly exercised save under considerable financial pressure and whether if thus exercised, the support and good will alienated would not more than offset the advantage gained.

If the view prevails that the admission of private patients is unwise, save as necessary to finance staff salaries or to eke out temporarily inadequate public funds, state hospital maintenance must be derived from part pay and per diem patients and from public funds. The income from the former is not likely to be great and the means by which public funds are received thus becomes of primary importance.

It is a long-standing practice of American politics, that the care of the sick poor is a charge on the county of their residence, and a method by which funds should be derived from the counties of residence of the patient has in its favor that it is in line with established custom and modes of thought. It is attractively simple to charge the cost of each individual patient back to the county, to be paid to the hospital as other county funds are paid; it provides an elastic source of income to the hospital, proportioned at all times to the demand for its services, and has the further merit of distributing the cost of hospital maintenance to those most utilizing its service. A most serious practical drawback to this plan, however, lies in the fact that to the minds of most county officials the present type of care afforded county patients, consist-

ing all too frequently of bed and board and a modicum of nursing and professional care, is ample and all that they deserve. Such care can be furnished in the counties themselves at a fraction of the cost of adequate care and treatment in a well equipped hospital and, until human nature changes to such an extent that county officials cast a less attentive eye upon expenditures for the promotion of health and upon the prospects of the next election, and turn a more interested mind toward the relief of these unfortunate charges, it is futile to expect that any considerable number of patients will be sent to the adequate but more expensive state hospital in competition with the inadequate but cheaper local facilities under any plan by which the counties directly bear the entire costs. This is particularly true of the smaller and more remote counties where the need for such service as the state hospital affords is greatest. The pill may be sugar-coated, as with the Michigan law covering admission of adult patients, by providing that the hospital receive its payment from the state, which in turn collects from the county. This process appears to make it much more palatable but even so it appears to be not infrequently refused with the result that patients needing the type of treatment afforded by the state hospital are denied it through fear of added expense to the county.

It is not difficult to predict that with the increasing development of county hospitals and local community hospitals caring for charity patients, the tendency under a plan of county support will be more and more to keep these patients at home. If equally efficient treatment can be provided there such a tendency is of course justifiable and laudable, but in all too many instances this is not the case.

A modification of the method of entire support by the county is the plan of a half and half division of the expense of each patient between the state and the county of his residence now being tested in Minnesota and Wisconsin. Such a plan has the advantage of following the line of thought of the federal-state participation schemes recently so much in fashion, and of enlisting the county's interest as well as its funds in the enterprise, without making undue demands upon either. This is eminently desirable, provided it can be accomplished without discouraging the counties from sending in proper patients. It is probably too

early to decide on the basis of experience whether the half and half plan will attain these ends or not, but the evidence thus far suggests almost as much reluctance on the part of the counties to participate in this as on the full time basis.

It is clearly desirable that some portion of the cost be borne by the counties in order to discourage any tendency toward undue dumping of patients on the state hospital, and the University of Colorado has attempted a solution of this problem by providing in its pending bill that a charge shall be assessed by the regents against the county of residence of each county patient at a rate fixed by the regents from time to time, but at no time exceeding one half the actual per diem cost. It is hoped that this elastic plan will make possible a sharing of the financial burden and the retention of the county's cooperation.

With the above consideration in mind, it has seemed to us wiser that the state should bear the major share of the burden of hospital support and that no injustice is involved therein, providing the services of the hospital are made equally available to each county in proportion to its population. If a given county has its duly proportionate opportunity of using the hospital, the fact that it does not do so for one reason or another should not be considered to work injustice to it. A variety of mechanisms by which state funds may be made available for hospital support have been proposed and several of them are in operation. These include :

1. By appropriation made by each legislature to meet the anticipated budget submitted by the hospital.
2. By continuing appropriations, adopted by a given legislature and presumably binding upon its successors.
3. By a continuing mill levy devoted to hospital support.
4. By the presentation of bills by the hospital at stated intervals to the state, itemized for individual patients, such bills to be paid out of general funds without any stated appropriation.
5. By a specific appropriation, biennially or continuing, to meet salaries, general maintenance and research, but providing that the actual patient cost of nursing, maintenance and treatment shall be paid as a separate item on individual bills rendered

either from a separate appropriation or out of general funds without specific appropriation.

The successful operation of the fourth plan in Michigan and Iowa over a sufficient period of years to test its merits is strong presumptive evidence in its favor. It has the very great theoretical advantage of elasticity, for under it every worthy patient presented can be cared for up to the limit of bed capacity, while on the other hand the state is insured against overappropriation as well as against the spending of any money, save as it is actually needed, and the psychological advantage of a continuous demonstration that the hospital is paid only for services rendered is apparent. Unfortunately for the universal application of this principle, certain states, among them Colorado, have a constitutional provision that no money may be expended by the State out of general funds save on legislative appropriation for a specific purpose. Under these circumstances it is necessary to consider the relative merits of biennial appropriations, a continuing appropriation, or a mill levy as a means of support. The establishment of a revolving fund within the university budget, devoted to hospital maintenance which shall be replenished continuously by crediting to it state warrants as they are drawn in payment of bills of individual patients as rendered by the hospital, should be considered, but unless the university is in a strong financial position, with an assured income independent of legislative appropriation, such a plan carries with it the dangerous possibility that the inevitable and perhaps rapid growth of hospital activities will throw an unequal burden upon the university budget, crippling other departments—an outcome to be avoided at all hazards. Were all legislatures composed of natural lawgivers, broad of mind, trained in logic, well informed, forgetful of coming elections and single-mindedly attentive to the needs of the commonwealth, not only would the millenium be at hand, but the biennial appropriation would be a most useful basis of hospital support.

Granted the uncertainties of dependence upon legislative temperament and the waste energy involved in a biennial presentation of hospital needs, the plan has one staunch supporter among you who has demonstrated that it is feasible. It has in its favor its simplicity, its considerable elasticity and the fact that it keeps

each succeeding legislature in close touch with the hospital. It is, perhaps, not a drawback that the hospital is kept on the alert to render a quality of service meriting the support which it needs. Both the continuing appropriation and the mill levy have the outstanding advantage of permanence, though in the former this is considerably offset by the disadvantage of inelasticity, a disadvantage which forces a choice between asking an initial amount sufficiently high to cover probable expansion of the hospital budget as its service grows, or asking an amount adjusted to cover the immediate needs of the hospital and those probable in the near future but manifestly too low for the more remote needs. The former course carries the disadvantageous probability that the entire appropriation or levy will not wisely be spent in the early years thereby earning the charge that too liberal an amount was asked; the latter, the difficulty of raising an estimate once set, whatever the evidence adduced to justify such increase. Endeavoring to seize the horn of the dilemma which in view of all local circumstances seemed least sharp, the University of Colorado is asking a continuing appropriation specifically for hospital maintenance, to be administered by the Board of Regents as other university funds are administered.

Certain expenses, other than those for hospital care must be provided for. These include the cost of the initial physician's examination prior to recommendation to the hospital, and any expense involved in determining whether the applicant is properly a free, part pay, or per diem patient. Such expense should be borne by the county and it seems probable that the county commissioners, or other equivalent county officials, can pass most expeditiously and economically on the patients financial status and recommend him to the hospital. The distribution of the cost of transporting to the hospital such patients as are unable to pay their own fare and the expense of an attendant, where needed, is somewhat troublesome. If such costs are assumed entirely by the hospital, the temptation to certify patients as unable to pay without justification and particularly to send friends and political adherents on a junketing trip as attendants at state expense, is likely to prove irresistible. On the other hand, if the hospital is to be supported by the state, especially if the state be of large area with widely scattered centers of population, the cost of such

transportation is likely to be regarded as prohibitive by the more remote counties, with the result that they not only fail to receive their due share of the benefits of the hospital but, feeling that they receive no return, are likely to be transformed into actual opponents of it. With some doubts we have tried the experiment of providing that the cost of the patient's transportation to the hospital shall be advanced by the county, to be repaid by the hospital on proper certification and that the cost of his transportation home, where necessary, will be paid by the hospital, but have left the cost of any necessary attendance to be borne by the county.

One type of service which the hospital should render and from which a small income will probably accrue lies in the care of patients in other state institutions needing its services. Certification by the county of former residence of such patients as provided in other cases seems likely to prove difficult of administration, and it accordingly may well be provided that they be admitted on certification of the Board of Charities and Corrections, the actual per diem cost of their care to be paid out of the funds of the institution from which they come.

DISCUSSION

DR. L. S. SCHMITT, San Francisco: Dean Meader has set forth all of the fundamental problems that a hospital connected with a state university has to meet. I would like to give our experience in the past few years in the hospital of the Medical School of the University of California. This hospital is maintained by endowment, by its earnings, by state aid, and by university funds. The state aid is a legislative biennial appropriation of approximately \$200,000.00 and it is administered by the Board of Regents of the University of California. All concerned consider the university hospital as a laboratory medical school. State aid is derived from the care of patients who can afford to pay in part or not at all. The fees are entirely dependent on the social service department rating. Patients are permitted to remain in the University Hospital during their acute illness. It is not a hospital for chronic cases. The turn-over is rapid. Under these appropriations and this arrangement the university hospital is maintained entirely as a teaching hospital. The University Medical School in conjunction with the Stanford University Medical School takes care of the patients in the San Francisco Hospital and uses

The advice so freely and cordially given by those members of this Association who have had practical experience with these problems is most gratefully appreciated.

them for teaching purposes. The medical service is divided equally between the two institutions. There is also an arrangement by which the appropriation for the medical school and hospital is combined, except for bookkeeping purposes. The medical school takes care of the income or of the cost of medical attendance at the university hospital, and the university hospital carries part of the overhead of the medical school.

We also have a fifth year. The hospital maintains the board and lodgings of interns. The university hospital is considered a branch of the medical school, and to further this purpose the offices of director of the hospital and the dean of the medical school have been combined. In this way there is no question as to expenditure in relation to the hospital or medical school, and the hospital is maintained entirely for the purpose for which it was built, namely, that of a teaching institution. The question of the private patient also seems a rather simple one. We limit the number of private patients admitted to the hospital, and only physicians who are connected with the staff and teaching at the university hospital are permitted to send private patients to the institution. In this way the hospital is utilized to the greatest extent, for teaching purposes.

DR. C. G. PARNALL, Ann Arbor, Mich.: I am aware that this question of the private patient in a state university hospital is one on which, perhaps, there is not very great unanimity of opinion, particularly when we consider the medical profession outside and the teachers in the medical school with which the hospital is connected. There is one point on which I disagree with Dr. Meader when he says that perhaps the only sound reason for the admission of private patients to a university hospital would be on economic grounds. I do not regard that as a sound reason. The soundest reason I know for the admission of private patients to university hospitals is that private patients are needed for teaching purposes. The real function of medical education, after all, is to prepare practitioners of medicine, and if we are devoting most of our attention to that object, it would seem to me that the admission of private patients to university hospitals is desirable in order to prepare the best type of private practitioners, because the private practitioner obviously is going to have to do with private patients and must take care of them in hospitals.

Dr. Meader referred to the working of the plan here in Michigan and in Iowa, the Iowa plan being a copy of the Michigan plan. I did not think when this law was planned that there was any hope it would work out so satisfactorily as it has. It has proven very satisfactory.

In Michigan we have a combination of the two plans mentioned by Dr. Meader, one in which the charges are made directly against the state, and the other in which the charges go back ultimately to the county. The plans here are these: For the care of children a statute passed in 1913 provided that the probate court of any county, on representation of proper agents, may, after the patient has been examined by a medical practitioner be sent to the university hospital. All of the charges are billed to the auditor-general and paid out of the general fund. There is

no limit as to the amount that shall be expended by the hospital for this class of patients. It has been intimated in the paper that this law has been subject to some abuse, but considering the number of patients we have I think the abuse, after all, does not amount to much when we consider the elasticity of the plan and the ease with which it furnishes hospital facilities for the crippled children of the state.

The other law point applies to adults. The difference here is that the cost is paid ultimately by the county. The law requires that the hospital shall itemize the bill for services for each patient and send it to the auditor-general by whom it is audited and allowed. The rates are fixed by the Board of Regents and they may change from time to time, if deemed proper, according to the actual cost of operation. The state assesses to the various counties for the cost of care of adults in the university hospital the amount that has been expended.

Theoretically, perhaps, there are other plans which are better, but during a number of years this system has been found to operate very satisfactorily.

DR. HENRY PAGE, Cincinnati: I would like to ask a question. Does the charging of private fees to patients in these state institutions cause any feeling of resentment on the part of the local profession? The feeling in Cincinnati is that a paid professor should treat only charity cases in city hospitals: that private cases should not be admitted. They seem to feel that as the professor is paid by the city he should not use the City Hospital for any private purpose. They claim that this is equivalent to subsidizing the professor and giving him an unequal advantage over the ordinary practitioner.

We found this out when we tried to create a private ward in the Cincinnati General Hospital. Much of the opposition to this ward was predicated on the false assumption that the paid professor was about to use his official position as well as the hospital to enter on an unfair competition with the doctor not so favored by the city as he. At any rate, we have had to abandon for the present any idea of a private ward until we can build a college hospital.

Another reason why we had so much opposition was that very few of the local doctors realized how necessary it is to have a private ward if the college wishes to turn out trained internists and surgeons. Charity hospitals have every variety of case but it is only in the private hospital, attracting patients over a wide area, that you can hope to gather together a large series of special cases for concentrated investigation. Without this concentration you cannot attract nor hold that type of student who wishes to become a finished specialist. Without this type of student a college cannot hope to achieve a very lofty place in educational fields.

This is one of our home problems and I am anxious to hear how the same problem has been solved elsewhere in city or state colleges.

DR. IRVING S. CUTTER, Omaha: The plan in Nebraska is rather unique in that there are only two or three lines on the statute books, namely, "there is created a university hospital which is under the control of the Board of Regents of the university, and patients may be admitted to and discharged therefrom under such rules and regulations as the Board of Regents may from time to time make." That is all the law there is on the statute books. The rules and regulations of the Board of Regents have the effect of law.

We have approached the problem a little differently so far as pay patients are concerned. We have the sentiment of the medical profession back of us to the extent of 100 per cent. We have had in the hospital during the five years since its organization 2,500 cases each year, wholly charity cases, and have not attempted in the slightest degree to charge the cost per diem for the care of these patients back to the county. For thirty years the plan in Nebraska for the care of insane patients and those committed to industrial homes, homes for the feebleminded, maternity homes, and places of that kind, has been this: the cost of their care was charged back to the counties on a per diem basis, and the result was bickering and strife in the legislature for many years before the organization of the university hospital. We did away with that sort of thing, and the Board of Control appropriates a lump sum for the care of the insane, the feebleminded and the patients in industrial homes. Therefore, it is an easy matter to go before the legislature and get an appropriation for the university hospital, not as a separate charity at all, but simply as a part of the appropriation for the College of Medicine. As in California, the hospital and the college are one institution, not separate entities, and the institution is not specifically mentioned in the appropriation bill. The entire amount is appropriated.

DR. L. W. DEAN, Iowa City, Iowa: The question of Dr. Page may be answered in a few words. "We have on the clinical staff only men who will not come in competition with the members of the profession of the state. They help the members of the profession as much as they can, but do not come in competition with them.

DR. A. P. MATHEWS, Cincinnati: How do you avoid having men come in competition?

DR. DEAN: We pick out the right kind of men. Our professor of internal medicine does not care to practice medicine. Our professor of surgery does not care to do private work in surgery. They do that amount of practice which satisfies the members of the medical profession of the state.

DR. MATHEWS: I should like to know what the amount of work is.

DR. DEAN: Clinicians appointed since July 1, 1920, are limited to two hours a day of private practice. Dr. Rowan, professor of surgery, devotes on an average of thirty minutes a day to private practice; Dr. Byfield,

professor of pediatrics, the same; myself, in the head specialties, less than one hour.

Let us take, for instance, the case of Dr. Rowan. He will do no work outside of the University Hospital. He is a general surgeon. He will not go out in consultation unless it happens to be to see a case that he has already treated or it happens to be in the family of some of his old students. He will not go to Mercy Hospital in Iowa City and operate; it makes no difference what the financial inducement is. He positively refuses to go out because his main reason for being in Iowa City is to teach clinical surgery. He sees privately a few difficult cases where it is patent to some members of the medical profession in the State of Iowa that he can do better work with his facilities than somebody else. He does very little work locally.

The whole secret of the thing is that these men live in the University Hospital. They have offices there. They have their private cases in the University Hospital. Dr. Rowan reserves for his private cases something like four beds. The other day they were all occupied by nurses and medical students. Dr. Rowan insists that he is there for the purpose of teaching clinical surgery and not for private practice, and he only wants to make a certain amount of money in a year. I am speaking frankly. His salary as a teacher is \$4,500.00. He makes in general practice about \$12,000.00 a year, and he is perfectly satisfied with that income.

The same thing is true of the head of the Department of Medicine.

Dr. Steindler does the orthopedic work. It is difficult to get orthopedic work done in the state, hence Dr. Steindler does a little more private work than some of the others. The result is this: eight years ago our state medical society appointed a committee to investigate the College of Medicine at the State University of Iowa. These men frankly felt we could not make a good school of medicine. We are now asking the legislature for two and a quarter millions of dollars for a hospital. Every county medical society in the state has urged that this money be given. Our state society, through its legislative committee, is working to get this two and a quarter millions of dollars for the University Hospital. This is all due to the fact that there is no competition from any man on the clinical staff with any other men in the state.

FOUR YEARS IN MEDICINE: THE HOSPITAL MEDICAL SCHOOL

THOMAS ORDWAY
Dean Albany Medical College

In a recent address, entitled "The Dry Rot of Our Academic Biology", the president of the American Society of Naturalists, Prof. W. M. Wheeler, severely condemned the present methods of teaching biology. Although his address is written largely in a facetious vein, there is much that might justly be applied to the present status of teaching medicine. I strongly advise you to read or to reread this paper* having in mind the suggested application.

Dr. Henry S. Pritchett, in discussing the relation of medical education to medical progress in the sixteenth annual report of the Carnegie Foundation for the Advancement of Teaching, gives a direct challenge to medical educators, most forcibly expressed as follows:

The medical curriculum of today represents the conception of teaching of a half century ago, modified by certain laboratory practice superimposed upon it. What is needed is to abandon this conception entirely and to plan a medical curriculum afresh in the light of present day knowledge of medical science and of medical education. No step will do so much for medical progress as such a readjustment of the medical curriculum. It will require technical knowledge and teaching ability of a high order to compass it and the greatest difficulty will be found in overcoming the rigidity and inertia of the existing order of things. Teaching institutions are inelastic; to try an educational experiment it is almost necessary to found a new institution. Whatever agency may undertake this task must have the courage to do two things,—first, to reduce the load laid upon the student to a point where he may have time to think and to digest in some measure the studies with which he is concerned; and secondly, to scrap the present rigid curriculum and construct a new course of studies in which anatomy and physiology and chemistry and pathology are not separate and distinct things to be taught at different times, but are parts of one thing to be learned and applied as the exigencies and the opportunities of the lecture room, of the laboratory, and of the hospital may provide. Perhaps only a new medical school will have the courage and the initiative for such a step.

Thirteen years ago, in a paper on "The Teaching of Pathology by the Case System, Supplemented by Gross and Microscopic Specimens", while discussing the advantages of this method, I emphasized the fact that the chief

"value of this laboratory instruction lies in the fact that the student takes the initiative and active rather than the recep-

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tive and passive attitude. He may be an "investigator" almost from the start. This is well shown in the so-called Agassiz method of laboratory instruction. The didactic lecture is largely used owing to the possibility of orderly presentation of the subject in a limited time to a large number of students, to the opportunity for the lecturer to offer his personal experience for elucidating obscure phases of the subject, and for its directive value."

As Curtis has said:

"Education is something more than barnacle-like accretion of facts; if that were all, the mind is as likely to be burdened and hindered by them as furnished and helped". In the lecture method the student takes little or no active part, is very apt to learn the subject matter in parrot-like fashion and more often recalls later merely the mannerism of the lecturer than to be influenced by the stimulus of his personality. The exposition of the general subject matter is likely to be better in a carefully selected modern textbook. A well arranged synopsis indicating the general scope of the subject and giving the relative parts due emphasis may be used, thus acting as a directive for supplementary reading and at the same time with blank space and index providing a reference storehouse for such actively acquired knowledge.

Although the clinical branches offer greater opportunity for case and problem teaching yet similar methods of instruction may be used to advantage to supplement and unify the so-called laboratory subjects and particularly to fit the student for his clinical work by having him thus actually see the interrelation between and the entity of laboratory and clinical interests.

A hurried review of present tendencies and a glimpse of incipient and suggested experiments in medical education is the object I have in mind. Any detailed exposition of such a venture will be reserved for a later communication.

The great improvement in medical education during the past fifteen years is a source of gratification. The credit for this is largely due to the organizations whose committees and other members have made special surveys and reports and set definite minimal standards for medical schools. The establishment and maintenance of such standards is due in great part to the full time so-called preclinical or laboratory teachers in the fundamental sciences. These teachers, often at sacrifice of scholastic environment and of adequate compensation, have succeeded to a marked degree in placing their respective subjects on a high academic level.

In these early years few of the clinical teachers had received adequate training in the then newly developing laboratory subjects, although many were excellent teachers of the strictly clin-

ical branches. They worked in a most altruistic manner, at great personal inconvenience, and with very little or no compensation. Other men, unfortunately, were appointed, even in the best medical schools, because of the clinical material which they "controlled" or because of political or ancestral influence. Such teachers gave little time or knowledge to the clinical positions which were considered of practical, commercial value to the incumbent because of the prestige and the necessary consultations sought by their poorly trained students.

It is not difficult, therefore, to understand why the full-time science teachers had little in common with many of the clinicians.

Notwithstanding the increasing clinical application of the fundamental sciences, it must be acknowledged that a different point of view has continued to exist in many medical schools between the clinical and laboratory departments. As the years passed, increasing numbers in the succeeding generations of clinicians were men who had spent considerable time (in certain instances even five or more years) in one of the fundamental sciences before devoting themselves to clinical teaching and practice. It might have been supposed that such men, because of their training, would have a most sympathetic interest and desire for cooperation with the preclinical departments. Indeed, such was in many instances the case. An element, at least temporarily disturbing, has come about as follows:

The academic success of the full-time laboratory departments placed the clinical departments in teaching, research, organization and financial support at a decided disadvantage. It was believed that as more and more men were being trained in and desired to apply their scientific studies in the clinic, it was logical and desirable to place the clinical departments also on a full-time basis. It was found, however, that few men of suitable scientific training combined with wide clinical experience could afford or cared to accept such positions. This was due to the fact that not only was their income greatly reduced, but in large degree they were cut off from contact with other practitioners of the district from whom many of the interesting cases were referred and also they were unable to maintain the intimate relationship of personal physician to those who frequently became interested in assisting educational activities. Indeed, to a certain degree only

young men of academic research possibilities, clinicians merely potentially, were found available for even the highest positions in the clinical departments and to secure these men it was found to be necessary to pay them almost twice as much as had been received formerly by teachers in the fundamental sciences, even though the latter were older and had devoted years to their special subjects.

This discrepancy in salary and the desire for departmental independence has not helped to bring about general cooperation. Indeed, the full-time clinical departments, medicine, surgery, obstetrics and pediatrics, because of defective department cooperation, or in order to work out their own problems in their own way, have established subdepartments in most of the fundamental sciences. If this is carried out to the logical conclusion, not only will the expense of medical education be increased enormously, even over the present high cost, but the quality of research will ultimately suffer; for it is not reasonable to suppose that trained scientists will accept positions in these subdivisions of the clinic but rather selection will be made of high grade technicians and younger graduates. Many of the latter would have formerly gone into the fundamental science departments to be trained by older scientific teachers and not merely learn to apply certain technical procedures in the subdepartments of the clinic. There is every inducement for younger men to accept more or less technical positions in the clinical subdepartments. They may look forward to greater financial return and in a shorter time either in clinical teaching positions or in practice. This plan is already having its effect in taking from the fundamental science departments the best, indeed most all, of those who formerly were applicants for assistantships in the preclinical departments. An equally bad effect may arise in the further separation of the viewpoint of the heads of the clinical and science departments and thus lead to even more complete isolation of the latter. It may be immediately gratifying to the full-time clinical teachers to have ample technical assistants to work out their ideas but such ideas should be amplified, deepened, disproved or verified by the critical yet constructive advice and cooperation between those of equal training and experience in the fundamental service departments.

Before considering how such difficulties may be minimized, it is necessary to discuss briefly certain general questions about

medical schools for upon these will depend in large part the experiment of preventing departmental isolation and of assisting in cooperation and correlation of the work of premedical, preclinical, and clinical studies.

WHAT IS THE PURPOSE OF A SMALL SCHOOL?

Naturally one would answer that the purpose of a medical school is to train students to practice medicine. In the great majority of instances it would seem advisable to have the students developed as general practitioners. At the present time it is the custom in certain of the training schools for nurses to insist that for the first five years after graduation nurses, in order to be allowed to register, should take any cases in general nursing which are presented and that after five years they are allowed to specialize by selecting certain types of work.

It might be desirable if this could be applied to medicine and would help to supply the need of general practitioners, and also give those who desire to specialize a broader foundation and wider angle of vision. Cushing has even suggested a trial period of actual house to house practice under supervision before graduation. It is very doubtful if any marked degree of specialization should occur in undergraduate courses. Indeed, the pendulum is swinging back to the point where it would seem to indicate that it is best to teach simply the bare essentials of the medical and surgical specialties and these only in their close relation to general medicine and surgery and to reserve further specialization for systematic postgraduate instruction leading to a special degree or other recognition. The idea of training general practitioners, however, does not express the entire function of a medical school, for to develop a satisfactory physician means more than imparting a definite, or indefinite, amount of knowledge of facts and theories. It should mean the acquiring by the student as early as possible of the research point of view so that as a practitioner he may realize that each patient or even each change in the condition of a patient is a new problem to be solved. Such an attitude should prevent to a considerable extent routine orders in the management of patients and allow practitioners to make real contributions to the development of medicine. This orientation toward medicine cannot be obtained unless the teachers have this

point of view and they can best gain and instill this by being investigators themselves and adding to our store of knowledge. Then, too, as medicine is constantly changing, new facts being discovered and old theories discarded, the medical school should be able to assist practitioners in keeping in touch with the real advances in medicine, showing them that many customs and claims are false by providing opportunities for theoretical study and practical application. These three functions in varying degree should be common to all medical schools. The training of specialists and certain types of review courses must necessarily be restricted to the larger schools, particularly to the medical universities.

WHAT SHOULD BE THE SIZE OF A MEDICAL SCHOOL?

The size of a medical school will naturally vary depending upon the organization, finances, the clinical material available, and the type of work undertaken. Furthermore, each of these factors is apt to be related to the other. It is very generally agreed, however, as a pedagogic principle that it is desirable in the teaching of medicine to maintain an intimate, personal relation between teacher and student. Hence, unless the quality of instruction is to suffer classes must be limited in size and even then other subdivision into sections is necessary. In certain branches of clinical teaching bedside sections of four or even two students have been found desirable. In obstetrics we have found that instruction in observation and care of cases prenatally, during, and after labor is best secured by having a single student assigned as clinical assistant to one instructor. Limitation in size of classes and sections favors interdepartmental cooperation and also allows more critical selection of students having the proper scientific and ethical requirements. The minimal number of students accepted must be governed by the permanent financial support received and other so-called practical considerations. In other words, in determining the size of a medical school there is both an upper and a lower limit beyond which it is not desirable to go.

WHAT SHOULD BE THE LOCATION OF A MEDICAL SCHOOL?

It is now generally agreed that a medical school should be a definite, integral part of a university. Other conditions being

equal it should be located in as close proximity to the academic and other professional schools as possible both for the general cultural and broadening effect upon the students and teachers, also in order to keep them in touch with and integrate the premedical students' work and to favor cooperation with those engaged in the so-called pure science departments. The "other conditions" referred to concern particularly the hospital relationship. Only in a large general hospital, under the complete control of or owned by the university, can conditions be fulfilled which are essential to our conception of the purpose of a medical school. The view of the general hospital and its relationships is rapidly broadening. Its advantages to the community, to private individual health, preventive and curative, and to public health, is much more real than has been commonly believed and appreciated. Such relationship is capable of further development to mutual advantage and it is very important that medical students, as future practitioners, obtain this point of view. If a medical school is large it may be said that the hospital is closely related to or even in the medical school as in the case of certain outdoor clinics at the present time. If the medical school is small it may be actually in the hospital as in some of the European schools.

The advantage of this is manifest in certain of the English hospital medical schools. My personal observations concerning such schools were confirmed in a recent communication from Dr. Harvey Cushing who, after his long experience as a teacher of medicine in America and as locum tenens in an English hospital medical school also stated in a recent address that he "has the impression that the British student gets a more practical clinical course based upon far better training in anatomy and gross pathology than do most of our students. He, for a longer time and more intensely, is brought in contact with 90 per cent. of human ailments upon which the complicated laboratory tests have no special bearing, and through practical experience is apt to arrive at a reasonably sound conclusion in regard to his patient's disorder, and have a shrewd idea of the appropriate form of treatment". Cushing says that "should we put side by side at work in a small town the average product of these two methods of teaching, I am inclined to think that the former (British) would be more resourceful and exercise greater wisdom though pos-

sessed perhaps of less learning and, after all, the strength of a profession, as of a nation, is represented by its average product”.

Not long ago, in replying to a communication concerning the relationship between the Albany Medical College and the Albany Hospital, I stated that the trustees of the two institutions were practically identical in personnel, that the relationship has been not only of great value in improving medical education in this school, on the one hand, and the care of patients, on the other, but that financially each institution had gained. Without such medical school relationship few hospitals in a community of this size could afford to give the character of service which is available. For the last six years our hospital has provided quarters, heat, light, power, and proportional share of salaries and wages for the department of pathology and bacteriology of the medical school. In these quarters the teaching of both medical students, nurses in training and hospital routine is carried on. At the present time the electrocardiograph and certain other physiological clinical apparatus is supervised by the professor of physiology in the medical college with the aid of technicians and assistants who are immediately under his control, with the understanding that they are to cooperate with the clinical departments. In a similar way the blood chemistry and basal metabolism is under the supervision of the professor of biochemistry. The undergraduate medical students in physiology, biochemistry and anatomy at present have special exercises in the hospital. Arrangements are now being made, however, so that the entire departments of physiology and biochemistry and much of the anatomy teaching will be transferred to hospital buildings. Thus, as in the case of pathology, they will be in the immediate proximity of the wards. It is our present intention to have most of the actual dissection, which I believe should occupy much less time than has heretofore been thought necessary, in a building separated from the hospital wards only by such a distance as public sentiment in a small conservative community may suggest. Such a plan of transferring medical school departments to the hospital will allow the latter to undertake new construction for the increasing number of patients and provide better accommodations for their medical care. This relationship of medical school and hospital we have shown reduces appreciably the cost of medical education and, in addition, markedly improves its quality.

THE PRECLINICAL VERSUS THE CLINICAL POINT OF VIEW.

It cannot be denied that in many medical schools there is a difference in the viewpoint of the teachers of the fundamental sciences and the teachers of the clinical branches. This difference is due to various causes, some of which have been referred to previously. The so-called laboratory men are too apt to consider clinicians more or less superficial, mercenary and noncooperative. They look askance when the importance of the "art of medicine" is emphasized. Indeed, this seems to smack of quackery for to most of the men in the fundamental sciences the mental side of their teaching material is not of particular importance. The persistence and increase of the various so-called sects or cults and actual quackery is due, in great part, to the failure of medical educators to realize the importance of the art of medicine and all that this implies, including what one should apparently overlook, as well as what to find, what to emphasize, what to belittle and the great importance of reassurance and suggestion. Indeed, the realization that each human being may react differently to similar stimuli, not only physically but particularly mentally. The application of such principles has long been recognized by broad minded and so-called common sense physicians and referred to by others as the art of medicine. The laity have given it various names and carried it to an absurd degree, perhaps as a reaction because of its neglect as the so-called scientific medicine developed. We hear much of mental hygiene and would apply such principles to apparently physically well persons; and the fundamental science teachers, particularly the biologists, clearly recognize the field of experimental psychology, especially as it refers to animal behaviour. Perhaps the term "applied psychology" therefore would be more acceptable to the preclinical teachers and its importance better recognized than the expression the "art of medicine".

The clinician, on the other hand, is apt to consider the laboratory teacher as being theoretical, and often appearing to scorn the practical application of his subject. Indeed, a laboratory professor and eminent researcher in one of the best medical schools in this country not long ago is reported to have said to a group of enthusiastic first year medical students, pointing to some laborers digging a ditch in the grounds adjacent to the laboratory, "Why, I should rather be doing such work as they are than to practice

medicine". Such an attitude is surely not inclined to stimulate the interest of students in medical practice. The clinician feels at times that the premedical teacher is very casual, that he does too little work. His vacations are usually long, he has relatively little responsibility and he has few interruptions. The clinical teacher bears similar responsibilities and many more (including that of his relation to patients and their friends and often certain phases of hospital management) in addition to medical teaching and research. So the clinician may be inclined to think that the average smaller income of the laboratory teachers is fully compensated by the easier time, shorter hours and less annoyance, that is, the lower tension under which they must work. If the clinician is not "full-time" and has to maintain an office with secretary and attendant and means of conveyance, the difference in income is often more apparent than real. The plea of research is set up by the laboratory teacher but, again, the clinician may say that a considerable portion of the so-called research is trivial, poorly done, and perhaps of little value, or that much of this research, if of value, might be done to better advantage in special institutes apart from medical schools, particularly if it separates the teacher from his students. Frequently his research is allowed to come first, the teaching is a bore, and is therefore largely delegated to young assistants. If the research of a teacher is to be of most value to the medical school it should be used to stimulate his students and not to separate him from them. The plea is again made that the laboratory teacher will not actively cooperate with the clinician. His excuse is that such cooperation is too frequently merely assuming the role of a technician.

The report of your committee on the teaching of medicine concludes that the teachers of the fundamental sciences should teach these branches as pure science and in their own way; that they should not try to make the application; that the latter should be made in review courses by clinicians but that time for this should be deducted from the hours allotted to the courses in the premedical science. I would add that corresponding budget deductions should be made and added to that of the departments making such application. I believe that this plan should be modified to the extent of joint or interdepartmental conferences with the students, whereby not only the latter but also the teachers

might learn much from one another. This will be referred to again later.

It would seem that many aspects of the purely theoretical portions of the fundamental sciences might better be given as university courses, as suggested by Baldwin. In this way the courses would be more available for other university students and the entire expense, therefore, would not fall upon the medical school and it would permit a re-arrangement of the medical school curriculum even in the first year so that the work in the fundamental sciences could be coordinated in a more satisfactory manner. This would mean some alteration of premedical and even of the high school work.

WHAT SHOULD BE THE TYPE OR TYPES OF MEDICAL SCHOOLS?

The development of medical education above referred to has tended to standardize the type of medical schools. That there should be but one grade of medical school, grade A, is or should be agreed upon by all. It would seem to me, however, that we should recognize that just as there are two general types of colleges of arts and science there may also be two types of medical school. Each would have certain advantages and disadvantages. One type might be termed the "medical university" and consist of a group of departments or institutes and the more or less special schools of public health, tropical medicine, industrial medicine, etc. In this medical university the undergraduate departments would be but a small part of its manifold activities. Such medical universities should be particularly important and are very necessary for the training of real specialists in medicine and its allied branches. The hospitals associated with such a school would be specialized clinical institutes. In such a large medical university the relations between departments or institutes would naturally be somewhat formal and difficult because of its size and the distribution of its buildings.

The second type of medical school should also be the medical department of a university for only university relationship can give the educational requirements and stabilizing influence necessary. This form of school might be termed the "hospital medical school". It should be a school with small classes (30 to 50 students in each class) housed in a large general hospital. It would

have the advantage of intimate relation between student and teacher and the departments being essentially under one roof should facilitate interdepartmental cooperation not only between the clinical branches but between the clinical and laboratory departments. Indeed, there might thus be no sharp distinction between the clinic and the laboratory. The whole hospital school should be far more important than any part.

Dr. Harvey Cushing in a recent address considers that "for most of our schools some measure at least of the French system would be best, whereby from the very outset of their course medical students are brought in direct contact with patients, and the laboratory courses are given conjointly and possibly prolonged throughout the four years. We must somewhere and somehow strike a middle ground between overtraining in the laboratory and undertraining at the bedside, or the reverse".

In the plan of teaching under discussion, the so-called pre-clinical as well as the major clinical departments, even in the first year of the medical course, should be as far as possible correlated. At this time the departments of general medicine and surgery, which now only test the product of the preclinical years, at a later date might not only know what is being taught but improve their own members by a review of the fundamental sciences and help the students at the outset of their course by indicating simple clinical applications. It should be possible to give the essentials of the various subjects in a relatively brief and simple manner to first year medical students if the premedical and high school courses have been satisfactorily arranged. For seven years I have taught nurses, whose preliminary education in the majority of instances cannot equal that of the medical students, and have used as a guide a book written by one of the officers of this Association, entitled "The Essentials of Medicine". It would be refreshing if even third year medical students could know thoroughly and could apply the contents of such a book. First year students would find that such an exposition of medicine, presented at conferences and, perhaps, illustrated by patients by a clinical teacher of experience, would be of great aid in helping them to realize the importance of and to hold the essentials of the fundamental sciences. The corresponding parts of each science should be given

as far as possible synchronously with the essentials of general medicine referred to.

As mentioned above, Pritchett has definitely challenged medical educators. He has had long experience in the training of engineers and has been in close touch with medical education. The analogy between the two courses of study is close and his suggestions for the improvement of medical education demand our best efforts to prove or disprove their value. It seems preposterous that any one should expect a first year medical student to understand and to remember most of human anatomy, histology, embryology, physiology and biochemistry all in one year of about eight months. It is somewhat as if we attempted to teach most of mathematics or all of biology in one year. It would seem to me that students should be given elementary courses in these pre-clinical subjects coordinated in part at least by the clinician, by the simple application of such portions of the subjects as may be applied. Then, we should proceed each year of the course to more and more advanced consideration of the medical sciences and to continue the clinical application increasingly, emphasizing more and more the confusing and exceptional conditions.

INTERDEPARTMENTAL CLASS CONFERENCES AND STUDENT
CONSULTATIONS APPLICABLE TO THE TYPE OF
HOSPITAL-MEDICAL SCHOOL WITH
SMALL CLASSES

First Year Class.—The departments of anatomy, histology, chemistry and physiology, with general medicine and surgery, should confer and arrange for each subject a syllabus of the essentials, a more or less elementary outline which should be correlated as far as practical with that of the other departments and serve as an introduction to the courses in pathology and bacteriology and medicine and surgery of the second year. This should give a degree of entity and correlation to the various subjects treated and help to avoid discrepancies which are particularly confusing to the beginner. From two to four hours a week allotted to general medicine and surgery should suffice. Departmental and interdepartmental conferences for the discussion of cases, and more particularly problems associated with cases, should be begun in the first year, at times in conjunction with the second year class.

Third Year Class.—The work of the third year class might be divided into four main divisions: (a) general medicine; (b) general surgery; (c) medical and surgical specialties, and (d) the fundamental sciences.

A.—In general medicine the class would be divided into small sections for work in the dispensary and also on the wards presenting cases and problems before the other members of their class under the direction of the teachers in general medicine and general surgery and those of other departments. This class should also attend certain exercises of the fourth year class in general medicine and surgery as above referred to.

B.—General Surgery: work to be arranged as described above in general medicine.

C.—Specialties: Medical and surgical specialties to be presented in the barest essentials, particularly as applied in the clinics and conferences in conjunction with general medicine and general surgery. Instructors in these specialties should attend such conferences for correlation and discussion of their special work.

D.—Fundamental Sciences: The class in small sections as in the clinical groups should work up and present cases or problems with particular emphasis on the special science concerned. Chemical or physiological tests, mechanical and anatomical problems, pathological and bacteriological studies give an opportunity for review and elaboration of the premedical work.

Fourth Year Class.—This class also should be divided into the four general subdivisions mentioned for the third year class. In general medicine and general surgery, section work, case and problem conferences, separately and jointly with the fundamental science teachers or the representatives of medical and surgical specialties. At least two case or problem clinics a week to be given jointly with the third year class. At this time also the students as clinical assistants learn to assume personal responsibility for cases assigned to them.

Specialties: The teachers of the specialties confine their work almost entirely as consultants and also emphasize and correlate their specialty, while attending medical or surgical case or problem clinics, where the cases or problems on which they have acted as consultants, are presented by the students.

Fundamental Sciences :—Elective courses and special problem assignments should be arranged. Some of the results should be presented at joint medical or surgical case or problem clinics. Representatives of the departments, preferably the heads, should have definite office or consultation hours. At such times they should advise with the students in working up their problems and in the capacity of consultants should make suggestions and answer questions arising in the course of clinical section work.

If the methods suggested could be adopted completely, the department heads or their delegates would act largely as advisers to the individual student or to students in sections. They would also serve as critics at the case or problem conferences at which one or two students present the results of their work on the case or problem previously assigned. Ideally the purpose would be to approximate the so-called Agassiz method of laboratory instruction. Indeed, in all years of the medical course after the bare essentials of the fundamental sciences have been presented as above suggested, classes in small sections of from two to five should be assigned patients illustrating definite problems to be worked up and presented before their own or combined classes or sections with the discussion usually directed in part by the head of the department. Even in the first year a case of simple fracture of the femur with marked overriding of the fragments, presented with a few words of history and simple local examination, a careful study of the roentgen-ray findings, special dissection of the cadaver to illustrate the parts involved and presentation of this specimen and of so-called wet anatomical preparations of related conditions or structure would be of value. A discussion of muscular pull, the anatomy and the mechanism causing this is an example of countless other problems which might be studied with profit in the department of anatomy. If the department of anatomy was more closely related to the department of roentgenology it would be of great advantage not only to the students in learning the anatomy of the living but to the roentgenology department in solving by the aid of the anatomist and the material and facilities at his command problems arising almost daily in the routine work of the roentgenology department. Patients presenting physiological and chemical problems might also be used as points of departure for presentation and discussion. In pathology this

method was described by me years ago in the paper above referred to in which representative cases were cited.

Second Year Class.—The more advanced work in anatomy, physiology and chemistry should be taken up and coordinated as far as possible with pathology and bacteriology. General medicine should not only take up the subject of physical diagnosis, clinical pathology, and general surgery begin teaching surgical technic and minor surgery, but clinical lectures and conferences should be begun on the simpler or more typical clinical conditions. At this time also joint interdepartmental case and problem clinics should begin, special cases being assigned as a text for discussion or to serve as a concrete illustration for the problem which has been worked up and presented by the student and discussed by his classmates and by the staff. Indeed, it would be valuable to have the first year class as guests at certain of these exercises. The idea of overlapping class exercises is not going back to the time when the advancing from a one to a two year course in medicine consisted merely in the medical student repeating the lectures and demonstrations with the incoming class. Just as the graded internship allows the juniors more gradually to assume the duties and responsibilities of the seniors in a similar manner, such overlapping of class or section conferences is of value. It causes members of the higher classes in reporting their cases or problems to do better before their classmates and particularly before their juniors and the juniors, on the other hand, learn something of the subject matter and methods which they are to have later. They strive to attain to and even improve upon the standards observed. At such exercises, called clinic or problem conferences, general medicine should join with surgery or occasionally with anatomy, frequently with physiology, chemistry, pharmacology and pathology. General surgery should join in a similar way with the other clinical and laboratory departments and it would be very important to have such joint meetings of the so-called laboratory departments. Obstetrics could find much of value in holding similar exercises with anatomy, pathology, surgery and medicine.

THE ADVANTAGES OF COOPERATION

Years ago a well known professor in one of our best schools, in a laboratory department, told me in all seriousness that there

was no such thing as real cooperation in referring to departmental activities of medical schools in general and the school with which he had long been associated in particular. This opinion was doubtless the result of his unfortunate experience but it is not unique. The laboratory departments to which I have given most of the credit for the marked improvement in medical education during the past fifteen years may now, as above suggested, perhaps learn something of advantage from the clinics. In the clinical work various departments or services cooperate daily in diagnosis and treatment of patients. Consultations are common between general medical and surgical specialists. The relationship is also particularly close with the department of pathology and bacteriology and with that of roentgenology. Not only are the written reports from these departments received but those in charge of the clinical services, even several times a day, confer personally with the heads and of these special laboratory departments located in the hospital.

The library and the museum should also be in the closest touch with all the hospital services as well as with the departments heretofore called preclinical. Indeed, in 1912 I strongly emphasized this fact in a paper entitled, "A Library Museum in Medicine" and stated that

"with the enlargement of medical schools the departments are knowing less and less about the work of their neighbors, and for the most effective cooperation some such unifying influence is necessary not only in the different laboratories but to bring into closer relation the clinical and laboratory interests. The function of a "clearing house", as it were, made possible by such centralization of museum facilities should prevent, to a large extent, the expense of unnecessary duplication such as now exists in many departments. Relief to some departments in cataloging and aid in illustrating the teaching should be given by the museum. The purpose of this library museum should be not merely safely to house and carefully to catalog specimens for storage and exhibition but to take an active part in the work of the medical school and hospital as a center of distribution of material for undergraduate and graduate teaching and research".

The advantages of cooperation are immediately apparent in better diagnosis and treatment, and such interchange of criticism and knowledge is stimulating and helpful in keeping the various departments in touch with advancing knowledge. It tends also to have a stabilizing influence for it prevents isolation and the ten-

dency to the development of special fads. In other words, it facilitates our search for the truth.

These contacts are brought about in great part by the plan of section teaching developed in the clinical branches. Students as clinical assistants are assigned to cases or to problems arising in the working up of their cases. They learn what aid may be expected from consultation with other departments, from the medical and surgical specialties, from the roentgen-ray department, from the laboratories of pathology and bacteriology. The case or problem is presented by the fourth year student before the members of the entire class. In a small school such as ours, the students of the class below are invited as critical guests to ask questions or take part in the discussion toward the end of each exercise. Members of the same or of other departments or services and other guests frequently enter into the discussion and point out matters which might otherwise be overlooked or neglected. The interest is maintained whether a case is presented as such or as a text for a discussion of the more or less closely related problems. The central idea is the tendency to make the subject matter more tangible. This is similar to the plan in the case method of teaching which has been widely used in many clinical subjects after its adaptation by Cannon, who realized its value in the teaching of law. The method was used successfully by me thirteen years ago in the teaching of pathology after a brief introductory course of the essentials of the subject.

In the great research laboratory of the General Electric Company at Schenectady the advantage of cooperation is apparent. This is due largely to the personality of the director and his associates and to the lack of formal departmental organization. A spirit of enthusiasm and helpful cooperation and confidence has pervaded the entire laboratory since its inception twenty years ago.

CONCLUSION

In conclusion it must be emphasized that the students should have a reasonable knowledge of all departments if they are to be at least safe practitioners. Even many years ago James Jackson

said "there was more known in medicine than the mind of one man could grasp". Blake has stated that

"it is impossible for any one student to cover completely and adequately all the ground and we realize that it is the study of the infinitely little which establishes the immeasurably great. The first tendency in specialism is to lay stress upon the special character of the investigation to be followed and to emphasize its individuality but with the broadening study its relation to and dependence upon general scientific research becomes more and more evident. Specialized specialism ceases to exist in proportion as it separates itself and grows and broadens only as it keeps up its relationship with the main body".

Though special work lies in restricted fields we should not allow their artificial boundaries to obscure the entity of medicine.

DISCUSSION

DR. G. CANBY ROBINSON, Nashville, Tenn.: The coordination and cooperation of the various departments of the medical school is an important advance that we are all attempting to accomplish, and so far as we have gone in the reorganization of the Vanderbilt University Medical School we have dealt with this problem only from the standpoint of the physical plant. Dr. Ordway's distinction between what he calls a medical university and a hospital medical school is a very good one. We have planned a small institution and have attempted to conserve our finances as far as possible in regard to the expenditures for plant are concerned. The plan for the new medical buildings of Vanderbilt University is that of a hospital medical school, but with close university affiliations. We have taken as a first principle the bringing into close contact the clinical and laboratory departments by putting the whole school into a single building. The question of physical contact will not accomplish the solution of the problem but that, it seems to me, is the first requisite and affords a great opportunity for the correlation and cooperation of all departments of the school. Dr. Ordway has said many things of great value, and I am sure his paper contains much that will bear fruit if the subject of his paper is carefully considered. The question of a radical reform of the curriculum is an old one, and while it presents difficulties, with which every one of us is very familiar, the idea of bringing the school together into a unified whole has special bearing on the medical curriculum.

DR. C. A. ABBOTT, Philadelphia, Pa.: The ideas expressed by the essayist are in accord with opinion that has been developing for the past several years. Two years ago, and again last year, dissatisfaction with our medical curriculum was expressed in a general way, by a number of speakers. Today, the essayist has suggested, in concrete form, a change. We are now ready, I think, to consider favorably a radical modification in our curriculum of such a character as will provide the student with more time for reflection and for development as an individual. We should

not endeavor to compel the student to cover the entire field of medicine, but rather concentrate on a thorough grounding in the fundamentals. Later on, he should be given the fullest opportunity to develop along special lines. I take it for granted that this is what Dr. Ordway has in mind in his suggested curriculum.

DR. HUGH CABOT, Ann Arbor, Mich.: It is with great difficulty that I can restrain myself from taking part in the discussion of this paper, because, it seems to me, to be one of the most forward looking human documents I have listened to for a great many years. I can see, as you can, enormous physical difficulties in doing the things pointed out. Dr. Ordway probably intentionally limited his problem, although he did not study the problem of the school with a very large attendance. The mere physical difficulty of dealing with 500 or 600 students in such an organization would be very great, and it seems to me, there comes along with such a program as he has put forward a very large increase in the number of men in the clinical departments who spend a large proportion of their time on the work, and I think all full time men in the lower grades are likely to do a great deal of teaching which can be done by senior men. There is a tremendous amount of time involved in such a program. As has been pointed out, the milk in the coconut lies in the fact that we are making a plea for getting away from the water tight compartment system. If each one in teaching his subject every day does so without any relation to anything else, it is, in a sense, a return to the conditions which existed before the concentration of the fundamental subjects. This concentration was a great step forward. I do not believe any one doubts that. I do not believe medical education would be where it is today if that concentration had not been made. I am satisfied it has served the greatest usefulness, and we must spend much time in bringing together again those things which we somewhat violently separated.

Dr. Robinson put his finger upon an important point when he said the physically bringing together of these various departments will not settle the question. It has been proven in practice that mere continuity does not break down the wall, and that it is in the strength rather than in the physical environment that development has come. It will, of course, not be immediately possible, and not possible for a long time to draw all these departments together, but every one of us should make attempts toward the actual working out of a plan of this kind.

I have read and reread Mr. Pritchett's report on medical education, but I cannot accept his gospel because I am not satisfied that he sees, as we see, the almost insuperable problem, and I am not one of those who believe that the way of getting at a new medical problem is to take a sledge hammer and abolish the whole thing and start over again. Let us work at it by less violent methods and by a process of filtration.

DR. E. P. LYON, Minneapolis: I visited Dr. Ordway's school in October and was much interested in the efforts he is making in a small institution to correlate preclinical and clinical teaching. The problems which

he has outlined can be approached and solved much better at such a place as Albany than in a large institution. I verily believe the physical continuity of the plant is a big factor, and that very much is gained if the preclinical teachers and the clinical teachers can come together frequently. This leads me to the belief that we must try to get full time men in the clinical chairs—with part time men, of course, as accessory helpers. In institutions like Minnesota it is difficult to get a meeting of the clinical heads, who are all busy practitioners. It is hard to get a committee meeting even when we begin a day or two in advance, to say nothing of having an informal conference without previous announcement.

I do not believe we can get very much help from the engineering schools, as suggested by Mr. Pritchett. He has not offered a solution of our problem so far as I can discover. In the engineering school, students begin with fundamentals, that is, mathematics, physics and chemistry, without much relationship to the future; and it is only in the third year that a student begins to see the practical application of those things he has been taught. While it is worth while to study other types of professional schools, we have got to work alone so far as the peculiar nature of our problems demand.

As a laboratory man, I shall cooperate in every effort that can be made to get a curriculum which tends to make the student think, and that is what Dr. Ordway's whole plan aims to do—to give the student independence, not simply grind him in a mill. They never educate a man in the business world in that way. He educates himself if he is any good. We should provide a place and circumstances—laboratories, hospitals, libraries—for him to educate himself. We cannot keep that thought too much in mind. We emphasize far too much the word "teach". We emphasize too little the word "educate", which means to lead out.

DR. J. PARSONS SCHAEFFER, Philadelphia: In teaching anatomy for a number of years, I have felt that one weak point in the medical curriculum is the retention of the unfortunate term, "preclinical". The point of view of the average first year student is too frequently wrong. He learns anatomy as such rather than as a unit in a medical mosaic. He takes histology and embryology, then physiology, then something else, and there is not that overlapping, that mortar between the units of the mosaic, so essential in welding the parts together. I think something should be done to bring first year students in contact with patients. This will help in teaching the fundamental subjects. If a certain amount of anatomy, physiology, etc., could be taught in the fourth year, it would be a great help, and if a correlation course could be arranged whereby the student could study patients and think in terms of his biology and anatomy, his chemistry and physics, his internal medicine and surgery, it would be a great advance for the whole fabric of present day medicine. We primarily should believe in the thing we teach and maintain its individuality. However, when we teach anatomy to future practitioners of medicine purely for the sake of anatomy, without recognizing that it is later to apply in

the practice of medicine, we are not treating the medical student fairly. Anatomy will not suffer by making clinical applications in presenting it.

One more thought suggests itself, namely, when a specialist, a surgeon or an internist has a student at the bedside, I believe the anatomical points, the physiologic points, etc., should be discussed and made a part of the clinical case. However, desirable as it would be, it is too much to expect that clinical teachers, anatomists, pathologists, etc., can always be assembled in the instruction of students, as some one suggested. A rather urgent point should be that those who teach the various branches are conversant with the fundamentals of related subjects. There should be as much correlation as possible. Students should forget the term "preclinical" and early begin to apply the so-called basic subjects. They should soon be brought in contact with patients to see the need of the laboratory courses. This matter must be in very careful hands. We must not let the first year student go along in his own way. He must be watched and brought in contact with subjects that are closely related. The great need to my mind is wholesome correlation, then the subjects of the first years of the medical course will become live and interesting.

The essayist brought out some very important points for consideration in the arrangement of the future curriculum, yet I wonder if the fault is not more with the teachers than with the present curriculum. Let the teachers of the basic branches of anatomy, chemistry, physiology, etc., become a bit more practical and the clinicians stress the fundamental subjects in the clinic and at the bedside and much can be accomplished with the present curriculum.

DR. RAY LYMAN WILBUR, Stanford University, Calif.: There are knotty places in the medical curriculum that need the services of the dynamite squad. While I believe in an evolutionary process, we have to go faster than we have been going to get results. We now know what ought to be done, and should strive toward that end. We have to deal with this problem differently in different institutions. We have varying personalities to meet, but when certain fundamentals are agreed upon, we should go to work and do in each place the best we can with them.

I would like to enter a protest against the use of the term "full-time". "Full" is no longer an appropriate word. "Whole-time" is just as bad in some ways. We ought to call such teachers academic professors. There is a broad general conception of what this means. It classifies these men with the rest of the university faculties, where they belong, even though there is a difference of interpretation in different institutions. We have had a bad mental attitude develop on the part of the profession from the use of the terms "full-time" and "whole-time". They are unnecessary and should be dropped.

DR. LOUIS M. WARFIELD, Ann Arbor, Mich.: I have been particularly interested in Dr. Ordway's paper, as he has brought out some things I have long had in mind, and particularly was I interested in the remarks of Dr. Schaeffer with reference to the study and teaching of anatomy and

its relationship to the clinical branches. The thought occurred to me that it might be of importance to emphasize that same point from the other end. During the fourth year, it has been my practice (and I have long felt the necessity of it), in teaching students clinical medicine to correlate all branches of study the students have had. It has never seemed to me that a student should forget in the fourth year what he learned in the first, second and third years. It is a strange point of view that the average student thinks after having passed the course he is through with it. Unless the clinical instructor, in demonstrating his patients to the student, takes in anatomy, physiology, biochemistry, pathology and all the fundamental branches, he fails to put that student in a proper attitude toward the patient and toward clinical medicine. I should like to emphasize the point that this problem can be solved very readily. The complaint that such correlation is not made seems to me partly the fault of some of the clinical instructors, as I have seen them at work. They do not take up the fundamental branches and bring them into correlation with the subjects they are teaching, the actual diseases from which the patients are suffering.

DR. ORDWAY (closing): When you read the complete paper, after it is published, you will find most of the questions raised in the discussion have been answered. Dr. Robinson inferred that perhaps I thought this plan could be accomplished at once. The plan, as I have conceived it, should be carried out gradually. As a matter of fact I referred to it as an experiment which is not at all completed. It has only been carried out in part in the school with which I am connected. I think under certain circumstances, however, it might be tried out quite rapidly. It may be so modified that it can be taken up gradually without very much trouble. It is unnecessary absolutely to "wipe off the slate," as Mr. Pritchett suggested, and I think in the complete paper that will be apparent. As Dr. Cabot said, and as I intimated in the paper, this can best be done and it is advisable to do it first, at least, in the school with summer classes.

I tried to draw a distinction between the large medical university and the hospital medical school of the university. I think Dr. Cabot is quite right, it would entail a somewhat larger number of men in the junior grades, but I think that could be arranged.

I tried to emphasize the spirit, as well as the physical relationship, by pointing out the remarkable example of the great research laboratory at Schenectady. If the members of the Association have not visited that laboratory they would find it of great interest that an industrial laboratory shall maintain such high academic quality of work. Dr. W. R. Whitney, director of that laboratory, was a teacher at the Massachusetts Institute of Technology, a former student of Mr. Pritchett, and then later his associate.

I omitted the more bold parts of the paper referred to by Dr. Cabot. They are more bold than was expressed.

There is another point that is of considerable interest. No one talks much about saving money. Many men think that you can appeal to the legislature and get all the money you want for such departments, but the economic importance of such relationship is obvious.

If you have not read the most recent report of the Carnegie Foundation, you should do so. You will see that the report this year said nothing about medical education in particular except the expense of education. The cost of running the high school, and the academic departments, as well as the medical school, is appalling. It is a lesson to us in considering medical education. The aim should be to reduce expenses wherever it is possible to do so without impairing the quality of the teaching.

Dr. Lyon spoke about the fact that Mr. Pritchett used the engineering school as an example. If you will read the paper, you will find it is not an example to be followed. As president of the Massachusetts Institute of Technology he saw the absurdity of engineering education, and that is the reason why he expressed his opinion that it was an example not to be copied but to be avoided.

I tried to limit the purpose of the hospital medical school. It is ridiculous for a small school to copy everything that the large university schools are doing in medical education. Many of us, however, are a good deal like sheep, we are either driven or we blindly follow the supposed leaders.

As regards wasting the time of the laboratory heads, I tried to emphasize the fact that they should not be on call; that their time should be economized by having definite consultation hours, and I think some of our laboratory men should have consultation hours with clinical men which would be to their advantage. Certainly it would not be a loss of time.

Dr. Schaeffer spoke about the importance of the anatomist. I looked very earnestly to find out where the anatomist would come in in such a scheme as this. The physiologist would fit in, as well as the pathologist, the bacteriologist and the chemist, and there would be very little trouble in having the anatomist included in this scheme. Dr. Bardeen's work has tended to conform my opinion that anatomy can be linked up closely in a most important manner with the roentgenologist and to a lesser degree with almost every other department in the school.

THE PLACE OF ANATOMY IN THE MEDICAL CURRICULUM

WILLIAM KEILLER

Acting Dean Medical Branch of the University of Texas
Galveston, Texas

After the liberal space given me in the reported proceedings of this Association in 1920, and the full publicity there accorded to my views on the place of anatomy in the medical curriculum, it may seem presumptuous on my part to have asked a place on your program for a reconsideration of this question. I am, nevertheless, so firmly convinced that the great medical schools of America are making a terrible mistake in their attitude toward this subject that I cannot keep silence.

That a subject so important as anatomy, a subject so difficult, a subject with which every physician, every surgeon, every general practitioner cannot be too intimately familiar, should be relegated to the freshman year, seems beyond belief. That this should have been done by experts in medical education seems only explicable on the presumption that before it was thus relegated there was something so radically wrong with anatomical teaching that the claims of anatomy had failed to impress themselves on this Association.

Surely, I am not antiquated in my conviction that every clinician in his effort to diagnose and interpret disease should be able first of all to think anatomically. True, he must also think in terms of biochemistry, physiology and pathology, but these are built on a framework of anatomy. Do not clinicians, be they physicians or surgeons, want junior and senior students to each of whom every region of the body is as nearly as possible familiar to his touch, through and through, transparent to his mental vision? Who can teach the differential diagnosis of spleen and kidney tumors to the man who lacks a vivid picture of the interrelations of kidney, spleen and colon? Who can teach the simplest nervous diseases to the man who does not carry with him to the sickbed a clear conception of the anatomical and functional interrelations of the centers and tracts of the brain and cord? What student can appreciate the technic of a breast operation who has not a mental picture of the axillary lymph nodes? Who can

understand referred pain who does not first know the functional relations of the cord segments?

Granted, then, the importance of anatomy, how are we to fix it in the student's mind so that it will stay with him, not through his student and intern years only, but more or less all his life? Most certainly not by concentrating all his dissecting in the freshman year. He must grow up in an anatomical atmosphere. Anatomy must have time to soak in; his anatomical pictures must be impressed on his brain again and again till they have some permanence. To attain this end, instead of wearying the freshman with four hour dissecting periods at a time when he can only have a feeble conception of all the terrible complexity of the machine he has later to try to set right, I would distribute his ordinary dissection into two hour periods throughout his freshman and sophomore years. I would revivify his freshman-sophomore impressions by a laboratory course of applied anatomy in his junior year when he is beginning to be appreciative of the clinical side of things.

And how shall we teach gross anatomy? I have been told that given a student with a fair premedical training in the natural sciences, it should be enough to give him a cadaver and suitable textbooks and with these he should be able to acquire an anatomical knowledge of the human body largely on his own initiative. Gentlemen, I am reasonably well-trained in human anatomy, but with all my training I could not acquire an adequate knowledge of the anatomy of any other mammal, no matter how well embalmed, by one dissection with the aid of the best of textbooks. How impossible is it then for an average student, even if he have dissected a mammalian type in the zoological laboratory to get the most out of his first (and only) dissection of the human body, if he be left largely to his own unaided efforts be he ever so earnest and his textbooks and atlases be they ever so perfect.

In some respects his training in the laboratory of zoology is a handicap. He has dissected and read from the wrong point of view. He has no conception of the details, the accuracy of anatomical knowledge that is necessary for the doctor.

I have been told that I spoon-feed my students. Perhaps so, but they come to me as babes, and at least they get some nourishment, even the most puny of them.

I have been told that it is absurd to require students to know origins and insertions of muscles, relations of arteries and viscer, but I have yet to find among my old students the man who complains that I required him to know too many details of anatomy. Our young doctor must go to the sickbed with a reasonably detailed memory of the whole construction of the machine he is called on to repair, or at least put in the way of repairing itself. It is my aim that my students shall have become personally so intimately familiar with the human body that they may at any time go to their old textbooks and when they read them, say: "Yes. I remember seeing that".

And what about the exquisite training of eye and hand, the deftness in using knife and forceps that can only be got in the dissecting room? What can teach these better than the careful cleaning of a muscle? It is greatly to be regretted that limited time compels us to clean most vessels so largely by blunt dissection.

Just here is where the careful dissection of cutaneous nerves comes in. Where can hand and eye have better training, and incidentally how can the future neurologist better learn the difference between peripheral distribution of cutaneous nerves, and radicular sensory areas? Can a man who has not carefully and intelligently dissected the abdominal wall understand the theory of abdominal incisions that will give at once free access to the abdomen and strong abdominal walls by avoiding subsequent muscular atrophy? How can you better teach visceral topography than by a laboratory exercise in outlining the viscera in his own particular subject on a life size chart, immediately after the abdomen has been opened and before the viscera have been disturbed? How better train touch and sight, how better impress the clinical value of the subject, how better teach the student to observe accurately and to record his own personal observations? Surely he will thus learn that every abdomen is an unexplored country, an unrifled treasure house of invaluable information.

What about the priceless opportunity of dissecting carefully the lymph glands of the head and neck, learning them on the body, confirming by dissection everything the textbook says, and how shall the student go about it without personal instruction? Who is to understand the mechanism of the deformity in ulnar paraly-

sis who does not dissect with the utmost care the insertions and nerve supply of the short and long muscles of the fingers? And where is the time for all this in a course in anatomy crowded into the freshman year? How can it stay with a man who learns it in his freshman year, so that it may be readily available, when he is a senior or an intern, or a hardworked general practitioner? Where were your men weakest when they were called to the war? Was it not in their anatomy?

Among all the weaknesses of interns, where are they weakest if not in their anatomy? And, gentlemen, it is just here that the young men should be strongest. Anatomy is no theoretical science difficult to understand. All its salient facts may be seen and handled; hardly one of its details is such that it cannot be verified by personal observation. What, then, is the trouble? Is there lack of material? Concerted action in anatomical boards and sufficient money will overcome this. Is there difficulty in keeping cadavers on the tables long enough? It can be done if you will take the trouble. In spite of our warm moist climate I can keep bodies on the tables eight months continuously, and they are as good to the minutest detail of dissection and even in staining properties for microscopic investigation at the end of the eighth month as the day they go on the table. Lack of time is an important handicap. No man can teach anatomy that is to stay with the student in a concentrated course in the freshman year. Four hour periods in the dissecting room, day after day, where new facts are all the time appealing for storage room in your brains, are a means of courting early loss of overcrowded ill-defined impressions. Short periods of intensive work, and frequent repetition is the secret of permanent knowledge and change of work keeps the mind fresh.

Is it possible that our teachers are at fault? The research enthusiast is not necessarily a good teacher. May not his very enthusiasm for research in embryology, or comparative anatomy be a handicap? Can he dream of the next day's lesson and how to make it interesting to embryo doctors and also indulge in the dreams that materialize in a paper for the Society of Anatomists? Can he go fresh every day to an illuminating preliminary talk on the day's dissection if he is immersed nine-tenths of his time in the comparative morphology of the kidneys? Or is an inexperi-

enced instructor, however enthusiastic, the best able to inspire lagging enthusiasm in the tired student? To my mind, the anatomical staff should consist of two types of men, experienced teachers and research fellows, the latter required only to give a few special lectures on elective courses, the former, men who cannot help the urge to inspire in students a desire for useful information.

What about topographical anatomy? In most schools this means sectional anatomy, and I believe sections of the formalin hardened or frozen body are practically useless to the medical student. As a means of confirming or correcting relations learned by dissection, of course, they are invaluable. Did not Braune's sections and His's reconstructions of frozen sections revolutionize our ideas of form and relations and correct endless dissecting errors?

But only exceptionally do you find surgeons or physicians going to sections to clear up their difficulties. Let the sophomore student when he first opens the abdomen, and before he disturbs the viscera, carefully with the aid of printed instructions investigate and chart on a lifesize outline corrected for his subject, his own personal observations of visceral topography. Then in the junior year, in a laboratory course on applied anatomy, let him supplement this by carefully directed palpation of abdominal organs with a hand introduced into an abdomen through a sub-umbilical incision just long enough to give his forearm free play. Thus he will learn more than he can by many carefully labelled outlines of cross or other sections, and do something toward training his touch till he has eyes in his finger tips.

Applied anatomy is in most schools an elective lecture course. Surely this is a great lost opportunity. As a lecture course it is very dry at best; even such a course as given in Treves' little book is dry, not because it is not intensely interesting, but because there are so many things to remember and the opportunity to apply them is so far away.

On the other hand, as a laboratory course, applied anatomy is intensely interesting and affords a great opportunity for manual training and for impressing the student with the appeal of accurate anatomy to clinical problems. Here also is a chance to insist on sufficient anatomical review in the junior year to clear up

the blazed trails of memory's pathways, trailings getting indistinct by enforced disuse. Four hours' laboratory work weekly will be required during the junior year. This by preference; the exigencies of the roster have reduced my own course to two hours weekly in the first semester in the sophomore year on the applied anatomy of the extremities, and two hours weekly throughout the junior year on the applied anatomy of the head, neck and trunk.

Note, I do not say surgical anatomy. I can thus emphasize many anatomical facts which appeal to physicians. We start out by outlining the organs with colored chalks in accepted patterns on thoracic and abdominal walls, thereafter scratching the outlines in for permanence, to be later verified by a hand inside the chest or abdomen. Then come typical incisions in limbs, chest and abdomen; exposure of vessels, nerves and long bones, of heart, superior mediastinum, lung and liver by small carefully planned windows or incisions. We make typical abdominal incisions and study them in their anatomical relations. Through these incisions we investigate the appendix, intestines, urinary bladder, gallbladder, stomach, etc., all as they must appeal to the physician and surgeon. But all this needs careful laboratory supervision. Ninety per cent. of medical students are primarily butchers, not surgeons, hurried and inaccurate in their work and careless of their best opportunities. Yet all are to have care of human lives some day, and the raw material must be moulded into shape.

If general anatomy be full of interest and opportunities for training in its laboratory possibilities, surely there is a glorious opportunity for trained thinking in applied neurology. Twenty years ago the main study of nervous diseases was symptomatic only; today nine-tenths of ordinary nervous diseases are most interesting problems in applied anatomy and physiology.

Thanks to the clinical pathological work of neurologists of the past twenty years, the central nervous system has become a book where the enthusiast in applied neurology may read the meaning of many of nature's experiments on man, clear and convincing, as laboratory experiments on dogs and monkeys and with all the patient's intelligence to help the interpretation. An hour's lecture weekly in this subject in the junior year will help the student to think of nervous diseases in terms of anatomy and

physiology; but he must be thoroughly familiarized with the nerve tracts and nuclei as seen by naked eye and microscope in his sophomore year.

All of which means that I think I have made good my claim for a curriculum that shall allow the student to absorb anatomy slowly, steadily and persistently in his freshman and sophomore years, fixing it and making it accessible in his junior year, and then if a reasonable amount of it does not become permanent, it will be the fault of his clinical teachers who themselves may fail to teach in terms of anatomy, physiology and pathology.

DISCUSSION

DR. H. VON W. SCHULTE, Omaha: Certainly, the anatomist of today cannot feel that he suffers from lack of interest on the part of his colleagues, even though this interest is far from being an unanimous approval. Yet, if his colleagues are on the whole dissatisfied with the anatomist, I feel the anatomist has some cause to complain of the conditions under which he works and the standpoint from which his teaching is judged. The changes in the curriculum have reduced the time for gross anatomy, roughly, one half, but I do not think the demands on the department have been reduced, and we are teaching with the aid of textbooks adjusted to a two years course in anatomy. Our students are rapidly introduced to a mass of facts which are disconcerting to them and which to their instructors seem hardly possible of assimilation in the time allotted. The question arises, what remedy can we suggest? We might ask for an extension of time. This solution is not warranted under a curriculum in which the majority of students are already worked to the point of diminishing returns. The question is really not the time in the curriculum allotted to anatomy, but the position which should be given to anatomy in the medical course as a whole, especially in the clinical branches. This argument includes all the fundamental sciences. A satisfactory solution will be reached only when clinicians, themselves masters of the fundamental sciences, habitually use them as the basis of their clinical teaching. Students should be taught to apply their anatomy as a matter of course in their clinical work. We may here turn to the simple processes of the mind of a child for guidance: we find they start in curiosity, proceed to inference and end in experiment or application. Yet in much of our teaching we deaden curiosity by the very mass of facts we offer for assimilation at short intervals, discourage inference because our hurried course afford little time for discussion, and the application in clinical work lags a year or two behind in the curriculum. It is inevitable in our present system that much must be asked of the clinician. If he is able through his knowledge of the fundamental sciences to make them tell in his instruction, he exerts a tonic influence on the students in the laboratories: if he teaches empirically, arguing from symptom to treatment from the standpoint of

experience alone, he invalidates the best efforts of the preclinical teacher. We are able today to teach anatomy in less time, more thoroughly and with more interest than we ever did, but much of the result is lost if subsequently clinical teachers, themselves neglecting the basic sciences, by example unconsciously convey the impression that the knowledge of the fundamental sciences is largely superfluous for the practice of medicine.

DR. W. F. R. PHILLIPS, Charleston, S. C.: I want to emphasize what Dr. von Schulte said and what Dr. Keiller said. The fault lies not in the anatomic department; it is a fact that the clinician and the surgeon do not use their anatomy. I am constantly having students come back to me with complaints that a surgeon does not know the anatomic nomenclature we are using today. He does not even know that a revision in our anatomic nomenclature was made years ago. If the surgeon does not know that 60,000 synonyms have been eliminated and that only 5,000 are now in use, what do you expect him to know about his anatomy. Many men get their anatomic knowledge in dissecting rooms, which are poor places for learning anatomy. What we want is to have a man who is a thorough anatomist, who keeps up with his anatomy, and who thinks in terms of anatomy when he teaches. If these men will do that, we will not have occasion to ask for more time in teaching anatomy. Students have come to me repeatedly and said they would like to repeat their anatomy in the second, third, and fourth year. The student, as he leaves the freshman year, does not get into any anatomic subjects until he enters his junior year, and when he gets into the hospital, into clinics and goes back into the dissecting room to review his work he only gets a glimpse of anatomy, and says he would like to go over this again as he feels he can make use of it. Every student feels the need of anatomy at that period, and it is a pity that we have not an opportunity in our schedule to offer it.

I do not know how many of the other schools are situated in that way. We cannot offer that opportunity. The clinicians and specialists take so much of the student's time in the third and fourth years that we cannot offer the student the opportunity he would like of doing dissecting work, even though the material is available. He has to go along and do the best he can.

I want to emphasize one point Dr. Keiller brought out. I come from a place where it is warm and difficult to keep material. I have bodies I have used for five years, and they are in as good condition today as when I first put them on the table. It is perfectly easy to keep anatomic material and for us to have plenty of specimens to show students if we could only be allotted the time to do so.

I want to emphasize again that it is important for the clinician to keep up with anatomic instruction, and if he will insist on the student using his anatomy, as well as using it himself, and see to it that he knows it, we will not have much complaint about anatomy.

DR. ALEXANDER S. BEGG, Boston: It seems to me that the pendulum still swings and while it swung anatomy so far back that two years ago

we were worried lest the subject be crowded into the premedical year, at the present time there appears to be a return toward normal and the anatomists are apparently finding themselves crowded for time. It appears, however, that there are several ways to get at the matter in hand without adding very much to the time that we already have for teaching anatomy. I do not want to ask for any more time on the schedule. We are, therefore, attempting to get at the problem in a different way in the institution with which I am connected. Realizing that in anatomy, as in all other subjects, the student can only make a beginning in the time allotted, we encourage the younger clinicians to return to the fundamental departments to do work. We have a rule that every young surgeon who goes on the staff must serve two years in the dissecting room. I find the younger men are very keen to do this sort of work, and we have more applications for these part time positions than we have openings. It thus becomes a question of cooperation between departments. Perhaps we are particularly fortunate, but one of the things that impressed me when I went over to this new institution was the willingness of the clinical men to cooperate with the fundamental departments and their action in placing an anatomist on the staff of the hospital was gratifying as evidence of such desire. I have not heard of an anatomist being on the staff of any other American hospital. I attend all the staff meetings and make anatomical demonstration as far as opportunity permits. Recently, at the meeting of the surgical staff held under the auspices of the Orthopedic Department, the subject under discussion was hips, and the presentation of anatomical preparations, including sections, was much in evidence. We have also had sessions in connection with the ear, nose and throat men. The anatomical department can cooperate with the clinical staff, help them in the preparation of specimens and give them the new terminology.

The question of the use of fresh material is often brought up. Students are said to know but little about the appearance of such material. In our institution, when anatomical specimens are obtained in the operating room, they are brought to the school for study. Amputated extremities are particularly valuable in this connection. The students in the dissecting room are also given an opportunity to use the bodies of the cats, dogs, etc., that have been the subject of experiment in other laboratories. I find that the students, although they have had courses in comparative anatomy in college, did not sufficiently appreciate them at the time, and are very keen to have an opportunity to work with this material.

Something was said yesterday about the time consumed in the mechanics of dissection, together with some references to the study of bones. In our laboratory the anatomical material for dissection is scarce and we have been forced to double up our students. As a result each student now does about one-half of the mechanical work formerly done and has a correspondingly increased time to check up and study things as he finds them in the laboratory. I believe, on the whole, the student has profited by this arrangement.

In my department we prefer to stay as we are as regards the question of the distribution of anatomical teaching time throughout the four years.

I think Dr. Keiller has led us to believe that in most institutions anatomy is over with the first year. This is not true in many places. One frequently finds a dissecting course in the first year and topographical anatomy either in the second or third year, this course being sometimes elective and sometimes compulsory. In many institutions there is also a course in applied anatomy in the fourth year. I feel, therefore, that if we can get, as we are getting in certain instances, the proper cooperation from the clinical side, we will not have any particular trouble with this problem.

DR. CHARLES R. BARDEEN, Madison, Wis.: In connection with anatomy, it should be borne in mind that a student needs to learn principles rather than details of structure. The main thing in the study of human anatomy is to get the power of visualization by thinking in terms of structure. The student should learn to visualize the organs of the body in action and their correlations. In order to appreciate structural correlation, he should be given opportunity to gain as soon as possible a fair conception of the human structure as a whole, and especially of the thoracic and abdominal viscera. When he has gained this point of view his work in histology, physiological chemistry, physiology and pathology becomes more interesting.

DR. THOMAS ORDWAY, Albany, N. Y.: The statement has been made as to lack of fresh anatomical material. Students tell me that they learn such anatomy while taking the course in pathology, and it seems to me, there should be more coordination between the work of the anatomist and pathologist. The thoracic and abdominal viscera are perhaps the most important structures. At many necropsies there is no reason why the anatomist and pathologist with the members of the class should not be present when a body is opened to give them an opportunity to see the condition of this material. The pathologist takes what parts are most important to him, and the rest of the material should serve an important need of the anatomist for gross and microscopic study by his class.

DR. G. C. HUBER, Ann Arbor, Mich.: I should like to have defined the term anatomy. I think of anatomy not merely as gross or practical anatomy as in the case with the average surgeon, but as a subject which is much more comprehensive. The modern anatomist thinks in terms of microscopic anatomy, of embryological and functional anatomy, of nervous anatomy, as well as gross or dissecting room anatomy. It seems to me that it is quite time that medical teachers throughout the country should realize that the course in gross or dissecting room anatomy was very materially reduced in the relative number and absolute number of hours allotted to this course during the reorganization of the medical curriculum a number of years ago. At the time when the majority of this audience had their work in "anatomy" there was practically no work in histology nor embryology, and very little work in neurology. There were almost no laboratory courses in the medical curriculum during that period. I am speaking now of a time about twenty-five years ago. Since that time, courses of histology, embryology and anatomy of the nervous system with

laboratory work have become a part of the medical curriculum and have taken time out of the course of gross anatomy; laboratory courses in physiology, biochemistry and pharmacology have been added. I do not think it matters much whether the course in anatomy is given primarily during the first year, so long as the work is given by men trained in anatomy and devoted to their work.

I believe thoroughly in research work. I think to some extent the question of research has been overemphasized. It is said that in some medical schools those doing research work are not supposed to do any or very little teaching of anatomy. I do not believe in that at all.

I am glad Dr. Keiller referred to an anatomist making a comparative study of the kidney. I have spent a number of years of rather heavy schedule of teaching and many hours daily in teasing the renal tubules. One can keep up the enthusiasm for teaching and at the same time tease renal troubles. It is not the fault with the method, but with the teacher.

I believe the fundamental work in anatomy should be given in the first year; gross anatomy, biology, embryology and anatomy of the nervous system, so on to form a foundation for physiology, pharmacology, biochemistry, and pathology. I think we ought to have more time in the next few years for further work in anatomy. It seems to me that Dr. Schulte and Dr. Bardeen struck the right note when they stated that it is not so much the fault of the present day department of anatomy as it is the fault of the clinicians who were taught twenty or twenty-five years ago and who have not developed so as to appreciate the spirit of modern anatomy. However, we are getting closer together. There is evidence of much more cooperation during the last few years, especially with the departments of surgery and roentgenology, but more must be done and needs to be done. I thoroughly believe in giving anatomy in the first year and still believe that a great deal of anatomy can be and is being taught during the first year.

DR. J. PARSONS SCHAEFFER, Philadelphia: Concerning the curriculum, each medical school, in a sense, has its particular problem. Where physiology and pathology are taught in the second year, gross anatomy, histology and embryology should be given in the first year. Certain courses are prerequisite to others and probably structure should precede function. It would, of course, be better if we could correlate structure and function, and, indeed, this is done to a considerable degree. Once the student reaches clinical work he sees the importance of this correlation. When a student sees anatomy applied in surgical work he shows an enthusiasm greater than he possessed before. A third year laboratory course in practical anatomy on the body is a very good thing. And finally, I would urge, as intimated by Dr. Hubber, that anatomy should not only be taught during the first years by anatomists, but in the upper years as well by the clinicians fostering and keeping alive anatomic interests.

DR. KEILLER (closing): With regard to the advisability of dissecting the abdomen in the first instead of the second year, I have met the situa-

tion as follows: The abdomen, head and neck have been assigned to the second year because of their extreme importance and also because they are difficult dissections. Most students have only one opportunity in their lives of getting to know the anatomy of the abdomen and it is extremely important that they should be fairly well-trained human anatomists before they approach such a difficult and important region. For this reason it is assigned to the first semester of the sophomore year. This creates a difficulty in our curriculum in that freshmen students get their histology, embryology and part of their physiology before they have dissected the abdomen, and sophomore students get their general pathology before they have finished this dissection. This difficulty is met by giving a short laboratory course on opened human cadavers with the aid of a special mimeographed text in which the freshmen get a preliminary laboratory acquaintance with the broader aspects of human visceral anatomy. Thus freshmen students actually investigate, on opened human trunks, the pleuroperitoneal cavity, the divisions of the alimentary and respiratory system, etc., getting sufficient knowledge to make their histology, embryology and physiology intelligible.

One thing more: Do not imagine for one moment that I underestimate the importance of research. I think, however, that the first duty of the average medical school is to turn out plain, ordinary, all around general practitioners for the benefit of the public. You all know the history of John Hunter, how he complained that as soon as he got interested in an anatomical problem, he had to leave in the midst of it to earn that "damned guinea." Where research is the all absorbing problem, it is so easy to make the labor of teaching a secondary consideration and to regard it very much in the same attitude as that of the immortal Hunter. Of course, I recognize that there are exceptional men, such as Dr. Huber, who present the exceedingly wonderful combination of being at once enthusiastic in research and in teaching.

SHALL A FIFTH OR INTERN YEAR BE REQUIRED FOR
THE M. D. DEGREE AND FOR ADMISSION TO
THE LICENSING EXAMINATION?

WILLIAM DICK CUTTER, M. D.

Secretary, State Board of Medical Examiners
Albany, New York

There may be some present who represent states in which by legislative enactment this question which appears as the title of my remarks has already been settled. Some of you represent universities in which the fifth year as a hospital intern is a part of the requirement for the degree. On the other hand, there are many states which have not adopted the requirement of the fifth year as a part of the medical course, or as a requirement for admission to the medical licensing examination. It is to these that I wish particularly to address myself.

With your indulgence, I shall confine my remarks to a consideration of the question, shall the medical course be extended to five years? And in considering this question I want you to bear in mind that while we customarily speak of the medical course as a four year course, it is in fact a six year course. The two years premedical work represents part of the training of the student for his profession. The course is really six years in length, and if we should add another year it would mean seven years. Is it necessary to add another year to the length of the period which is required for the training of men before entering upon their life work?

It seems to me, in order to answer that question, we must first of all find out whether the time we now have at our disposal—six years—is fully utilized, and I say to you, that it is not so fully utilized at the present time that there is any necessity for extending the course. Assuming that there may be additional material, which is desired, and which may be profitable to our students, and assuming that the graduate in medicine from a four year course has not had sufficient practical experience in the handling of the sick, has not had intimate contact with patients in a hospital and dispensary, the question arises, is it necessary to add another year to give him such experience?

At the present time our medical course in the colleges averages about 34 weeks. We have 16 weeks of summer vacation. I have a little girl, 9 years of age, who goes to school. She has 10 weeks vacation, and our education department has compiled statistics showing that the length of the teaching period diminishes progressively from the elementary schools up to the colleges and universities. Is there any reason why, if a child of 9 can study for 42 weeks, that a boy of 21 or 22 cannot study for more than 32 or 34 weeks?

I have taken the schedule of one of our colleges which is fairly typical and find that if we take out all the time given to vacations, holidays, Sundays and half a day on Saturday, less than half the year is given to study. We can lengthen the period of instruction, and we should so do before we undertake to add another year to the course. If only eight weeks are added to the period of instruction, we should add as much to the total time available as if we added another year of eight months to the course. In this direction progress can be made without the necessity of taking another year of the life of the student at a time when it is most valuable to him.

There is another way in which a good deal of time is lost in the present course, and that is, during the first two years, the so-called premedical college years. During these years we not only have long summer vacations but we have another element of waste. Colleges require, as a rule, fifteen or sixteen hours a week of work to constitute a college year. Medical schools require a good deal more time. Every high school requires 20 hours a week of recitation to constitute a year's work.

The president of one of our colleges recently spoke of collegiate institutions as amusement parks where young people go to enjoy themselves. How much truth there is in this, you all know. Many young people go to college because of social ambitions, or because of athletic ambitions, and for them study is a secondary matter, if not really an obnoxious price which they have to pay for the social privileges which they enjoy. This may be all right for a candidate for the arts degree who is not preparing himself for a profession. But is it reasonable to permit a young man to spend two years in this atmosphere of idleness and play,

working only 15 hours a week, and then add a whole year to his period of training?

What are the reasons which have been given for these long summer vacations which prevail in our colleges and professional schools? The only two reasons I have ever heard given in support of this program are these: First, some of the students are so poor that they need to work their way through college; they need long summer vacations to earn money to put them through the succeeding winter session. If there are a large number of such students, it would be far better to lengthen the college year and let those students take a whole year off to earn money which will support them during the rest of the college course. That would take five years in the place of four years, or seven years in place of six. Why should other students be required to take seven years to do what they could do in six?

The other reason sometimes given is that these long summer vacations are necessary for the faculty, that they want time for research work when they are unincumbered by the duties of teaching. It would be folly in such a gathering as this to decry the value of research; but I think everything in connection with the advancement of medical education points to the fact that at the present time the cost of medical education has been tremendously overloaded by the amount of research which is being done. Research is all right, but the cost of it ought not to be charged to medical education. Plenty of time can be found for the necessary amount of research for the instructors and professors during the academic year, as well as during a shorter vacation. Many college instructors teach, not throughout the whole college year but only one semester. Teaching, the primary function of the medical school, occupies only one-half the available time.

There is no justification for adding another year to the present medical curriculum until the time we already occupy is fully utilized. By increasing the amount of study in the premedical years and increasing the length of the college year in the professional school, more time can be secured than by the addition of another year according to our present schedule.

The other question is whether or not an internship in a hospital should be made a part of the legal requirement for admis-

sion to the licensing examination or be required as a prerequisite by the university for its degree. It might seem at first sight as though the answer to this question was involved in the answer to the previous question. If we answer the previous question in the negative, there would be no room for the internship. That, of course, is not necessarily true because it is possible, if the six years now allotted to the course are fully utilized, that time can be found for service as an intern in a hospital, should it be regarded as absolutely necessary. But before deciding that it is necessary to send students into hospitals to secure this additional practical training, we should inquire into the conditions that prevail in the hospitals to which they are to be sent.

If a medical school is so organized that it has, under its control a hospital of sufficient size and capacity to provide internships for all its students, it might carry on practical work under the direct supervision of the members of the faculty of the medical school or university, and there would be very little objection to such a procedure, but I know of no medical school so located that it can give to all its students internships in its own hospital. The result is that those schools which require an internship send their students into hospitals scattered all over the country. During that time they are a part of the machinery of the hospital. Their duties are largely routine. Instruction is secondary, and in many such hospitals facilities for instruction are inadequate. The staffs of these hospitals are selected for all sorts of reasons—some social, some personal, some political, but never are the staffs of these hospitals chosen for their ability as teachers. It would be quite impossible to select men for the positions of chiefs of service in all these hospitals, men who would be qualified to serve as medical teachers.

If any of the deans present have ever tried to fill the chair of medicine or surgery, they can appreciate how difficult it is to find a man who is really qualified for such a responsible position, and if in medical schools we have found it difficult to secure the services of a competent man to assume the responsibility of professor of medicine or professor of surgery, how utterly absurd it is to expect that such men can be found on the staff of every hospital accredited by the American College of Surgeons or by the Council on Medical Education and Hospitals of the American Medical

Association as suitable for intern training. I am sure, every one of you, from your own experience, can recall many instances to show how utterly fallacious is the supposition that the staffs of these general hospitals are competent to supervise the training of interns and give them the amount and character of instruction which can be accepted as a legitimate requirement either for the medical degree or for admission to the licensing examination.

The story is related of a practitioner who was governed largely by whether disease was located above or below the diaphragm. If it was located above the diaphragm, he gave guaiacol carbonate, and if it was located below the diaphragm, he gave pepsin and bismuth. Think of an intern serving a year's time under such teaching as that! Let us take a more modern illustration.

A patient was brought into a reputable and highly accredited hospital. The roentgenogram showed some rarefaction of bone. The patient was referred to the surgical department. An exploratory operation was performed, and the material gathered from the interior of the thigh was submitted to a pathologist who examined it by frozen section and reported that it was sarcoma. Two surgeons amputated at the hip joint. A little later, careful examination of the specimen revealed the fact that it was not sarcoma at all, that it was an erosion of bone due to an aneurysm of the femoral artery. Do we want to teach our young men such things as that? Do we want to put them in a place where they are obliged to see and follow that sort of example?

One argument sometimes brought forward in favor of hospital internship is the fact that most men take hospital internship anyhow. That is true. It is said that 98 per cent. of the graduates of the better schools seek a hospital internship. Probably 98 per cent. of the graduates entering practice put up a sign with their name on it. Shall we therefore require them to have a sign printed before admitting them to the licensing examination or conferring a degree on them? As a matter of fact, many of these boys prefer to go to hospitals to get personal contact with the members of the attending staffs which will be useful to them and advance them in their practice later on.

We have no ground whatever for assuming that hospital internship, as at present conducted, outside of the control of uni-

versities, represents a course of training or instruction which is in any way adequate to fit a young man to carry on his duties as a practitioner of medicine. It may be true, that in many of our schools there is not enough practical instruction. The student does not come into sufficiently intimate contact with patients for a sufficiently long period of time. Dr. Ordway pointed out to us one way in which that intimate contact may be secured, but what I have already said to you with regard to the possibility of lengthening the term of instruction, without lengthening the number of years, with the amount of time going to waste during the six years medical course, shows that we can give students within the limit of six years all the practical instruction they need and all the intimate contact they need with patients in the wards. It may be said that some of the schools are not so situated that they have the hospital facilities under their control. I admit that is true.

About fifteen years ago, when the process of standardizing medical schools began, it was found that many of the schools did not have sufficient microscopes for the use of students, and the medical schools were obliged to furnish them. If medical colleges have not the necessary facilities for teaching clinical medicine and surgery, let them proceed to get those facilities. Let us enlarge the clinical facilities and give to our institutions of learning adequate and sufficient control over the hospitals, so that the training of students and of interns which goes on within these institutions may be carried out in such a way as to be creditable to the university and receive from that source adequate amount of instruction and real gain in knowledge and skill and power which are commensurate with the time we require them to spend.

The course of training for the practice of medicine is longer than that required for any other profession. In view of the fact that medical graduates are from 25 to 27 years of age, to require them to spend an additional year in a hospital, without receiving commensurate benefit, is a policy which I believe to be economically unsound.

DISCUSSION

DR. ARTHUR T. McCORMACK, Louisville: While one should bear in mind that a similar general objection is naturally raised to any step in progress in medicine or other education, I am impressed that at this

particular time it is of the utmost importance that any regulation we make, which requires an apparent lengthening of the time for the student to go through the required course in medicine, is fraught with danger to our whole scheme of medical education.

It is unquestioned that the training we are now giving medical students enables them to become better doctors than ever before and requirement with which a large majority of the students take an intern year is unnecessary, because the basic character of the training in medicine has become so scientific that it is essential to a majority of them that they have at least a year of contact in a hospital with the practitioners of medicine so that they learn the art of which they had previously acquired the scientific foundation. Unquestionably much hospital teaching is poorly directed and supervised, but I believe the contact of the intern with his fellows practicing the art of medicine is a very important thing to him and that more and more students will feel it is necessary to have the intern year.

The thing that impresses me more, and this is in addition to the very excellent and very logical reasoning presented by Dr. Cutter, is that, coming in contact with legislators and the people, as I necessarily do in my branch of medical practice, if we raise the standard further, however cogent the reason for it may be to us, if the impression is made on the people that students in medical schools are idle too much of the time because of holidays or because our facilities are not able to devote more days in the year and more hours in the week than do other men who work, we will have hard sledding before state legislatures in maintaining the standards which we now know are necessary.

In practically every state the country people, who elect a majority of the legislators, are getting fewer and fewer doctors, and the fact that the ones who do graduate are far better qualified is not much solace to those who have access to no doctor at all. Our country people were curiously satisfied with the sort of doctors they had when most of us graduated from medical schools, and it is very difficult to get them to stand quietly by as the general practitioners in the country districts are becoming rarer and rarer. We, who graduated years ago, know we needed more basic education, more premedical education before we started in medicine. We know we were not taught many of the things we needed to know while we were in college. It is apparent that the students of the present and future will be better qualified and can practice scientific medicine more intelligently than those of our generation. However, had we not better stop in what has been the most remarkable progress that has ever been made in any educational system, pausing long enough to consider the viewpoint of the people and their legislative representatives in these matters? Increasing numbers of them are suggesting that our medical requirements are so exacting that we are not getting enough doctors. Physicians, generally, recognize the fallacy of this argument, and yet, I respectfully submit that it would do us little good to know that the argu-

ment is wrong if the majority of the legislators in any state put through a bill impairing our medical standards. It is important for us to consider seriously the criticisms that are made on present day medical education. In some respects, are we not attempting too much? A medical student has a certain cerebral capacity; his brain can carry a certain amount of knowledge and, on this knowledge, he will be able to base a certain amount of reasoning, and it is this that determines his practical value as a practitioner. When we stop to think that our faculties of forty or fifty or more men are trying to teach each student all the special line of knowledge and practice which they each know, are we not assuming for our students frequently that they are capable of acquiring an amount of knowledge and doing an amount of reasoning that no one of us is able to do?

Under no circumstances should we consent to any reduction of present standards in medical education, but I agree with Dr. Cutter that it would be entirely possible to so rearrange the curriculum by omitting nonessentials now being taught and by teaching through the major part of our present holidays and materially shorten the time required for the student to learn his basic scientific knowledge so that he could spend the greater portion of his time in acquiring the art of medicine.

DR. JOHN S. RODMAN, Philadelphia: I have been very much interested in Dr. Cutters' remarks. The National Board of Medical Examiners and state boards are interested in the same line of work, but their problems are a little different. The National Board started some seven years ago, assuming that a hospital year was an essential part of the training of the medical student, and I think our experience up to this time has led us to feel we will continue that practice. State boards, however, are more concerned than the National Board with the irreducible minimum which is safe for the graduate in medicine to put into practice. I feel at the present juncture, therefore, that such boards would be going too far to insist that a hospital year must be required.

I was particularly impressed with Dr. Cutter's remarks that medical schools should not go so far in general at the present time as to insist on the hospital year for graduation, and they cannot go that far until they have hospitals that can be controlled absolutely. Just because one is on a hospital staff does not necessarily mean that he is a good teacher, and so I feel that simply serving time in a hospital from the intern's point of view is not getting the additional year of instruction which would be required. Therefore, until all medical schools can control hospitals, we cannot insist on the requirement of a hospital year for the M. D. degree.

DR. C. A. HAMANN, Cleveland: The seniors in the Medical School of Western Reserve University are occupied eleven months in the year. At the end of the third year, after a month's vacation, they serve as clinical clerks. I venture to say that 95 per cent. of our medical students become interns. I think the hospital year is necessary, but hospitals should be suitable for intern instruction; it is quite true that

not all hospitals are suitable for this purpose. The problems of getting suitable hospitals may be a serious one in some places, but we can handle that in Cleveland, though it may not be true everywhere. On the whole, I am rather in favor of an intern year. Time should be utilized to better advantage. It may be said that interns are not under the supervision of competent teachers at all times. I grant that is true in many cases, but at the same time that they are having experience, they are being given an opportunity to learn, and that of itself is of great value.

DR. WILLIAM DICK CUTTER (closing): I am glad Dr. McCormack brought up one side of the question which I did not touch on, namely, the fact that the people of the state through their legislators ultimately control this situation, and they are not in any mood to stand any further increased burden upon those who are going to become physicians, which would react somewhat in the way of decreasing the number of physicians available.

As to the practicability of lengthening the college course, I want to say this, that there is no insuperable obstacle to running colleges through eight or nine months of the year. When I went to college the length of the college year was 40 weeks. When I went to a medical school it was 36 weeks. The length of the term both in college and in medical schools is now 34 weeks, or less. It is only a few years since we had a longer school year and a shorter vacation. I am not at all opposed to the practical training of students in the wards such as they are supposed to get in a hospital. I believe it is an urgent need of our medical education to provide much more practical work than at present, but I believe it can be accomplished within the limits of the six year period.

THE PREMEDICAL REQUIREMENT IN CHEMISTRY*

THEODORE HOUGH

Dean University of Virginia Department of Medicine
University, Va.

The purpose of this paper is to discuss the adequacy of our present standard premedical requirement in organic chemistry and to consider the possibility and advisability of certain other suggested changes in the premedical chemical training.

I.

ORGANIC CHEMISTRY

The minimum admission requirement of this Association in organic chemistry, adopted in 1919, is 4 semester hours. It does not specify, as in the case of other premedical sciences, that laboratory work must be included. So far as I am aware, this omission of laboratory work from the stated requirement is an oversight, and I shall assume that there is no question as to its necessity. In point of fact, I know of only one or two colleges on the accepted list which do not give at least two semester hours of laboratory work.

At the time of the adoption of this requirement I was of the opinion that it was entirely inadequate and offered an amendment increasing the time to 8 semester hours. In the discussion on this amendment no one claimed that 4 hours is enough, and it was freely admitted that 6 or 8 hours would be better. It was, however, urged that the colleges had complained of the frequency of change in entrance requirements to medicine; that we had announced two years previously that we would increase our total time for chemistry to 12 hours; and that, since at least 8 of these had to be assigned to general chemistry, it was inadvisable to give more than the remaining 4 hours to organic chemistry. On these grounds, and on these grounds alone, the present minimum requirement was adopted.

Three years have now passed without change in our minimum requirements. It would, therefore, seem proper for us to recon-

*The second part of this paper which dealt with a possible advance in the total number of semester hours has been omitted by the author in order to stress an adequate premedical chemistry preparation.

sider this matter on its merits; and, if the present requirement is found to be inadequate as a minimum, to change it, of course, giving due notice of the change. I have, therefore, reintroduced the former amendment; but I hope you will understand that this is done merely to serve as a basis of discussion and that there is no intention to insist upon a total of 8 semester hours or upon an equal division of time between didactic and laboratory work. These are details which can be determined by amendment from the floor when the matter comes up for decision.

Nevertheless, I propose to defend the proposal of 8 hours; and, to begin with, I shall qualify as an expert. First, as a graduate student of average ability, I took Remsen's course in organic chemistry in 1889-1890. That course consisted of 6 hours* didactic and two hours of laboratory work. I had an incomparable teacher and I was an enthusiastic and faithful student. There was little in the course which did not find subsequent application in my studies of elementary biochemistry and physiology. I know positively that this 8 hour course at Johns Hopkins was a minimum course for me.

Second, for twelve years I taught biochemistry as well as physiology. I was in the most intimate touch with my students, and came to know their difficulties with the subject. It was from this experience, which I suspect few in my audience have had, that I learned how essential it is to the student of biochemistry to be able to *think in terms of organic chemistry*. During the greater part of this time an 8 hour course in organic chemistry given specially to medical students immediately preceded the biochemistry. I know that these students, even the best of them, had no superfluous knowledge of organic chemistry.

Our requirements in English, general and organic chemistry, physics and biology are meant to be strictly minimum requirements, and I think that in the other subjects we have stated the minimum with some approximation to accuracy. In organic chemistry alone we have, as I see it, grossly understated the minimum requirement. There is but one question before us: Have we understated the minimum premedical requirement in this sub-

*The term hour is used throughout this paper for semester hour as defined in our by-laws.

ject for efficient work in biochemistry and pharmacology? If we have, how much should be required? What should be the distribution of time between didactic and laboratory work?

I would not, however, ask this Association to adopt an increase merely on the basis of my judgment. A questionnaire was therefore, sent to two groups of men whose opinion should settle the matter. These two groups are:

1. Professors in charge of instruction in organic chemistry in all colleges on the tentative list of approved colleges of arts and sciences and junior colleges, compiled by the Council on Medical Education and Hospitals of the American Medical Association.

2. Teachers of Biochemistry in Class A medical schools. Opinions were also obtained from members of the American Society of Biological Chemists actively engaged in biochemical work other than teaching.

I am deeply indebted to those to whom these questionnaires were sent for their generous response.

OPINIONS OF ORGANIC CHEMISTS

The answers of the organic chemists may be summarized as follows, 325 questionnaires being sent out and 233 replies received.

Question 1. *Do you regard the present requirement of the American Medical Association or that of the Association of American Medical Colleges as giving adequate preparation in organic chemistry for the study of physiological chemistry?*

No	.	.	.	.	.	218
Yes	.	.	.	.	.	6
Not answered	.	.	.	.	.	9
						Total 233

Two of those giving an affirmative answer qualify this opinion with the statement that the course must be given "under favorable conditions".

Question 2. *What is the semester hour value of didactic and laboratory work of your course in organic chemistry taken by pre-medical students?*

The answers may be tabulated according to the total number of semester hours, with subdivisions of each group according to the division of time between didactic and laboratory work.

Total semester hours	Number of colleges	Distribution between didactic and laboratory work	Number
2	3	2 - 0	3
4	16	2 - 2	14
		4 - 0	1
		3 - 1	1
5	17	3 - 2	12
		2 - 3	4
		2½ - 2½	1
6	44	3 - 3	8
		4 - 2	23
		2 - 4	5
		Misc.	8
8	72	4 - 4	56
		5 - 3	8
		6 - 2	4
		3 - 5	3
		7 - 1	1
9	10	6 - 3	7
		3 - 6	2
		4 - 5	1
10	42	5 - 5	7
		4 - 6	6
		6 - 4	29
12	18	6 - 6	16
		8 - 4	1
		Not given	1
12 plus Not answered or not clear	2	Not specified	2
	9		9
Total	233	Total	233

Four points stand out clearly here; first, the colleges themselves express in practice their opinion of the present minimum requirements—only 19 out of 233 give so short a course in organic chemistry; second, 8 hours is the most frequent length of course, and the equal distribution of the 8 hours between didactic and laboratory also occurs most frequently; third, approximately equal numbers give less (4 or 6 hours) or more (10 or 12 hours) than 8 hours; fourth, 72 colleges are on the 3 hour basis at present,—i. e., give multiples of 3 hours.

Question 3. *Would your college or university have serious difficulty in providing for the proposed 8 semester hour course in organic chemistry?*

No	198	
Yes	16	
Yes, at present	1	St. Olaf College, Minn.
Yes, because on 3 hour basis	1	Western Reserve
Not serious	3	McPherson, Kansas
		Junior College, K. C.
		Grand Rapids College, Mich.
Not for 8 hours total but would for 4-4 distribution	2	Butler, Indiana
Not in 1925	1	Univ. of Michigan
Inconvenient	1	Trinity, (N. C.)
Not in a 3 year premedical course	1	South Dakota
Unanswered or not clear	9	
	233	

When at least 204 out of 233 colleges reply that they will not be seriously inconvenienced by giving a 4 - 4 = 8 hour course, surely little is left of the objection that the proposed requirement of 8 hours will be a serious hardship on many colleges. For the most part the colleges to whom it will be inconvenient belong to that small minority which give only 4 or 5 hours at present.

Question 4. *What is your opinion of the proposed 8 semester hour course (with 4 semester hours of laboratory work) as a preparation for the work in Biochemistry?*

Approved without qualification	103
Approved emphatically	80
Deemed insufficient	9
Not approved because of distribution	6
Too much time or not necessary, though possibly advantageous	10
Not approved	7
Unanswered or not clear	18
	Total 233

Question 5. *In case you do not think this proposed course allows the proper time for organic chemistry or the proper distribution of time between didactic and laboratory work, what recommendations would you make regarding the time allowance for the course?*

One hundred and thirty-four did not answer this question, generally because they had already approved the proposed requirement. Some who approve an increase would prefer a different

total or a different distribution or both. The answers are as follows:

Less advised (generally 6 hrs.)	.	.	.	.	.	.	17
More advised (generally 10 or 12 hrs.)	.	.	.	.	.	.	46
8 hours but different distribution:							
6 - 2	.	.	.	.	.	.	8
5 - 3	.	.	.	.	.	.	8
3 - 5	.	.	.	.	.	.	1
More laboratory	.	.	.	.	.	.	3
More didactic	.	.	.	.	.	.	1
3 year premedical course	.	.	.	.	.	.	1
Unanswered	.	.	.	.	.	.	148
							<hr/>
							Total 233

OPINIONS OF BIOCHEMISTS TEACHING IN MEDICAL SCHOOLS

The biochemists, both teachers and others, were asked only questions 1, 4 and 5 above. Replies were received from 65 teachers of biochemistry in medical schools. One of these strongly protests against the establishment and enforcement of minimum requirements in any premedical subject. Since that is not the subject under discussion, the following summary of answers includes replies from 64 teachers.

Question 1. (*Adequacy of present requirement.*)

Yes	.	.	.	.	.	3
Qualified yes	.	.	.	.	.	7
No	.	.	.	.	.	50
Qualified no	.	.	.	.	.	3
Not clear	.	.	.	.	.	1
						<hr/>
						Total 64

Under qualified "Yes" or "No" are classified such answers as "Yes, if properly taught"; or "Yes, if closely coordinated with the medical course in biochemistry"; or "No, save under exceptional conditions"; or "Yes, in proportion to the time given to other branches of chemistry, or to physics, or biology", etc.

Question 3. (*Approval or disapproval of proposed change.*)

Approved	.	.	.	.	16
Strongly approved	.	.	.	.	18
Qualified approval	.	.	.	.	13
Disapproved	.	.	.	.	12
Strongly disapproved	.	.	.	.	1
Qualified disapproval	.	.	.	.	2
Unanswered or not clear	.	.	.	.	2
					<hr/>
					Total 64

Most of the qualified approvals are from those who want 8 total hours but a different distribution of didactic and laboratory

work; others approve some increase but would prefer 6 hours total; others think that if we are to increase the total requirement in chemistry, quantitative analysis or physical chemistry should come in for their share and that the claims of these branches of chemistry should have preference over organic. Details of this matter will be given in the answer to the next question.

Question 5. (*Alternative suggestions.*)

Total of 8 hours but different distribution		
5 - 3	. . . . .	5
3 - 5	. . . . .	2
2 - 6	. . . . .	1
10 or 10 plus	. . . . .	4
6 hours		
3 - 3	. . . . .	7
4 - 2	. . . . .	2
5 hours (2 - 3, or 3 - 2)	. . . . .	3
Present requirement or 3 - 1	. . . . .	2
Addition of qualitative to required subjects	. . . . .	2
Addition of quantitative to required subjects	. . . . .	12
Addition of physical to required subjects	. . . . .	11
Not answered	. . . . .	26
Total		77

Most significant of all, perhaps, is the percentage of the two groups of teachers who favor a total of at least 8 hours, apart from the question of distribution between didactic and laboratory work. This is 85 per cent. for the organic chemists and 89 per cent. for the biochemists.

We may summarize the salient points brought out from replies to these questionnaires as follows:

1. The present minimum requirement is declared inadequate by a virtually unanimous vote of teachers of organic and of biological chemistry; out of 297 replies only 9 give an unqualified opinion that this course is adequate, and only a total of 19 qualified and unqualified opinions to that effect are recorded.

2. The colleges show their opinion of it in that only 19 out of 233 attempt to teach organic chemistry in so brief a course. Three of these give a purely didactic course and many others report that although they offer 2 - 2 courses, they advise all pre-medical students to take a more extensive course. Two report

that the 2 - 2 course is taken only by weak men who fear they cannot pass the fuller course.

In view of these two facts, there can be no argument that the minimum requirement in organic chemistry should be increased. The only question which remains is the amount of the increase. The following facts bear on this question.

3. Eighty-five per cent. of the organic chemists and 89 per cent. of biochemists favor an 8 hour course.

4. One hundred and ninety-eight out of 233 colleges report that they would have no difficulty in providing an 8 hour course; with 7 the difficulty would "not be serious", or is only temporary; only 18 say they would have difficulty in making this provision.

5. The number who regard an 8 hour requirement insufficient is not large enough to justify more than this time requirement.

6. Less than 8 hours is advised—as a minimum requirement—by 8 per cent. of teachers of organic chemistry and by 22 per cent. of teachers of biochemistry.

7. Only one fourth of the colleges are at present on the 4 - 4 hour basis, although 16 others give a total of 8 hours with a different distribution. One third give more than 8 hour courses. These, of course, would meet the proposed requirement. One fifth give six hours. It would seem that the variation both in present practice and also in opinion as to the proper distribution of time between didactic and laboratory work is too great to justify a hard and fast requirement as to distribution between the two. The proposed 4 - 4 plan would seem to be open to this objection, and it would seem to be better to require a total of 8 hours with a minimum of 2 hours of laboratory.

The adoption of an 8 hour requirement involves one other question. Objection has been made on the ground that many colleges are on a 3 hour basis and 8 is not a multiple of 3. A similar objection comes from colleges on the quarter system, that clean-cut arithmetic is difficult or impossible. The common sense of this situation would seem to be that if the college must limit itself to 3 hour unit courses, then it must offer a 9 hour course to meet the needs of the students. One extra hour will harm no student!

ANALYTICAL AND PHYSICAL CHEMISTRY AS PREMEDICAL
REQUIREMENTS

It has been urged, especially by teachers of biochemistry that premedical training in physical chemistry and quantitative analysis is as important for work in biochemistry as additional organic chemistry; and, if the chemical requirement is to be increased, these should have the preference over organic chemistry. From this view of the case I strongly dissent.

Take, first, the case of analytical chemistry. Since the first premedical year must have the general chemistry, analytical and organic chemistry would have to be placed in the second premedical year. College curricula are seldom arranged to give both these subjects in one session and it would be unreasonable to ask most colleges to provide special chemical training for premedical students.

It would be very convenient to teachers of biochemistry for every premedical student to have adequate training in quantitative methods, especially in volumetric work; but we cannot expect this in a two year premedical course. It must be remembered that students can learn quantitative methods and acquire the needed practice upon total nitrogen, urea, acidimetry, etc., as well as upon the inorganic analyses usually given in analytic chemistry. If we had three or four years of required premedical work, it would doubtless be desirable to include quantitative analysis; but with the two years, which is all we have any right and, I believe, any disposition to require, it is certainly impractical as a standard requirement.

Somewhat similar considerations hold with regard to physical chemistry. General, analytical and organic chemistry are coming to be presented from the standpoint of modern physical chemistry. Physical chemistry, except as an advanced course, is not really a separate branch of chemistry; it is essentially the fundamental principles by which we interpret chemical phenomena and must be learned in connection with the study of those phenomena in other branches of chemistry. We may scarcely hope to have in all our feeder colleges courses in physical chemistry which will meet the needs of all students who are going on with various lines of chemical work. Especially is this impossible as part of the second year work in college chemistry. Special courses for pre-

medical students are out of the question in most cases. So long as this is true, we must depend upon our standard fundamental courses to give what premedical physical chemistry the student is to acquire, and the medical school itself must supplement this with courses specially adapted to the needs of medical students.

Unquestionably, more than two calendar years of premedical college work is not advisable as a national standard. Personally, I am convinced that a student who is capable of carrying the medical course can do more than 60 hours in two years and that it may be profitable for him to take 66 or even 72 hours; but we shall probably get more satisfactory results if we require for admission to medicine more than a mere passing grade in general and organic chemistry than by the addition of other branches of chemistry to the premedical curriculum.

The two year premedical requirement must consist of work which our colleges, as at present organized, are in a position to give. It must also consist of requirements which a student spending two years in an acceptable college may be expected to obtain. We can secure this in general and organic chemistry. More than this is not at present possible in two years of college work and the chemical work of the medical curriculum must be based on this preparation.

DISCUSSION

DR. A. P. MATHEWS, Cincinnati: Dr. Hough made one reference to the University of Cincinnati which should be corrected. He referred to us as being one of the institutions that did not wish to increase the requirements in chemistry. We require already sixteen hours of chemistry to enter the medical college, and probably whoever answered his query took it for granted that was the general requirement elsewhere. I think every teacher of biochemistry feels the need of a better preparation in chemistry on the part of his students. Of course, everybody feels that way on every subject. A student never learns a subject when he is studying it; he learns it afterward. He will learn the fundamental sciences when it comes to clinical work and the practice of medicine after he leaves the school. He learns chemistry when he comes to me, although he studied it before. When he leaves me he knows very little about biochemistry. He learns that afterward. We have to bear in mind, when a question of this sort comes up, that the trouble is in the process of intellectual digestion rather than the need of more time for instruction. That process of digestion goes on automatically in our brains and it always takes time. That is the reason we cannot possibly hurry things in learning, the way several men have proposed to hurry them here this morning.

Personally, I am of the opinion that we need more quantitative work. The University of Cincinnati in its chemistry department has diminished qualitative analysis and put in quantitative analysis for medical students without changing the number of hours required, so that we now have one-half qualitative and one-half quantitative; and there is nothing more valuable than a thorough training in quantitative analysis. That is what students need above everything else.

I am heartily in favor of raising the requirement of organic chemistry to eight hours. This certainly is a minimum, but in addition thereto I should like to see it recommended that qualitative analysis be replaced, in part, by quantitative work. That certainly would do a great deal for our students.

Dr. Hough has raised the question of increase in the requirements to three years for entrance to the medical curriculum. I am not in agreement with him that we should not press forward to that end. It is the inevitable result of our present tendency and is bound to come, and I think we should press forward with all our might for it. It will make no difference at all in the number of medical students we graduate. There will be just as many graduated then as now, and they will be much better trained men when they get through. The loss of time is rather in the lower schools than in the higher schools. I am confident of that. I am heartily in favor of this proposed change. I think it will be for the benefit of every one. I doubt very much, however, whether it can be done without lengthening the requirement to three years, but I heartily favor increasing the requirement to that amount.

DR. W. S. BULLER, Rochester, N. Y.: I suppose the attitude of every one with regard to these requirements will depend upon their own view of the subject. Having had experience in teaching not only biochemistry but as advisor of premedical students, and being chairman of the admission committee of a medical school, I perhaps have a little different attitude toward the premedical requirements.

I cannot quite agree with Professor Hough that the medical student will have further opportunities for broadening himself after he leaves the medical school. I think the present tendency is to specialize more and more, and that whatever breadth he will have in his education must be obtained before he enters a medical school. In those institutions in which the premedical years are allowed to count toward the arts degree, the authorities in the arts college object more and more to the medical school reaching down into the regular college course, really throwing the medical course back to the freshman year in college. I think in some respects their objection is a good one, and for the reason mentioned, that these medical students must have some time to give themselves a broad cultural foundation. I find myself, therefore, divided as to what I think should be required of the premedical student. On the one hand, the present tendency in medical education is to continue the so-called preclinical subjects into the clinical year, which means that in addition to having

knowledge of the elements in biochemistry, the student must also have a practical application in the later years, and if he cannot have it in the later years, then as much of the course as possible in biochemistry must be taken in the preclinical years. And that means that the student must have an adequate knowledge of organic chemistry, and since biochemistry nowadays is largely quantitative, he should also have a working knowledge of quantitative analysis.

DR. WILLIAM J. GIES, New York City: The discussion of this subject reminds me of personal experiences with colleagues who have said, in effect, that students of medicine in the second and third years commonly know nothing about biological chemistry presented in the first year, no matter how earnestly and faithfully they have been taught. Dr. Mathews has suggested an explanation which is consoling to those who have been disconcerted by such remarks, namely, that students do not learn while we are teaching them, but learn after we get through with them. From the standpoint of a teacher of the subject, it would be gratifying if that were entirely correct.

At the session of the Annual Conference of Biological Chemists, in Toronto, Canada, last December, certain questions were raised pertaining to the content of a suitable course in physiological chemistry for general recommendation. In the discussion of the course that was proposed, one particular criticism arose, namely, that no provision had been made in the course for instruction in certain principles of organic chemistry that are commonly taught as parts of biological chemistry. It has been a universal experience that students entering a medical school at present, though they have passed courses in organic chemistry, are not apparently well prepared to proceed with biological chemistry. It is customary, in recognition of that fact, to include at the beginning of the course in biological chemistry, such subjects as will enable students to review the portions of organic chemistry in which they ought to be well versed, or which were not brought out in the courses in organic chemistry on which their admission was partly based.

Various explanations have been offered for this predicament. One is the shortage of time for the college course in organic chemistry. The organic chemists themselves feel that they do not have time enough properly to teach the subject. Others say it is not due to shortage of time but to inefficient teaching of the subject. Others suggest that it is neither shortage of time in the allotment for organic chemistry, nor inefficient teaching, but lack of good judgment in the selection of the subject matter taught to the students. It has been suggested, also, that frequently the attitude of the teacher of organic chemistry is such as to show complete lack of appreciation of the direction in which the student is headed.

While I feel that an additional requirement of time is desirable, I am not entirely satisfied that that is the only thing that needs attention

It is obvious that the attitude of the student is important. The judgment of the teacher, in selecting the subjects he uses for the development of the principles, is significant. The proposed new requirement would give the teachers of organic chemistry opportunity to do what they claim they cannot do in the short period of time allotted to them now.

It is consoling to recall Dr. Mathews' conception, as we reflect on our embarrassments, that, even when the teaching is good, the student may be expected to do most of his learning after the completion of the course.

DR. C. A. HAMANN, Cleveland: I do not feel competent to discuss this subject from a chemical point of view, but at the Western Reserve Medical School this matter was turned over to a committee, and I will take the liberty of reading the results of their deliberations. It applies particularly to the preliminary requirements in chemistry, not to the lengthening of the course.

1. In order to allow time for the utilization of special facilities of individual colleges and for general cultural development, it is undesirable to increase any minimum subject requirement.

2. If it appears justifiable to increase the requirement in any subject, the whole question as to the relative claims of all subjects should be reconsidered.

3. As regards the minimum requirements in chemistry, we believe the present proportion to the other subjects is just and adequate.

4. As regards organic chemistry, we believe that the knowledge essential for medical courses can be presented in 4 semester hours, 1 hour of which is laboratory work, provided the subject matter is wisely chosen. If additional chemistry is elected by a student, quantitative analysis should be given precedence.

The Committee took no action on increasing the premedical requirement to 72 semester hours, as our present requirement is already 90 semester hours.

Some of my colleagues have suggested higher mathematics and higher psychology. If this matter is to be taken up at all, it should consider in a broad way the questions that are involved.

DR. CHARLES R. BARDEEN, Madison, Wis.: I wish to endorse the scheme submitted by the Western Reserve University.

DR. G. C. HUBER, Ann Arbor, Mich.: I too, wish to endorse the scheme submitted by Dr. Hamann of the Western Reserve Medical School, and I likewise endorse the suggestions made by Dr. Emerson.

I wonder if a questionnaire relative to biology and comparative anatomy were sent to all teachers of biology, which number over 500, asking as to the advisability of requiring 16 hours of biology, in the premedical course, what the result of such an inquiry would be. I saw a communication the other day coming from a group of physicists, stating

that another 4 hours laboratory work in physics might be required, so that students with special training in physics might have opportunity to study medicine.

DR. BURTON D. MYERS, Bloomington, Ind.: I would like to offer the suggestion that we might profitably review the subject matter presented, eliminating nonessentials. Recently our professor of physics at Indiana University volunteered a special course in physics for premedical students on the ground that the course in physics in universities today is already a specialized course directed toward the preparation of engineers. That is point No. 1.

Point No. 2. I do not share the conviction that we increase a man's preparation for the study of medicine by merely requiring of him more work. I reviewed my class this year after the questionnaire of Dr. Hough was received, and I found that 50 per cent. of the class had had 72 hours or more of premedical work. I cannot tell the least difference between these two halves of the class in the work done in the laboratory. Our increased requirement should be qualitative, not quantitative. Last fall I eliminated 75 applicants for matriculation in our School of Medicine who had completed quantitatively all of the premedical work, but who did not come up to the qualitative requirement we demand.

We want intelligent medical students, and we do not assure ourselves of increased intelligence by merely asking for more work. We stand a better chance of getting more intelligent medical students if we emphasize the qualitative requirements.

As to the thought of learning a subject after the course is completed, I may recall in this connection an address made by President Hadley of Yale to a graduating class in medicine some years ago. He said: "Young men, conferring upon you these diplomas today is not an indication on our part that we believe your education is complete. On the contrary, it is only an indication that we believe you are prepared to learn, and that we have a reasonable degree of assurance that you will learn rightly."

It seems to me that is the fundamental matter. When we complete the course in physiologic chemistry or in anatomy we want to have a reasonable degree of assurance that our student is prepared to learn rightly. To have this assurance there must be a certain fundamental content to the course.

The schools of engineering learned this long ago. Some schools taught the trick of doing certain work, other schools gave fundamental courses. The graduates of the first group had greater facility in their limited field but were lost when a new problem arose which was not in their box of tricks. The students trained in fundamental courses showed ability to meet an emergency. The field of medicine demands fundamental training in fundamental courses.

DR. W. F. R. PHILLIPS, Charleston, S. C.: I cannot speak from the point of view of a chemist, but I can speak for the chemist in my school.

We discussed the proposed amendment in our faculty meeting and our professor of chemistry stated that in his opinion he did not think a mere increase of hours is worth while unless the course is detailed. We went into details and studied it from the standpoint of organic chemistry. We found that more than 60 per cent. of our A. B. men, or degree men, have come with more chemistry than is required according to the present requirements. Some came with 10 or 12 hours of organic chemistry. Our professor of chemistry does not find anything new in this minimum requirement because they have taught it right along. Therefore, we do not see the necessity of having this increased requirement. Our professor of chemistry said he would have to do precisely what he has been doing, to give an introductory course in organic chemistry, bringing up the chemical knowledge of the student to the point from which he wishes to depart as a physiological chemist. For that reason our faculty was unanimous in concluding they would not approve of this requirement; that we would oppose it. Inasmuch as we have a minimum requirement, we feel that if any particular school is not satisfied, there is nothing at all in our present by-laws or constitution to prohibit that school from increasing the requirements to the skies.

DR. J. LUCIEN MORRIS, Cleveland: I wish to speak not only from the standpoint of a chemist who has taught chemistry in medical schools, but in college in preparing students for medical work, and I wish to refer to the position the Western Reserve Medical School takes and the part the biochemistry staff had in that decision. No teacher would be faithful to his own subject if he did not emphasize the importance of the subjects which are logically preliminary to his course. We want the best pre-medical training in chemistry it is possible for our students to secure. That training should be in the fundamentals of chemistry rather than in the details which stretch out into hours and hours in many courses. This applies equally to inorganic chemistry, qualitative and quantitative analysis, organic chemistry and physical chemistry. If additional work is to be required in chemistry, it should not be more organic chemistry. Better organic chemistry would be very welcome, but some quantitative analysis and some physical chemistry should be added before we have additional organic chemistry. Concerning what I mean by better organic chemistry, I believe that principles of structure and behavior of the substances belonging to the fundamental groups of organic chemistry can be taught in a four hour course. These facts, when supported by the application of the laws learned in inorganic chemistry, prove sufficient training for the requirements of biochemistry courses. Extending the organic chemistry course to eight hours means the addition of the special chapters, such as dyes, rubber or the biologic group of lipoids, carbohydrates, proteins. None of these additions is especially desirable for premedical students. Any one of the additions serves to so cover up the fundamental group knowledge that students come to medical schools lacking in the most important knowledge of principles and confused with an accumulation of names and formulas.

We would welcome more training in chemistry, but quantitative analysis and physical chemistry should be added before the organic chemistry requirement is increased. Furthermore, we would not urge more chemistry of any kind unless it can be secured without sacrificing mathematics, logic and the other subjects which make for training of the ability to think.

DR. HUGH CABOT, Ann Arbor, Mich.: In listening to the paper and discussion I find great stress was laid upon the inadequacy of the preparation, and the thought kept coming to my mind, preparation for what? Somehow or other the idea kept coming to me that we were training people, the majority of whom would be concerned with looking after human beings, and that perhaps the most important thing they must acquire at some time, if they fill this function, is a broader knowledge of the human being, not particularly as to his chemistry or his physiology. I think the preparation is inadequate, shockingly inadequate, but far less inadequate in chemistry than it is in an elementary knowledge of what is alleged to be the language which the medical student in this country is supposed to use. There is a shocking inadequacy in general knowledge, in a knowledge of history upon which many of his judgments of human nature must be based. Generally, there is an utter lack of a chain of knowledge in regard to the processes of the human mind. We spend much of our time trying, with at least a little success, to find out what the other fellow is thinking about.

I am not sure that I should object to having this Association go on record as increasing the requirements. I do not believe in an increase by a year, but if I did I should add very little to the technical subjects but much more to the subjects which will make a student a man before he is a doctor.

DR. M. P. RAVENEL, Columbia, Mo.: This matter has been referred to a committee of our faculty, and the main points are contained in the committee's report, which I will present to you.

Comments on the proposal before the Association of American Medical Colleges that the premedical requirement in chemistry be changed to

Inorganic chemistry.....8 hours.

Organic chemistry.....8 hours.

1. There is no doubt that the present chemistry minimum is too low. This fact the University of Missouri is already recognizing in its unofficial policy of directing all of its premedical students to take a 5 hour course consisting of qualitative analysis, followed by a minimal amount of quantitative analysis, with the result that they take the following subjects:

General inorganic chemistry.... 5 hours

Analytical chemistry 5 hours

Organic chemistry 5 hours

Total.....15 hours

2. There is also no doubt that some form of quantitative laboratory work is imperatively needed by all medical students. If precision, gravimetric or other instrumental work is given in either physics or chemistry, this need is covered.

3. Practical considerations often tend to block the giving of quantitative experiments to the medical students in physics, so that they need room for it in chemistry.

4. The above proposed Association requirement, while adequately taking care of the total chemistry need, offers too little time in which inorganic quantitative work can be done. Students who fail of this training in physics should receive at least 10 hours of inorganic chemistry. This should be permitted without raising their total chemistry requirement to 18 hours (as would happen in case of an inflexible 8 hour requirement for organic chemistry).

5. The inflexible requirement of 16 hours, equally divided between organic and inorganic chemistry implies a curriculum based on 4 hour courses. But the University of Missouri and some other schools have largely 5 hour units, and base their other requirements also upon the 5 hour unit; e. g., 10 hours "citizenship", 10 hours German or French, etc. The inflexible imposition of a different unit from an outside body is educationally undesirable in such an institution. The University of Missouri would be disinclined to give up calling for students to take analytical chemistry, and an 8 hour organic minimum would bring the total chemistry minimum to 8 hours. With the same difficulty occurring in several other departments, the scheduling of premedical requirements is becoming unduly heavy.

6. The general purpose of the proposed change can be accomplished by a 15 hour minimum in chemistry of which not less than 8 hours is to be inorganic and not less than 5 hours organic. It might well also be added that all students ought, either in physics or in inorganic chemistry, to receive instruction and practice in precise quantitative determinations.

DR. HOUGH (closing): The real question is whether 4 hours of organic chemistry is an adequate preparation in this subject for the study of dependent medical sciences. That is independent of the question whether we should add quantitative analysis or physical chemistry to the premedical college preparation. It is either adequate or it is not adequate and I have shown you that the overwhelming opinion of teachers of organic chemistry and of biochemistry is that it is inadequate. I have also shown that the colleges express this opinion in that few of them attempt to teach the subject in so brief a course. It would seem that the sensible thing for us to do is to state the requirement in a manner more nearly in accord with the facts, so that these requirements will show what an average student should have in the way of preparation to carry the medical course successfully.

THE DANGER OF THE STEREOTYPED CURRICULUM*

CHARLES P. EMERSON
INDIANAPOLIS

We Americans are said to be in favor of standardizing all products; for illustration, we like to feel confident that should the car we are driving get out of order we can buy any new part in any State of the Union and that it will, without further machine work, exactly fit. But we certainly do not like stereotyped automobiles and so crowd each Automobile Show to study each new model and we trade ours in for a new car much oftener than our finances may justify. So we of the American universities have long been struggling to develop a standardized medical curriculum. Our student who, for illustration, earns fifteen semester hour credits in chemistry in one university can, if he changes schools, be credited with this number of hours in that subject in almost any other university of equal rank in the country. But here the analogy ceases for we have developed much too stereotyped a curriculum, and it is this which is hampering the satisfactory evolution of medical education. This is the fault in part of our state medical boards which in one examination try to test a recent graduate's ability in every possible medical subject; but more it is a result of the rivalry of our special departments, all of which demand an opportunity to meet the medical students; and still more it has been due to a conservative tendency to hold all we have as we add still more courses with the result that our curriculum is so overcrowded that to reach a minimum in each subject takes so much time that there is no chance to reach a maximum in any.

While it may be true that our medical students are better able on graduation than are those of other countries to begin at once the practice of medicine yet it may also be true that they are less able to keep abreast year by year of their profession. The stream of medical advance flows swiftly: can our students swim? Will this current, as in the past, carry them to medical worlds unlike those in which they learned their medicine? Will they be able to grow with their subjects, to accept new and therefore strange ideas and ideals or will they feel themselves strangers

*Read before the Congress on Medical Education and Licensure, March 6, 1923.

and hostile ones at that? And, what is more important, will they accept the responsibilities and the leadership which this progress imposes on them? For illustration; the young practitioner of 1885 we taught to pay strict attention to practice and to avoid all which suggested publicity, and the laboratory men of that decade were eagerly advancing the new science of bacteriology; neither felt any particularly professional responsibility for the well public. "Let the quack make public lectures", they said. They would prove their ethical "regularity" by avoiding all such "advertising". But the next decades proved that these laboratory discoveries were of the greatest value to the public, for of them public health and preventive medicine were born and it became the duty as well as the privilege of the best medical men to lead in the education of the public to struggle for better public utilities, better laws, etc., in order that the public might benefit by what was their right, for there is the general truth that to whom much is intrusted, of him, also, much shall be required. The great social service movements and the national societies for the better understanding of and the prevention of cancer, blindness, etc.; the Society of Mental Hygiene, the Antituberculosis Society, etc., all sprang up and are proof that the best did not lead. Unfortunately we now have the medicine of the twentieth century practiced by men who still cling to the ideals of the midnineteenth. That our graduates not only are not the leaders in these movements but are indifferent or even antagonistic to them, is not due to a lack of the sense of moral responsibility or to selfishness but rather is proof that during their medical student days they never really mastered their fundamental clinical branches; they did not learn to think in terms of their subject, to see the spirit which shines through the facts which research is continuously bringing forth. They now are strangers in a strange land.

That our curriculum is overcrowded many authorities on education have stated from this platform; that it contains so many subjects that only a minimum can be required in each has often been emphasized. We touch the high points of many specialties, of all in fact, and our students learn some of the tricks of therapy. They give a very good account of themselves for the first few years out of school but since they really did not master the fundamental clinical branches they soon find themselves not growing

with their subjects but clinging to the medicine with which they were graduated and even fighting for legislation to prevent its further modification.

The inadequate preparation of our graduates is proven also by the quality of our postgraduate schools, the most of which are not postgraduate at all in the sense that their courses are built upon those of the undergraduate years and carry the student to still higher professional levels, but are for the most part designed to bring the graduate of a few years ago up to the level of the undergraduate of today or to allow the practitioner to change his field of activity to some other specialty.

Another proof is the eagerness with which our graduates enter the specialties. We would repudiate the oft made criticism that they are tempted by the greater remuneration which the specialties offer, and would insist that they are not well enough grounded in the broader clinical subjects to feel at home there but do get a clearer idea of the work of the narrower specialties which are allowed in the undergraduate curriculum relatively more hours than are the more fundamental medical subjects and so are better taught.

What then is the curriculum which we would urge? It is one containing three main clinical subjects: medicine, general surgery and obstetrics. We would double the time allotted these and in addition would allow the student the right to elect perhaps one specialty. Each student would get acquainted with all the other various specialties by a brief course of not over eighteen hours of demonstration. This does not mean that the student would leave the school as ignorant of the specialties as might at first glance appear. Quite the contrary. While working in the general medical and surgical wards he would watch the examinations and treatments which the various specialists apply to patients assigned to him and he would perhaps in that way get better idea of the meaning and value of their work, since related to his more general cases, than he could from the same number of special patients presented in special clinics.

The second point we would urge is the desirability of a vertical rather than a horizontal line between the laboratory and clinical subjects. The latter idea, popular in this country thirty

years ago, was borrowed direct from Germany. I well remember, when a first year medical student, the warning from one of our teachers, who said that since the school had decided to teach the laboratory subjects the first two years and the clinical subjects in the second two years, it would not count in a man's favor were he during his first two years seen hovering around the dispensaries or hospital wards. That so sharp a separation between laboratory and ward is not wise I think that now we are agreed; we are training practitioners of medicine and the laboratory subjects receive their highest importance to the medical student because of their application to the individual patient, and the individual patient can be well studied only when he is studied in the laboratory as well as in the ward. We would, therefore, urge that physical diagnosis, at least, be taught in the second semester of the second year, but also, what is even more important, that the laboratory subjects should continue throughout the fourth year. Of course, certain subjects, especially anatomy and physiology, including biochemistry, must be taught first from the biologic point of view in order to give the student a foundation for his clinical work; but these courses as first year subjects need not be nearly as extensive as they now are, and should continue through to the fourth year, their character changing as the clinical knowledge of the student increases.

Of course, I know that the surgeons present will at once say why "he always reviews anatomy with his senior students". I have often heard them. But it seldom amounts to much, and the reaction of the student is often interesting: For illustration, a surgeon during an operation turns to a student and asks some question in anatomy. Very likely the student will smile and shake his head. The question will then be passed on to two or three others until it finally reaches some boy who does know. But the students who do not know do not seem at all worried but rather consider their ignorance as a joke. If, on the other hand, he asks some question in topographic anatomy which was taught later as of clinical value, the student who does not know flushes and looks worried, all the whole group show by their manner that they should know this point and are humiliated if they do not. Of course, a student who has once dissected a whole body can review his anatomy fairly well in an illustrated textbook of anatomy,

but far better were he required actually to handle the dissected parts.

The reason for the horizontal line of division between these two groups of subjects goes back, we feel, to an unfortunate episode in medical history and represented a step definitely backward. You may remember that during the middle of the nineteenth century, Germany could make little progress in the sciences because of the paralyzed influence of her so-called Naturphilosophie. This, as we understand it, may be stated briefly as follows: In the laboratory of man's consciousness he can find the truth of which the objective world is but an imperfect reproduction. Why, then, interest oneself in the external world when subjectively we can so much more accurately arrive at the truth? Later, this philosophy was overthrown by the schools of experimental science and the pendulum swung even too far into the realm of experimental investigation and laboratory medicine. But a nation does not abandon its mental habits over night and, although we could not claim to be historians of philosophy, it would seem to us that the technic of Naturphilosophie continued to rule in the German universities until the twentieth century and blighted the development of clinical medicine, for they approached medicine chiefly by indirection. They studied medicine in the animal in preference to man. They substituted the laboratories of experimental medicine with their dogs, guinea-pigs, and rabbits for the clinic. In the laboratory, they said, if we learn the truth concerning human beings, why grope darkly at the bedside? It is interesting that the beginning of the twentieth century saw a definite and successful revolt on the part of these clinicians, but the universities of this country, which had been planned on the German model evidently have not yet learned of this for today the clinics are in large degree dominated by laboratory men. These favor the appointment to the clinical chairs of professors who are themselves laboratory men while those who have actual knowledge and experience of clinical medicine are given secondary rank. Our plea today is that we may go back to the medicine of Boerrhaave and Cullen, of Louis and Lenec, of Bright and Addison, of Stokes and Corrigan, and teach our students that the center of his interest is the bedside and that the laboratories are to help him solve the problems which the bedside may suggest.

May we not break away from the applied Natur philosophie of this century and train our students to study patients? May we not limit our curriculum to that which we actually can teach well? Then we will get away from the dangers of a stereotyped curriculum and will graduate boys who are well trained now but who can keep always abreast of the times and who will lead the public as well as their patients in paths of right living.

PRESENT IDEALS OF THE PHYSICAL PLANT*
IN MEDICAL EDUCATION

C. R. BARDEEN

Dean University of Wisconsin Medical School

Medicine may be looked upon as a trade, as a science or as an art. The medical school may be looked upon as a trade school, a school of science, or a school of art, according to the prevalence of commercial, scientific, or humanistic ideals.

The commercial ideals dominated during the greater part of the nineteenth century in this country. The proprietary school, if successful, sold education at a profit. The direct financial return to the teachers was never great, but the indirect returns in the way of reputation and consultation fees made the purchase of the professorships worth while. The student for a small expenditure in time and money obtained a diploma that represented a good investment. Not long ago an educational efficiency engineer, who had once been employed to investigate one of the great state universities, seriously suggested in an article in a popular magazine that higher professional education should be self-supporting, that sufficient fees should be charged to cover the cost of the education offered. He seemed to think the idea original, and to be ignorant of the fact that a century of trial in this country had clearly shown that the ultimate cost to the public of medical education thus conducted is far greater than is the cost of liberal support of medical education. From the immediate commercial standpoint, didactic lectures and demonstrations to crowds of students, admitted without credentials, are ideal methods of teaching. The medical school of the proprietary period consisted essentially of one or more large amphitheatres, a dissecting attic to lend the proper odor, helped out in this at times by a chemical laboratory without hoods. When, later, on account of competition with subsidized educational institutions and on account of legislation, the proprietary schools were forced to add more laboratories, they ceased to be examples of commercial success. Schools of quackery have arisen to take their place and some of these schools have been

*Read before the Congress on Medical Education and Licensure, Chicago, March 6, 1923.

much more successful financially than any of the proprietary schools ever were. In the midst of commercialism in the latter schools there survived ideals of science and of service which in many cases prevented complete commercialism. Indeed, many believe that the art of medicine was then sometimes better taught than at present.

The scientific ideal succeeded the commercial ideal in dominating medical education in this country. For the scientific ideal to prevail in a medical school, university support is essential since the university is the place where such ideals are fostered. Moral support is not enough. There must be financial support of the most liberal kind. This was first given in this country when Johns Hopkins left over \$3,000,000 to endow a university and over \$3,000,000 to endow a hospital to be used for teaching purposes in the medical school of that university. Johns Hopkins died in 1873. The trustees of the hospital sought advice from five physicians of experience as to the best way of erecting a hospital for charitable and teaching purposes and as to the proper relations of such a hospital to a medical school building. The replies of these five physicians were published in 1875. All are of interest. The most comprehensive was that of Dr. John S. Billings whose services were of great value to the trustees during the subsequent study and building of the hospital. All five consultants agreed that, from the standpoint of the students, the use of the hospital for medical education was highly desirable. Most of them believed, however, that to some extent this use would be to a greater or less extent at the expense of the comfort, if not of the welfare, of the patients, in a way, a payment made by the patients for the care they received. It was urged that efforts be made to keep the discomfort of the patients at a minimum. Thus, Dr. Stephen Smith advised that "there should be a private room in which anesthetics are administered without exposure of the sick to the gaze and often ridicule of medical students." Several recognized, Dr. Billings more clearly than the others, that the best protection of the sick would be selection of students on the basis of educational qualifications and character. He wrote, "It is not desirable that the classes should be large. A class of half a dozen, such as I would wish the graduates of this school to be,

would be a more satisfactory result of a year's labor than half a hundred turned out on the ordinary pattern. The means of this are sufficiently well known: a high standard for admission; a four years course; rigid and impartial examinations, preliminary, intermediate, and final; and practical work in the laboratory and apothecary's department, the microscope and photograph rooms, and the dispensary and wards of the hospital. An important feature of the school should be a first class physiological laboratory and ample facilities for chemical and microscopical work." In the main, the recommendations of Dr. Billings were carried out when Johns Hopkins Medical School was opened in 1893. In the thirty years which have elapsed since that date they have become generally adopted.

With the revolutionary progress that has thus been made in medical education you are all familiar. Many factors have played a part in bringing this about, the medical profession through the Council on Medical Education, the medical schools through the Association of American Medical Colleges, the general public through the state boards and through liberal appropriations to the state universities, the universities through taking control of schools, the Carnegie Foundation through its masterly report on conditions in 1910 and through liberal financial aid, the Rockefeller Foundation and the General Education Board through financial aid and support, and many public spirited individuals through generous donations and bequests. The scientific ideal predominates in medical education today and has been extended from the laboratories to the hospital, the wards of which, in a teaching institution, have come to be looked upon as laboratories. This point of view has been perhaps most strikingly presented by President James in relation to a request to the legislature of the State of Illinois for a teaching and research hospital to be attached to the medical school. He stated, "This clinical building will not be a hospital in the ordinary sense at all. It will not undertake to treat the general run of hospital patients. Its facilities will be reserved for 'cases', that is, for patients whose cases are of interest from the standpoint of medical science and art. Provisions will be made for keeping chronic cases of interest and special value for instruction and scientific purposes for a length

of time determined solely by the scientific value of the case" (University of Illinois, College of Medicine, 1922-23, p. 28).

Meanwhile, on the whole, I think it may be said with fairness that medicine as an art has been insufficiently developed in medical education. The universities have never been institutions in which the arts have thrived in spite of the degree of master of arts, the recipient of which is seldom master of anything. Medicine as an art consists in applying scientific knowledge to the prevention, care, or relief of disease. As an art it deals with human beings as individuals surrounded by a complex environment. Sympathetic understanding based on social experience is an essential factor. Medical science on the other hand is advanced largely through specialized study of factors of disease under conditions of artificial simplicity and removed from emotional influence. A student trained wholly in laboratories, including wards as laboratories and patients as cases for study, may become proficient in one or more of the medical sciences, but he needs further training to become proficient in the art of medicine. He may become a successful specialist in a branch of medicine which deals with a condition in a patient, but he is unlikely to be able to give sympathetic understanding to the patient as a human being. Not long ago a friend of mine, an experienced internist, asked a young colleague to come with him to see a very sick patient. The patient was suffering from a condition marked by nervous excitability. The young colleague had finished a modern scientific medical course and had followed this up by postgraduate study at a highly scientific center. During this postgraduate study he had devoted a large part of his attention to the conditions from which the patient was suffering. In the presence of the patient he criticized the treatment that had been given in such a way as to quite upset the patient and made impossible in this case any aid his special training might have enabled him to lend. His education had taught him to know something about a disease, but not enough about human nature. What we need more than anything else is something to take the place of the old apprenticeship system, for art is learned only through apprenticeship. Many young physicians, after their internships are over, attach themselves to older men of experience and thus learn something of the art. Medical educa-

tion needs such modifications as will make this possible for all. This will mark the next great step in the progress of medical education. Would it not be well during the intern year to attach students to physicians rather than to hospitals?

In the development of scientific medical education in this country the different departments have been placed in the hands of specialists who have been encouraged to advance knowledge within the field to which the department was devoted as well as to give courses to medical students. For this, a large amount of freedom has been necessary and has been granted. In university departments of the college of arts and sciences where the educational aim is to offer a "liberal education" the common bond of union is the duty to advance knowledge and the love of knowledge. In a professional school each department has, in addition to these general duties, the duty of educating students for a definite profession. There is thus required a more definite union of departments, a sacrifice of some academic freedom for the good of the whole which is not required in an ordinary college department. In the academic organization of medical teaching this fact has sometimes been lost sight of. For the sake of medicine as an art, it is especially important that the medical school act as a unit. With a close correlation of the departments devoted to the basal sciences and to the clinical branches a solid foundation is given for acquiring the art of medicine. In the early days of scientific reorganization of medical education it was essential to stress the importance of specialization. Today the trend is in the direction of stressing the importance of unification of the laboratory branches with one another and with the clinical branches.

For the art of medicine, as stated above, something in the nature of an apprenticeship is needed. To offer this to all students there must be an extramural as well as an intramural faculty. To keep the latter high grade, the influence and aid of the school in maintaining high professional standards must extend beyond its boundaries. In considering a medical school as an educational institution one must therefore take into consideration not merely the educational resources within its immediate control, but also those sufficiently within its sphere of influence to make them utilizable in promoting medical art and science. For the

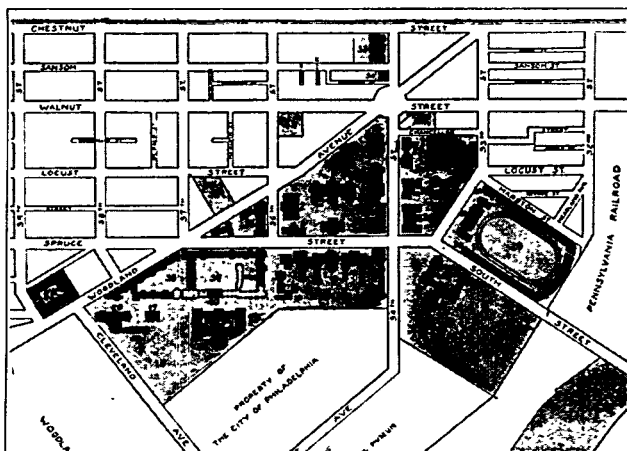


Fig. 1.—Campus, University of Pennsylvania. 3, 18. Medical School Laboratories. 20. Zoological Laboratory. 21. Veterinary School and Hospital. 24. Chemical Laboratory. 26. Laboratory of Hygiene. 27. Physics Laboratory. 37. Wistar Institute of Anatomy. The Philadelphia General Hospital is located near the medical laboratory building on the "property of the City of Philadelphia."

It will be noted that all of the conditions outlined above are to be found here. The buildings of the medical school are in close proximity to buildings devoted to college instruction. A large group of hospital buildings constituting the university hospital group, while administered by a separate board, is essentially under university control. The first of these buildings was erected in 1874 and was the first teaching hospital under medical school control in this country. Close by are the medical laboratory buildings, the laboratory of hygiene, and Wistar Institute of Anatomy. The Philadelphia General Hospital with 2000 beds adjoins the university grounds. Other hospitals are available for supplementary teaching.

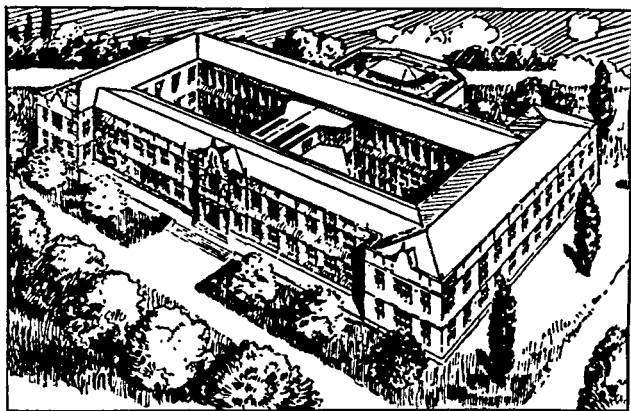


Fig. 2.—View of the medical laboratory building of the University of Pennsylvania.

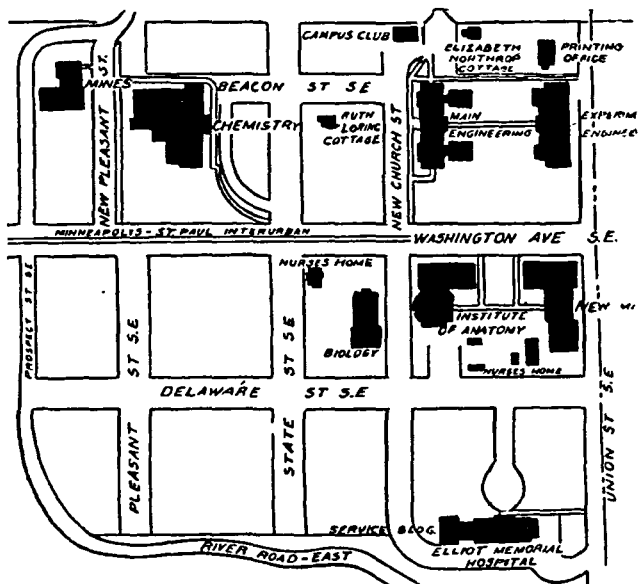


Fig. 3.—Map of part of campus, University of Minnesota.

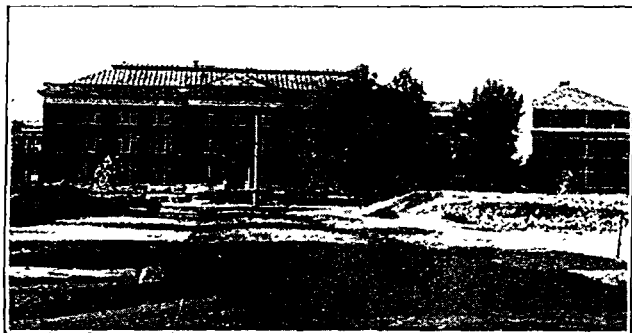


Fig. 4.—University Hospital, University of Minnesota.

Here also the medical school buildings are on the university campus. The Institute of Anatomy is across the street from the Biology building and but a short distance from the Chemistry building. A hospital building is comprised in the medical school group.

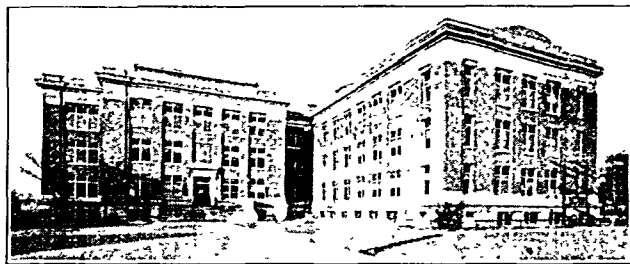


Fig. 5.—Institute of Anatomy, University of Minnesota.

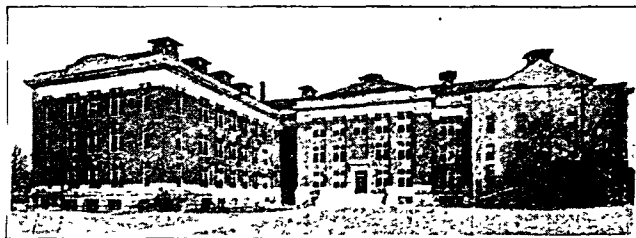


Fig. 6.—Millard Hall, University of Minnesota. Laboratories of physiology, pharmacology, bacteriology and clinical medicine and outpatient departments.

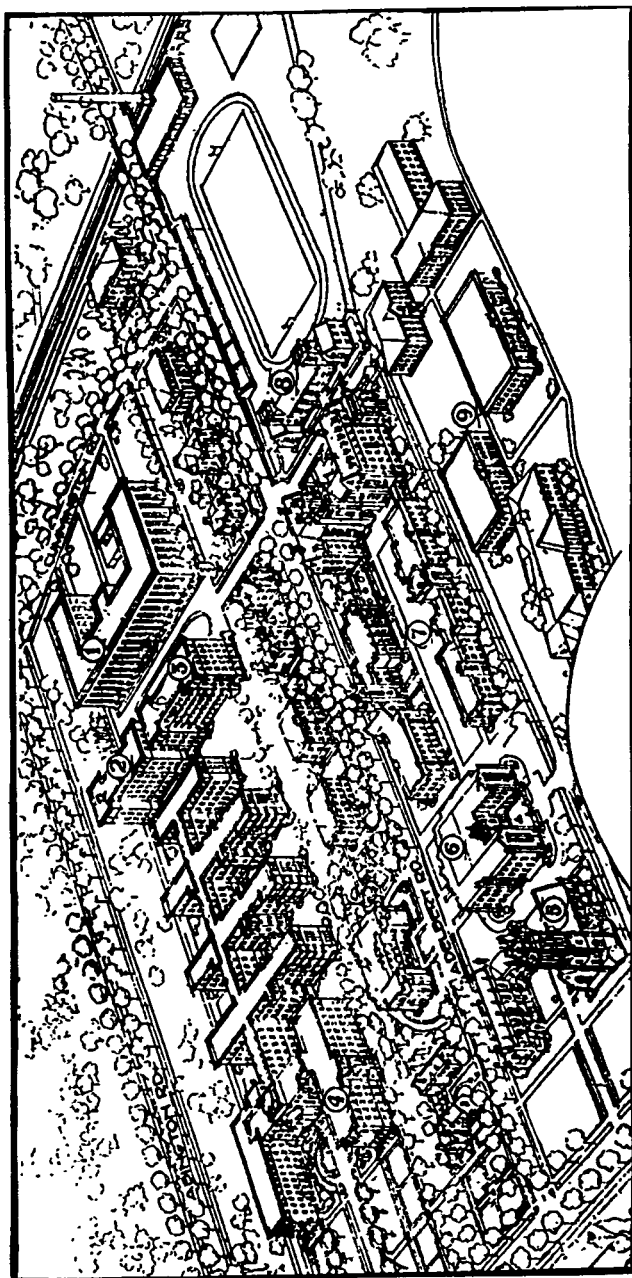


Fig. 7.—Plan for new medical buildings, Western Reserve University. 1. Medical School. 2. Maternity Hospital. 3. Babies Dispensary and Hospital. 4. Lakeside Hospital. 5. Chapel. 6. Administration Building. 8. Gymnasium. No. 1 is under construction; Nos. 2, 3, and 4 are in plans.

The site is one of 20 acres adjacent to the collegiate campus. A year ago Mr. Samuel Mather undertook to provide personally the funds for the erection of the buildings of the new medical school, the cost of which is estimated at \$2,500,000. The school already has an endowment of \$2,000,000 provided by various generous benefactors. The school has the use of numerous affiliated hospitals.

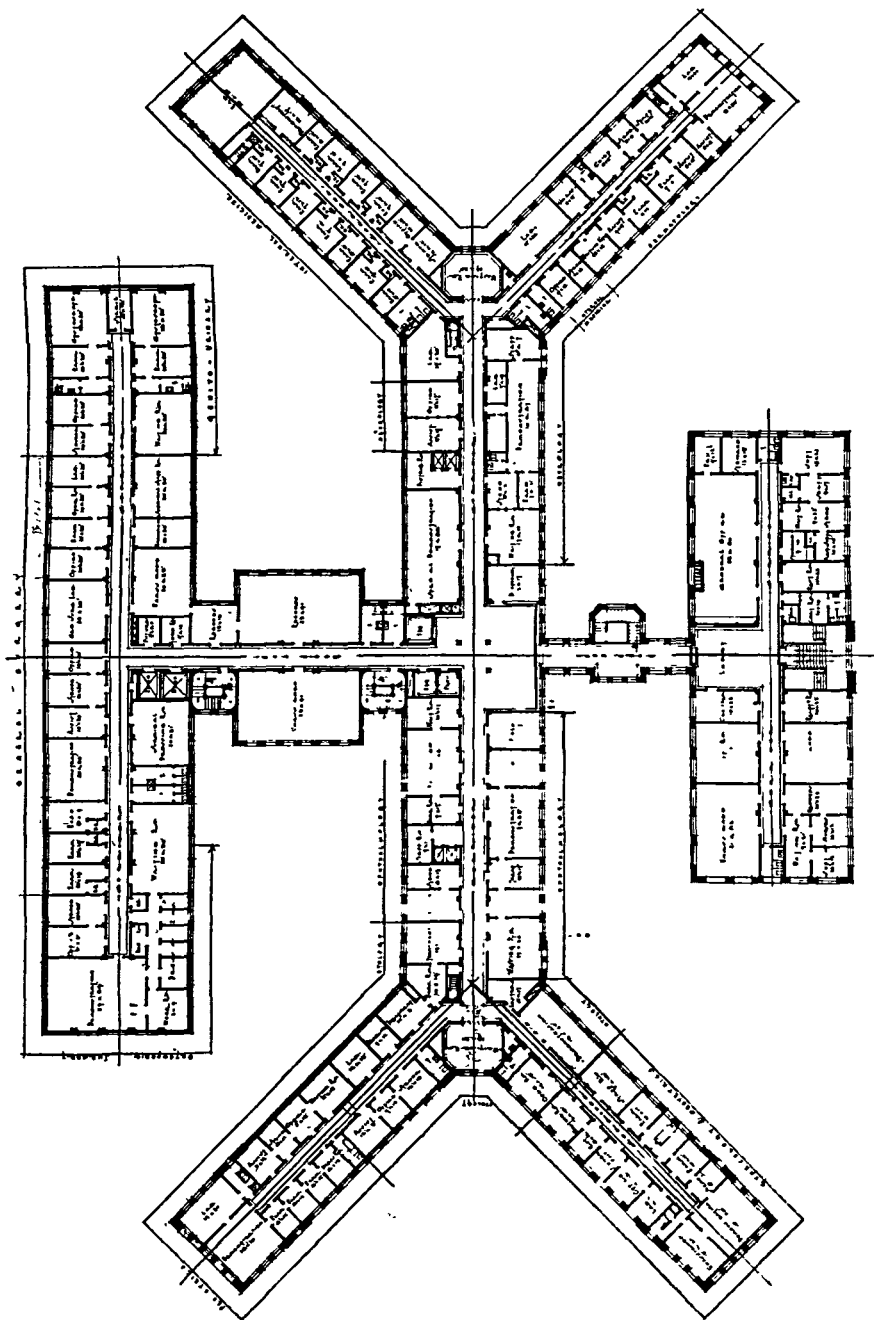


Fig. 8.—First floor plan, new university hospital, University of Michigan.

The medical school of the *University of Michigan* has been a leader in the development of laboratory work in medical education and in the development of the use of the state general hospitals for clinical teaching. Since many of you were at Ann Arbor last week there is no need to describe here the present plan. A floor plan (slide 9) of the new hospital which now awaits completion and equipment may, however, be of interest.

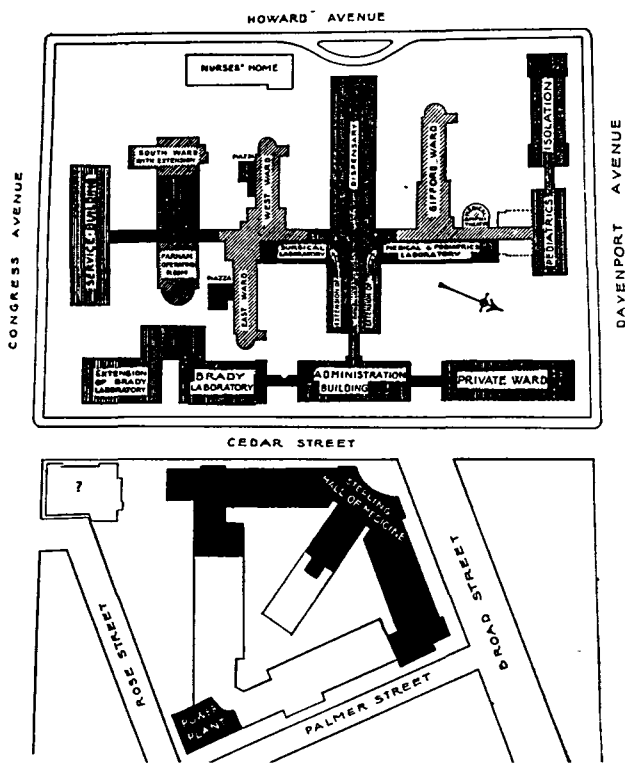


Fig. 9.—Map showing proposed development of the Yale Medical School and New Haven Hospital.

The *Yale Medical School* has in recent years effected an affiliation with the *New Haven Hospital* which puts it in the class of institutions now under discussion. The newer buildings are being erected in the vicinity of the hospital. The distance from the college campus is but a few blocks. Slide 10 gives a block plan of the *Yale Medical School Laboratories*, *New Haven Hospital*, and *University Clinic*.

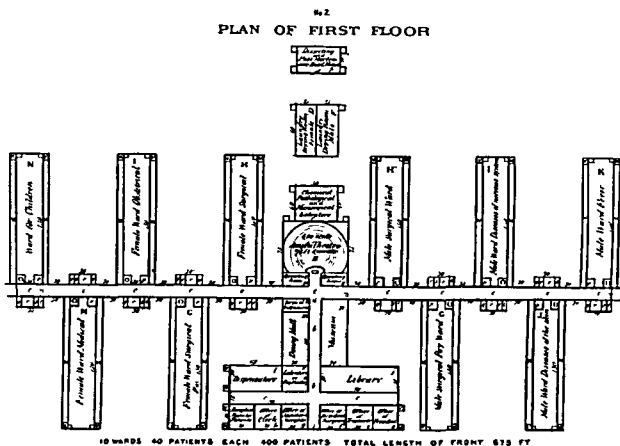


Fig. 10.—Plan suggested by Dr. Joseph Jones in 1875 for Johns Hopkins Hospital.

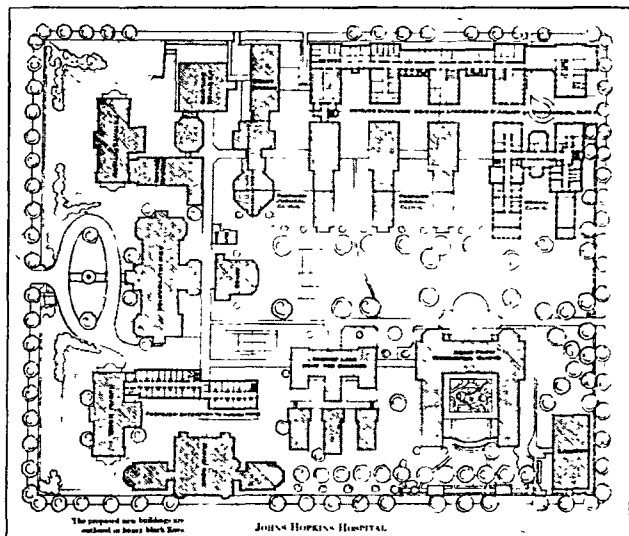


Fig. 11.—Present plans for Johns Hopkins Hospital.

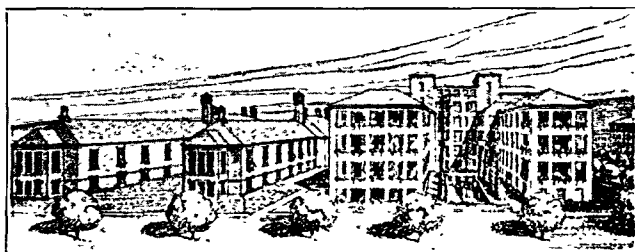


Fig. 12.—Early pavilions, Johns Hopkins Hospital, contrasted with new pavilions now replacing them.

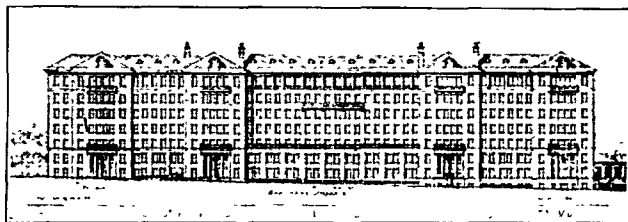


Fig. 13.—Elevation plans for new outpatient and laboratory buildings, Johns Hopkins Hospital, now being erected.

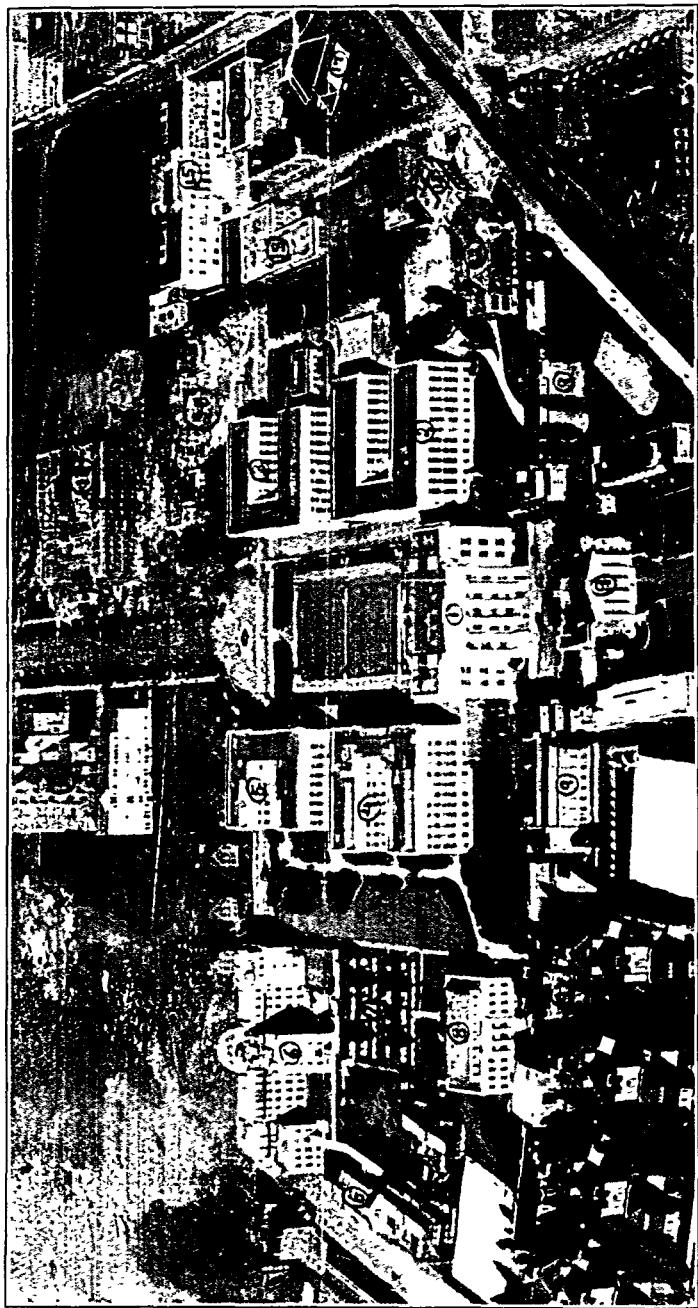


Fig. 14.—Harvard Medical School. 1. Administration Building. 2. Anatomy, Histology, Embryology. 3. Pathology, Neuropathology, Bacteriology, Tropical Medicine. 4. Physiology, Biochemistry, Surgical Research Laboratory, Physiological Chemistry. 5. Pharmacology, Comparative Pathology, Preventive Medicine. 6. Children's Hospital.

At *Harvard University*, as at *Johns Hopkins*, the laboratories for the medical sciences are at a considerable distance from the main campus. The medical school buildings erected in 1906 from funds donated by a number of generous givers, constitute undoubtedly the most beautiful set of laboratory buildings in the country. Grouped around these buildings are hospitals closely affiliated for teaching purposes. In addition to these hospitals *Harvard* has affiliations with a number of other hospitals in *Boston*. Slide 15 gives a bird's eye view of the *Harvard* buildings and affiliated hospitals. Slide 16 shows the first floor plan of the medical school buildings. Slide 17 gives a view of the buildings from the court. It has been estimated that \$50,000,000 would not cover the cost of erecting and endowing the medical school buildings and the nine hospitals with which its work is most closely associated.

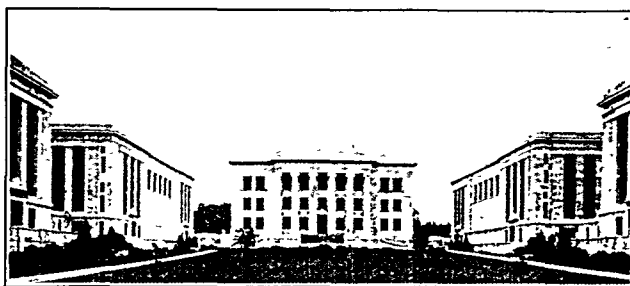


Fig. 15.—View of Court, Harvard Medical School, taken soon after completion of buildings.

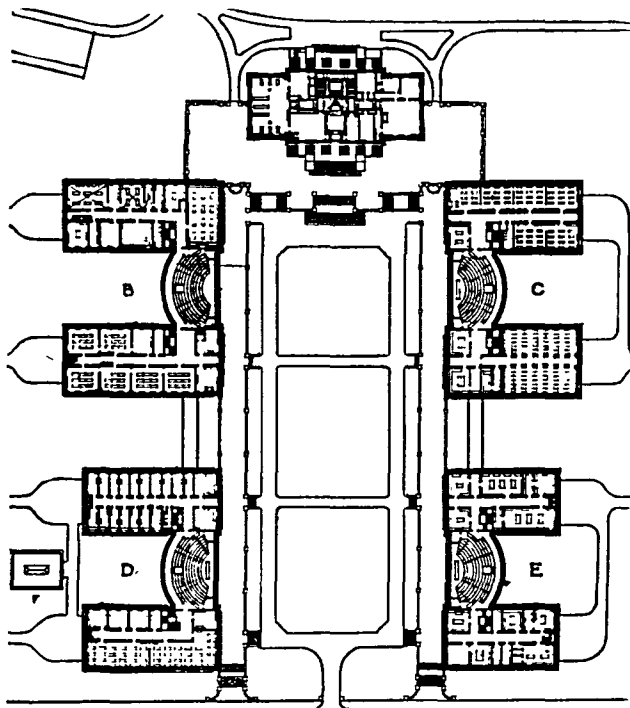


Fig. 16.—First floor plans of Administration and Laboratory buildings, Harvard Medical School. (a) Administration Building. (b) Anatomy and Histology Building. (c) Physiology and Physiological Chemistry Building. (d) Bacteriology and Pathology Building. (e) Hygiene and Pharmacology Building. (f) Animal House.

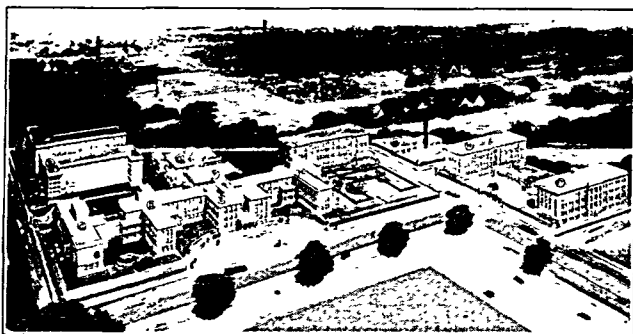


Fig. 17.—Washington University Medical School and Hospital group. (a) Nurses' Home. (b) Children's Hospital. (c) (d) (e) (f) (g) (h) Barnes Hospital. (i) Pathological laboratory and dispensary building. (k) Site of maternity building. (l) Infirmary site. (m) Power House. (n) Outpatient Medical School Building.

The present buildings of the medical school of *Washington University* were dedicated in 1915 and are due largely to the generosity of Mr. R. S. Brookings. They are situated about three miles from the collegiate campus in close affiliation with the Barnes Hospital and the St. Louis Children's Hospital. The medical school also has control of services in two of the St. Louis City hospitals for supplemental instructions. Slide 18 gives a bird's eye view of the medical buildings and affiliated hospitals, slide 19 a view of the Barnes Hospital, slide 20 a view of the chief laboratory buildings.

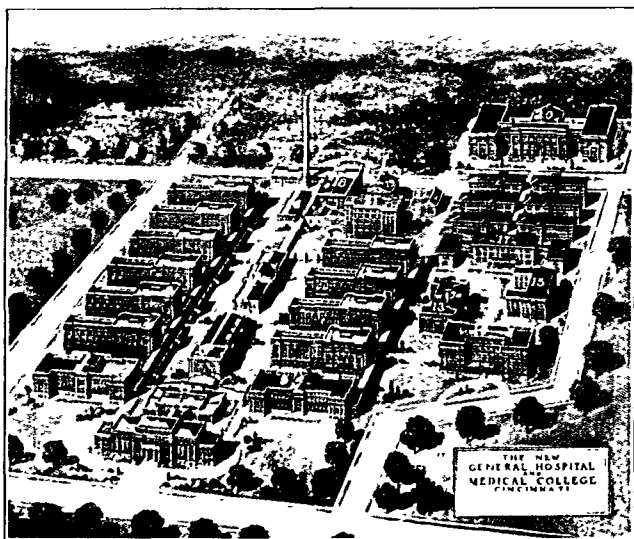


Fig. 18.—Cincinnati General Hospital and Medical School of the University of Cincinnati. 1-13. Hospital buildings. 14. Nurses' Training School. 15. Women's Dormitory. 16. Men's Dormitory. 17. Contagious Diseases Department. 20. College of Medicine. 21. Pathological Institute. 23. Location of the University of Cincinnati.

The *University of Cincinnati* is of special interest because the medical service of the City General Hospital is under the control of the trustees of the university. The medical school laboratories have been built in connection with the hospital buildings and away from the university campus, although the distance is not great. Slide 21 gives a bird's eye view of the medical school and hospital.

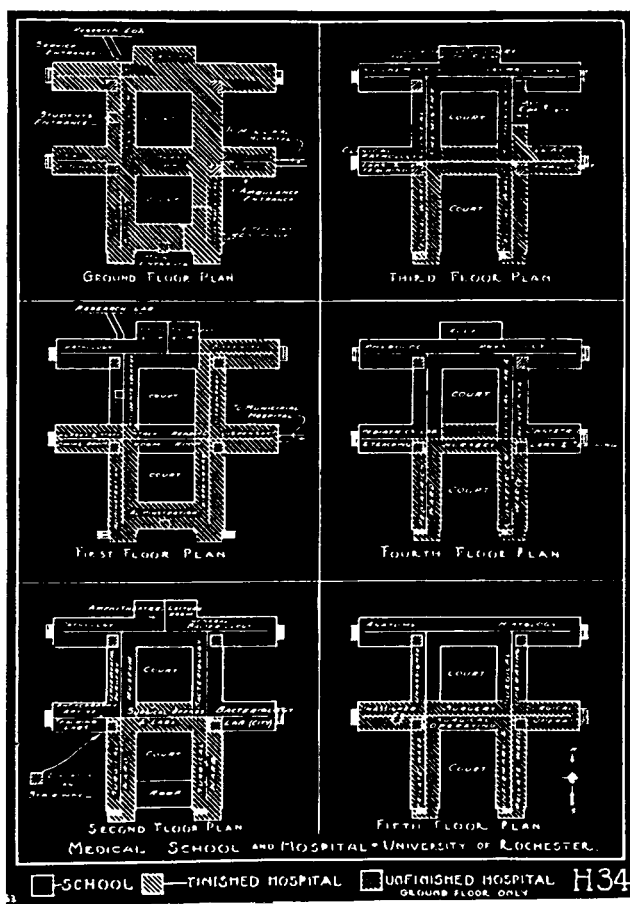


Fig. 19.—Tentative floor plans for the new Medical School and Hospital of the University of Rochester, N. Y.

The new medical school at the *University of Rochester* will belong in this group. The laboratory and hospital will not be on the main university campus, but will not be far away. Slide 22 shows the block plan of the buildings proposed. It will be noted that the teaching hospital and laboratories are to be brought together in one unit. Nearby the City Hospital will offer facilities for teaching under conditions of affiliation.

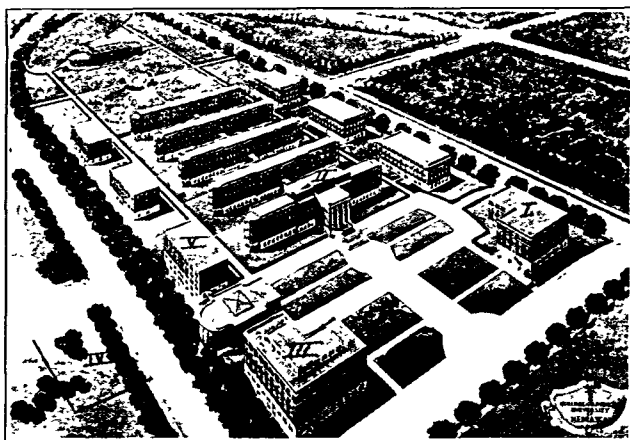


Fig. 20.—Bird's-eye view of the present and proposed buildings for the Medical School and Hospital of the University of Nebraska. I. Laboratory of Anatomy and Pathology. II. University Hospital. III. Laboratory of Physiology and Pharmacology. IV. Power plant. V. Nurses' home:

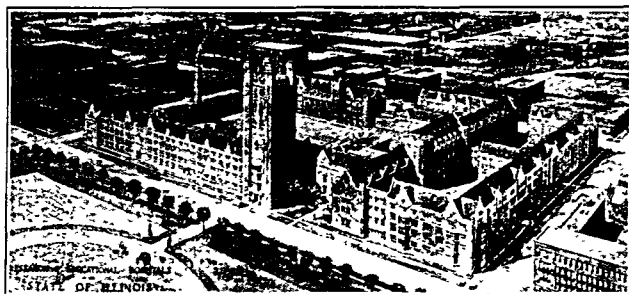


Fig. 21.—View of present and proposed buildings of the University of Illinois Medical School and Hospital.

The plan calls for grouping the hospitals which the state needs for the care of indigent patients about the medical school. The business side of these hospitals is placed in the hands of the State Department of Public Welfare. The medical school has charge of the medical service. The purposes of these plans for cooperation and differentiation are "to construct and maintain a great group of hospitals and institutions in the medical center of Chicago where laboratories, libraries, and medical skill could be readily obtained; to provide medical treatment for the indigent sick of the State; to give young men and women a medical education and training such that they would become active soldiers in the warfare for the prevention as well as the cure of disease; to help practicing physicians of the state to keep in touch with the latest and best methods of preventing and curing human ailments; to tell the people of the State through special lectures and bulletins how to keep themselves physically efficient. The greatest object of all is to determine the cause of sickness and on the basis of this knowledge institute preventive measures."

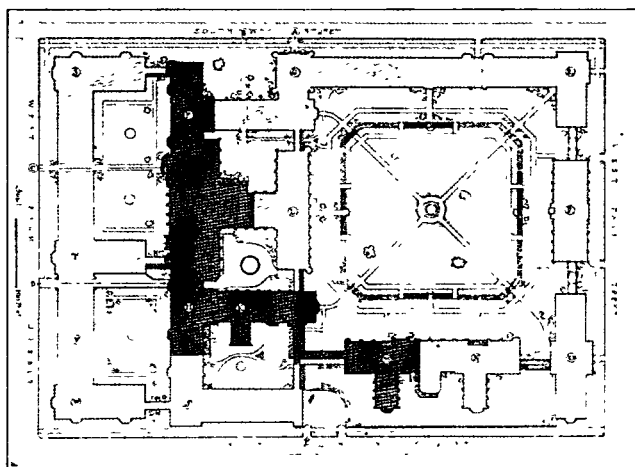


Fig. 22.—Map of present and proposed buildings of the University of Illinois Medical School and Hospital. F, H, Clinical Institute; K, Psychiatric Institute; M, Orthopedic Institute; S, T, V, Proposed medical school laboratory and class rooms.

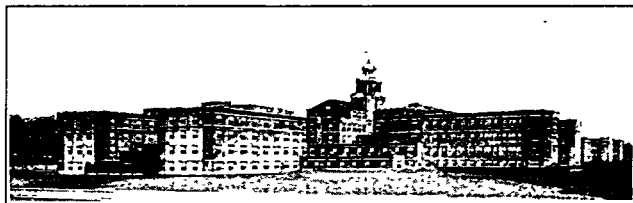


Fig. 23.—View of proposed Medical School and Hospital buildings, University of Colorado.

The *University of Colorado* for some years has maintained a divided school, the first two years at Boulder and the last two at Denver. Plans have recently been completed for erecting a building in Denver and giving the complete course there. These plans, as may be seen in slides 27 and 28 call for a very close union between teaching hospital and medical school. They have been most effectively worked out by the architects in conjunction with the members of the faculty of the school. In addition to the use of this teaching hospital, the school will have affiliations with other hospitals in Denver.

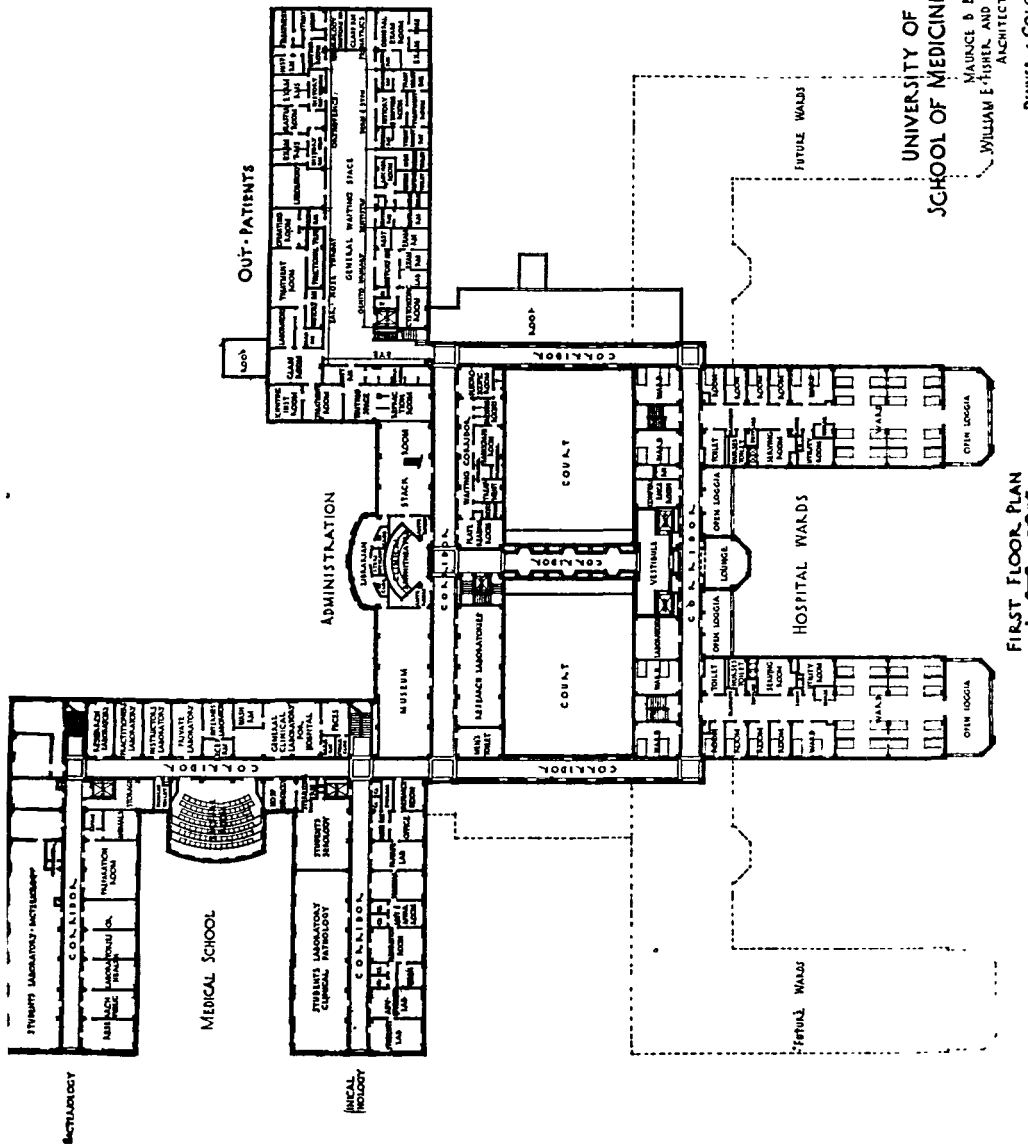


Fig. 24.—First floor plan of the proposed Medical School Building and Hospital, University of Colorado.

UNIVERSITY OF COLORADO
SCHOOL OF MEDICINE AND HOSPITAL

MAURICE B. BISCOE
WILLIAM E. FISHER AND ARTHUR A. FISHER
ARCHITECTS

DENVER, COLORADO

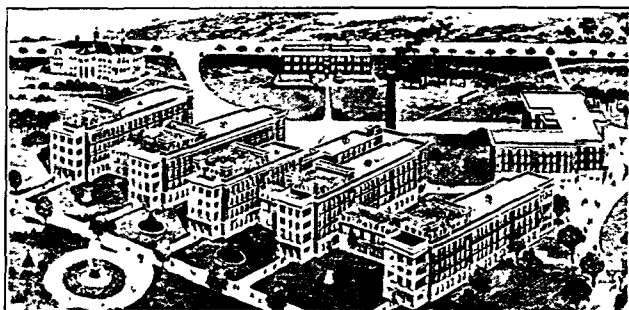


Fig. 25.—University of Georgia Medical School building and affiliated City Hospital buildings, Augusta, Ga. 1, 2, 3, 4, City Hospital buildings; 6, Medical School building; 7, Children's Hospital; 8, 9, Proposed additional hospital units.

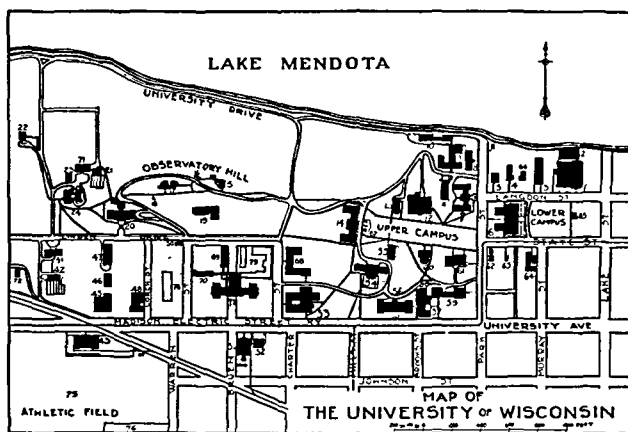


Fig. 26.—Map of part of campus, University of Wisconsin, showing location of hospital buildings and proposed site for medical laboratory building. 69, Bradley Memorial Hospital. 70, Student Infirmary. 77, State General Hospital, under construction. 78, Site of nurses' home. 79, Site of Medical Laboratory Building. 53, Chemistry Building. 54, Biology Building. 68, Physics Building.

relatively few students who desire to devote themselves to one of the medical sciences opportunity to learn scientific investigation under personal supervision may readily be had within the school. For those who desire to devote themselves to public health work, facilities are needed, not only within the school, but also in connection with departments of public health. For training in industrial medicine relations with industrial concerns are essential. The great majority of students will enter private practice. For these opportunity should be given for close association with physicians actively engaged in practice of a high type. This, in turn, involves an affiliation of medical schools with hospitals devoted to the care of private patients as well as those devoted to the care of charity patients. The medical student of today, scientifically trained in the basal sciences and clinical work in the latter part of his course, should be under proper supervision, an asset to any hospital. We may expect the extramural activities of medical schools to differ widely according to variations in resources and environment. The medical school of the future will, however, play a more active part in the life of the community than that played by any other part of the university.

To summarize we may say that the prevailing ideals in medical education include as fundamental:

1. University financial support and control.
2. Laboratories for the basal sciences.
3. A teaching hospital and dispensary under immediate control.

They include as highly desirable:

4. Location of the teaching hospital in conjunction with the medical laboratories.
5. Location of the medical school laboratories near the collegiate department of the university.
6. Affiliation with hospitals and other institutions not under immediate university control for common benefits including broadening of facilities for medical instruction.

In very few schools are all of these ideals realized. Even where funds for development have been relatively large, it has usually been necessary to sacrifice one of these ideals for the sake

of another. Most frequently this sacrifice has been that of location of the medical laboratories on the university campus for the sake of their location near teaching hospitals. Where the funds for development have been more limited it has been necessary to make as good use as possible of such a physical plant as has been available. Many schools are thus making excellent use of a relatively inferior physical plant. The spirit of the faculty is more important than the physical plant in which its work is carried out. The large sums given in recent years for medical school buildings and hospitals show the public appreciation of the maintenance of high standards in medical education and gives promise that where ever high ideals are maintained sooner or later an adequate physical plant will be provided.

It is my purpose today to give some illustrations of the physical plants of medical schools for which provision has been made in recent years. The slides I will show you have been selected not to show details of internal structure and equipment of buildings, but to show the environmental relations of medical laboratories which have been chosen as the most satisfactory under the conditions prevailing at a given school. I give illustrations merely of some of those schools which have been fortunate enough to receive funds sufficient in amount to make it possible to plan development on a large scale along the lines mentioned above. I shall not attempt to illustrate the many excellent improvements that have been made in schools which have not had the opportunity to develop a single comprehensive plan.

↓
The schools which at present best illustrate in the physical plant all of the ideals outlined above are Pennsylvania and Minnesota. At each of these institutions the medical school buildings are located near the collegiate campus; there is a teaching hospital under university control, and there are affiliated hospitals for amplification of medical teaching. Chicago, Western Reserve, and Vanderbilt are planning a similar development. Michigan, Iowa, Virginia, and Yale have the medical school in close association with the collegiate departments and have immediate control of a hospital and dispensary for teaching purposes, but none of these, I believe, make use of affiliated hospitals for the sake of extending the field of instruction.

At the University of Wisconsin much building is in progress. The site selected for hospital and medical school development lies midway between the collegiate campus at the right and the grounds of the college of agriculture at the left. The departments of physics, chemistry, biology and economics of the collegiate department and those of chemistry and home economics of the College of Agriculture, the university extension building and the university power plant and shops are in close proximity to this site. We are thus assured of the most advantageous physical relationships between other university departments and the medical school and hospital.

At present there are located on this side a student infirmary with a capacity of 80 beds and a research hospital with a capacity of 40 beds and large laboratory facilities. There is in the course of erection, a state general hospital with a capacity of over 300 beds. This will be connected by corridors with the two other hospital buildings. This new building has laboratories for teaching and research. An appropriation is available for a nurses' home. When the new hospital is well established we shall have sufficient clinical resources to begin the clinical teaching of the third and fourth years. The hospital resources on the university campus can be supplemented by the use of other hospitals in Madison, and we hope to develop the use of hospitals in other parts of the state for some of the final teachings in the art of medicine. This, we believe, can be done by making the State General Hospital and the medical school a real center of co-operation for those engaged in the practice of scientific medicine in the state.

To carry out our plans most effectively we need funds for a new building to house the work now being given in the basal medical sciences and the work of the State Laboratory of Hygiene. The logical site for such a building is outlined. It should be united to the State General Hospital and should provide additional space for clinical laboratory teaching as well as for the departments mentioned. We live in hope that funds for this purpose may be made available, but as yet we have merely hopes. Had I had time I could have pointed out the special advantages which each of the schools mentioned today has in developing certain phases

of medical education. At Wisconsin we feel that the special advantages are on the one hand opportunity for unusually close association with the university departments of physics, chemistry, biology, as pure sciences, and as applied to agriculture and to public health, and on the other hand for state wide cooperation in the application of scientific medicine to human needs. A firm base for the promotion of medicine as a science, offering possibilities of a splendid superstructure for the promotion of medicine as an art.

DISCUSSION

DR. G. CANBY ROBINSON, Nashville, Tenn.: When Vanderbilt University received a large gift for the reorganization of its medical department, it seemed to us that we ought not to do the conventional thing, but to make some experiment if it gave promise of success. This change has been in the physical plant, the success of which will depend on the future. We hope we are making a contribution to the subject of medical education from the point of view of the physical plant.

One question was in regard to the location of the medical school. At present it is about two miles from the campus of the university, and we decided that it would be wiser to scrap or vacate the old buildings, and erect a new plant directly on the campus of the university, so that the medical school would be not only in direct continuity with the main Vanderbilt University, but also adjacent to or just across the road from a college for teachers, perhaps the best endowed teachers school in the South. We do not know what that may hold for us and for them in the future. At any rate, we hope very much that we may cooperate.

One of the deans reported yesterday that correlation was becoming the watchword of the day, as we used to hear so much about science for science's sake. We are all interested in correlation, and it is along this line that we are endeavoring to construct the new plant at Vanderbilt.

The idea of correlation is not confined to America. Embryo attempts at correlation are now embodied in the curriculum which for the last two years has been going through the German universities. It has been accepted by eighteen of the twenty-three German universities. They are placing students in the outpatient department during the first year as orderlies during the summer vacation. They feel that clinical work should begin early. One professor in Berlin spoke of it as the American plan, so that we are beginning to have some influence on German ideas of American education. They are much interested also in England and Scotland, as evidenced by a report of the Pathologic Society of Edinburgh two years ago.

In Holland they are building a new plant at Leyden which will cost fifteen million dollars when completed. They put pathology and bac-

teriology in the same building. In this country we are very definitely co-operative in spirit. Therefore, we shall have the opportunity and spirit of forging ahead along the lines we have been discussing in the last two days.

Vanderbilt University Medical School is not going to be an elaborate affair, as compared with the plants Dr. Bardeen has gone over, especially those plants showing extensive future development. We have attempted to bring the laboratories and hospitals in relation to one another. We hope to spend two and a half million dollars on the new plant. Vanderbilt University has eight million dollars for medical education, and we have done our best to keep the cost of equipment down. If we can do that, we will be able to manage with a minimum amount of money expended for equipment.

DR. A. C. ABBOTT, Philadelphia: I should like to know whether any provision has been made for the teaching of public health.

DR. G. CANBY ROBINSON, Nashville, Tenn.: There is a series of rooms that are set aside for the teaching of hygiene and public health. There are three or four rooms which will be available for laboratory purposes, where public health, preventive medicine and hygiene are to be taught. These rooms are on the same floor as the department of clinical pathology.

DR. E. P. LYON, Minneapolis: I want to express sympathy with all that has been said here in a general way, but we can easily overdo in this direction as we have in the opposite direction. Our whole effort should be to keep a sane balance and to go forward carefully, and reasonably slowly. The water tight compartment is a very valuable feature in unification, although we would not advocate an absolute water tight compartment in education—the mind is not built on the principle of a water tight compartment. There is some tendency on the part of those who take extreme views to substitute another water tight compartment in which the diaphragm or neck, instead of being the boundary, is now put between the preclinical sciences and clinical sciences. I see as much danger in the one as in the other. One speaker who presented a paper yesterday left out physics, chemistry and biology as departments which were all to be affected by the relations of the clinical department, and I wondered why that was so. When a student is studying electricity, it would be considered of additional interest and advantage if the electrocardiograph was introduced and he was taught the applications that can be made of that instrument, and if he saw a few patients with heart disease and noted the changes in the records produced under those conditions. In studying physics and light, the student would be interested if the ophthalmologist demonstrated the anomalies of refraction. In the course in general chemistry, when calcium is taken up, it would be a great advantage for the student to know that calcium is a part of the constituent of bone and to have bones demonstrated to him, etc. I will not dwell on the practical difficulties which one would find if we should attempt to carry out

an extreme scheme. Let us take biologic chemistry. Imagine what would happen if we should attempt to have four classes in the laboratories. An enormous equipment would be necessary which none of us would be willing to stand for or we must have lockers for the whole four classes, and the practical aspect will make one hesitate and go slowly.

DR. ARTHUR DEAN BEVAN, Chicago: I think it might be helpful in this discussion if I present a brief summary of the ideas of a medical educator with a great deal of experience and very sound judgment, Dr. Charles H. Frazier of Philadelphia, who is absent on account of illness:

"At Pennsylvania we are so impressed with the advantages of early contact with clinical problems that we have introduced clinics into both the first and second years. On the question of correlation I feel very strongly. After all, the instruction given the student in the fundamental sciences, anatomy, physiology, chemistry and pathology, is selected with a view to its application to clinical problems. I am not in sympathy with the plan that crept into our educational program, by which these sciences were presented abstractly. If there are clinical applications to the laboratory phenomena, why should not this application be demonstrated synchronously with the laboratory demonstration? Let me cite an example: There are a number of demonstrations in the laboratory to illustrate shock; would the practical importance of these scientific laws not make a deeper impression on the student if, at the time, he were taken to the hospital to see shock in the patient and the treatment of it? Or let the subject be hemorrhage. The student makes a number of observations on the lower animals as to the effect of loss of blood, the constitutional effect on the animal, the change in the blood picture, etc. How telling these observations would be if, at their conclusion, the students were taken to the bedside of a patient, the subject of an acute or chronic anemia, observed the clinical aspects, and saw the influence of a blood transfusion. This dovetailing method might be applied to bacteriology, pathology and physiology.

"Instruction in a specialty should be restricted to the diagnosis of the more common lesions, emphasizing those which are an expression of systemic disease and those which, because of their grave potentialities and need for immediate treatment, require prompt recognition. To the post-graduate schools should be left the comprehensive study of any specialty.

"Surgery should be catalogued as a major specialty and, except for certain emergency operations, the student should not be burdened with the details of operative technic. He should know the significance of gall-bladder disease and what may be accomplished by surgical intervention, but nothing more.

"As to how the medical student should be taught, speaking for the clinical subjects, I would urge the reduction to a minimum of didactic lectures and the expansion of the clinical program. To plan an ideal curriculum, we should wipe the slate clean and rebuild the curriculum without the handicap of any preexisting practices".

DR. WILLIAM DARRACH, New York: With reference to ideals of plants, no one will dispute the statement that the brain needs a compartment of its own. We also need the great clinical associates, the peripheral nervous system and general circulatory system to work in active cooperation in carrying on the work of the parent body. If we can apply this to the physical plant we shall have taken a great step in advance, as aptly illustrated in the plants for Vanderbilt and Rochester universities. We also have to take into account certain personal tendencies on the part of human beings. Department heads must have places in which to work so that they are disturbed as little as possible. There also seems to be an inherent quality that human nature will not travel very far in a horizontal direction if it can avoid it. We seem to have approached a happy solution in the Vanderbilt and Rochester plants, where the different clinical and laboratory departments are brought into potential contact, which can be taken advantage of if need be, and isolation can be taken advantage of if the desire is in that direction.

At the Bellevue Hospital, New York, we have tried to reduce the horizontal distance to that distance which men will travel if they desire contact, and at the same time make use of the vertical direction whereby all departments can be brought into potential elevator contact in a short time.

THE ART OF MEDICINE

IRVING S. CUTTER

Dean University of Nebraska College of Medicine

During the last decade, it has become a rather popular diversion among too many of our teachers of medicine and surgery to decry the "art" or the methods of applying the fundamental facts of science to the relief of the sick individual. The abrupt dismissal of the usefulness of such teaching is startling and disconcerting.

Are those who are dealing directly with medical students, and who are largely responsible for the tendencies of the modern medical curriculum, keenly alive to deficiencies evident in the applications of science to practice? Are we so strenuously engaged in cramming the student with scientific facts—too frequently uncorrelated—that we defeat the fundamentals of education, namely, thought and the development of judgment? Are we compelling the student by precept or example in his undergraduate or intern years to form a proper concept of medical practice and of his relation to the public? It is easier to remember than it is to think, and to think to a logical conclusion is the most difficult of all. Reams of data may be gathered by the student, but until he is able to weigh the evidence, arrive at a safe conclusion and apply those conclusions to a given case, medical education falls short. To apply the science of medicine with the highest possible skill, the student must learn to think in terms of the patient. This can come only through thought and careful observation. We are too prone to bewilder the student in the heart clinic with the interpretation of electrocardiograms, when a proper evaluation of physical findings and the observation of a well correlated symptomatology would mean an accurate diagnosis, and make for a normal life for the patient. The student may know the pharmacologic action of digitalis, but, after all, the proper administration of digitalis must be determined by a careful study of the individual case, coupled with systematic observations on the effects of the drug. That nice balance and discrimination which must be arrived at in the administration of digitalis means success or failure.

In our eagerness to teach scientific diagnostic methods based on laboratory examinations, we forget to study the daily life of the patient, his history, his environment, his relations to his fellows. Owing to overreliance on laboratory diagnostic methods, there is often slighted the bedside examination made with the full confidence of the patient and with his entire cooperation. One may justly fear for the future of medical practice with the apparent unthinking attitude of many of our graduates. They fail to look squarely at the patient. An appalling number of roentgen-ray examinations and laboratory tests on secretions, excretions and blood are made, together with examinations by specialists, and as a result the patient is told that he is physically sound, that there is nothing the matter, and that he may proceed to his home and forget his troubles—all this at a total fee for specialists and others that is often a serious factor. The fact remains that the patient is sick. He needs help and, because of the failure of the physician, he drifts into the welcoming arms of the theatrical healer. That functional disease is a distinct entity cannot be gainsaid. It destroys the efficiency of the individual, and renders him a burden to himself, his family and his friends, and the trained physician, conversant with every detail of modern medicine, too often fails to look squarely at his patient and recognize the disease. As a result of our training, a graduate is in a sense helpless, unless he is in immediate touch with a large laboratory, manned by skilled technicians. We have trained away from self-reliance, from accurate observation, owing to the sense of security and dependence created by the laboratory. It has shown the easy way to diagnosis. Present methods have had the effect of crowding graduates into the cities, where splendidly equipped laboratories, hospitals and expert consultants are immediately available. The very multiplicity of precision determinations constitutes a weakness. Too little do we teach that the patient is not made up alone of tissue structures but is a personality functioning in a given environment. Too often, hospital, outpatient and even office practice becomes a mere routine, and the attending physician fails to remember that every case represents a human heart, crushed to the point of despair by sickness and resultant poverty.

The cultivation of a bedside manner may, in the extreme, be an affectation; but personality and the attitude of the physician

may mean the difference between life and death. To inspire groundless hope in a patient is criminal; but to give the patient a sense of your appreciation of his suffering, your hope for ultimate relief, and the feeling that you will do all that is possible, is but a natural justifiable and humane attitude. How much of all this does the student get in the medical curriculum or during his intern service? How coldly callous do many of our brilliant graduates appear? Modern graduates may wonder why the citizens of a community remain faithful to the "old fogey" doctor, as the old practitioner is termed, when they, with modern training and equipment, have so much to offer. A study of the methods of the old doctor and the application of many of them would mean greater success for the recent graduate. The apotheosis of pure science must give way to the larger conception of the conscientious care of the sick, and science for science's sake assume its most important but proper place. Evaluate pure science fairly, evaluate research sanely, and emphasize the skilful management of the sick individual. Teach those principles calculated to relieve human suffering. Stress the service side of the physician's job. Modern medicine must be the applications of science at the bedside—science so applied that every factor tending to restore the individual to a normal regimen of life shall be utilized. Science is the armament of the physician; and his skill in the use of this armament in overcoming disease reflects his training and his attitude toward his fellow man. Medicine must maintain its superstructure of service as its foundation of science. "Knowledge is proud that he knows so much. Wisdom is humble that he knows no more".

SHOULD THE ASSOCIATION DEFINE WHAT IS A
PROFESSOR, A CLINICAL PROFESSOR, AND SUG-
GEST A MINIMUM REQUIREMENT FOR QUALI-
FICATION TO ENTER ACADEMIC RANKS AND
ENJOY ACADEMIC TITLES?

E. P. LYON

Dean University of Minnesota School of Medicine

I must tell you frankly from the start that I could not get much out of this topic which was inspiring or valuable. Of course, the first thing I thought of was the old story of the southern gentleman who had to introduce Booker T. Washington to a public gathering. As a southerner he found himself in a dilemma—in fact there were more than two horns to his difficulty. He could not call a colored man “Mister”; it didn’t sound right to call him “Doctor”, and he thought Washington was too big to be addressed “Booker”, so he finally decided to call him “professor”, which shows something of the wide range of the title of professor.

Having no ideas of my own on the subject, I was driven to the questionnaire. I do not know where the questionnaire originated. I have been looking for some evidence to come out of King Tutankhamen’s tomb. Perhaps when they decipher more of the ancient hieroglyphics we shall find the questionnaire to have been invented by one of the lieutenants of Pharaoh as a means of harassing the tribe of Moses. A plague of questionnaires is as bad as a plague of locusts. As a physiologist I deny such a thing as a plague of frogs. The word must be wrongly translated.

Anyway, I sent a questionnaire to 256 part time clinical men, in all medical schools of Class A, and I received 228 answers. That’s the way you always begin a report of results of a questionnaire.

The first question was, “Should we define professor, associate professor, assistant professor and so on”?

Two hundred and twenty-six answered “yes”.

The second question was, “How would you define a professor”?

Twenty-seven answered “Packard”, 38, “Cadillac”, 140, “Pierce-Arrow”; and 1 said “Buick”, but he belonged to a southern negro school and ought not to be counted.

Question: How would you define assistant professor?

Forty-six answered “Flivver”, 22, “Henry”, 14, “Lizzie”, and the rest plain “Ford”.

Question: Do you favor the full time or part time plan?

Two hundred and twenty-six answered, "part time plan".

Question: What salaries would you think adequate for part time teaching?

There was a good deal of variation in the answers, the average being \$9,288.62.

Question: How much time should the part time professor devote to university work?

Again, there was a considerable variation. The suggested time varied all the way from one hour a semester up to three hours a week. The average was one hour, fifteen minutes, and twenty-six seconds a week. Several said "except in the busy season". Others said "such time as can be spared from golf and practice". Still others said, "leave it to the men themselves". A large number think this is the fairest and best way.

Question: What are the functions of assistants?

This question brought forth a variety of answers, but boiled down it amounts to this: to do the work of the professor.

Question: Should the title of clinical professor, clinical associate professor and so forth, be used?

Answer: They all thought, yes.

Question: For whom?

Answer: For the associates of our departments.

I also prepared a questionnaire somewhat different for the preclinical men. That brought in replies not so large in number because the men had to pay their own postage, but I received something like 80 or 90 replies.

Question: Do you favor whole or part time for clinical teaching?

Answer: The whole time plan was universally favored.

Question: How much should part time clinical teachers pay for their positions and titles?

Answer: There was variation in answers, but for professors it was generally thought that the negative salary should be in the neighborhood of \$10,000.00 a year, and that associate professors should pay about \$8,000.00 a year. One man said there should be a graded scale founded on the income tax paid by the clinical men; another one said the negative pay should be as high as possible, (this is a little hard to understand); a third one said we should not be stingy in such matters.

Question: How should this money be used?

Answer: To support the fundamental departments.

Question: What is the purpose of academic titles?

Answer: To satisfy faculty vanity and to create harmony.

Question: Does it produce these results?

Answer: It does not.

After I got all the information I could from the questionnaire, I consulted the catalogs of some other types of professional schools. I went to the agricultural college of our institution, and I found such titles as this: "professor of bee keeping". It did not say "clinical professor of bee keeping". "Instructor in blacksmithing"; "assistant professor of dressmaking". It did not say "clinical instructor in blacksmithing" nor yet "assistant professor of clinical dressmaking".

The only real, cogent reason for attaching the word "clinical" to titles came from one of the fundamental men in Boston, who called attention to the fact that the word "clinical" meant bed. He suggested that we use as an alternative and more euphonious descriptive term the word "ostermoor", as ostermoor professor of pediatrics. I have nothing further to say on that phase of the subject, although it seemed to me that he was too severe in his implication.

I will now speak briefly of the situation at our institution in the Twin Cities. We have our own university hospital in Minneapolis, but we are also responsible for the service rendered to patients in the two municipal hospitals, each of which has about 600 beds. This demands a large staff of part time men who (most of them) receive no salaries. We cannot use or rather have no need to use the services of some of these men for teaching. Take conditions at the St. Paul City and County Hospital. We use most of the service in medicine, surgery, obstetrics and pediatrics, but we are responsible also for specialties which we do not use for teaching. If we appoint a man to do certain of this work, he will be responsible to the University; and the question arises whether any distinction should be made between this type of extramural labor of university men and that of other men who may be doing more teaching, or more work at the university campus.

So far the scheme has been adopted of giving them all the same sort of rank. If a man has the ability and training and academic interest which would make him professor, he has been called a professor, no matter what particular institution he might be attached to or what or how much work he was doing. I see no reason to change this. It is fair enough; and while in the case of some men the title does not mean much from the standpoint of teaching, they are men who are capable and interested and who do well the small jobs which are all we have for them to do. If they deserve the title it should not be limited because of amount of teaching or clinical service. I do not believe we can define in a simple and satisfactory manner these titles and positions nor help matters by using the prefix "clinical."

I can see plainly what to do if I want to get a professor of physiology. Certain definite qualifications come to my mind. I should want to find a man who had high native intelligence. I should select one who had been thoroughly trained in biology, physics, and chemistry as fundamentals, and who had three or four or more years in a physiological laboratory where there is a fine staff, with enthusiastic inspiring leadership, and where research is carried on. I would select a man reputed to be able to "profess" that subject—who knows it, and knowing it, ought to be able to teach it to others and contribute to its literature. I should investigate his personality, character and teaching ability. That is a general picture of the man I would have in mind. In other words, it is a definition of a professor of physiology.

Similarly, I should find it fairly easy to define the qualifications of a professor of surgery or medicine to serve full time or substantially full time in the university. The associate professorship, assistant professorship and instructorship have likewise fairly well known meanings. I acknowledge more difficulty in regard to the large number of part time men—primarily practitioners—who are needed in a school like ours. There is here a good deal of variation in the meaning of academic titles. Still, as I have said, I see no advantage in complicating the situation by adding a new group qualified by the adjective "clinical". Should a clinical professor know less or more or profess less or more than a plain professor? I cannot see why he should.

A professorship should be a thing worth striving for. There should be high qualifications of mind, ethical qualities, personality, leadership and so on, as well as scholarship. The professorship should mean a good deal and be hard to obtain. I do not believe we can define it in any brief and satisfactory way. The associate professorship likewise should be a high and worthy title, not easily attained.

I may add that at Minnesota the instructorship (in clinical branches) usually follows three acceptable years of service as assistant. The assistant professorship for teaching or clinical service only is not granted until the candidate has served at least six years as instructor. The candidate in either case may hasten his promotion by research and publication. As a rule, the associate professorship is not granted unless the man has shown continued research activity. In a few cases, however, men have received that rank for long years of teaching and clinical service only. The professorship we try to reserve for the highest order of merit in research and teaching. Rules of this sort we find of value in making promotions among our part time clinical teachers.

DISCUSSION

DR. BURTON D. MYERS, Bloomington, Ind.: I would like to add to the list of titles for discussion the "departmental head", if there is no objection. He is often looked upon as the senior member of the department. Dr. Page gave a definition yesterday morning I would like to hear him repeat.

DR. HENRY PAGE, Cincinnati: I have been much interested in this discussion about titles. There is a dignity in titles—at least there should be, and we should do all we can to arrange, by mutual understanding, what duty or position should go with a title. A definition of a title should go far in fixing the limitations of responsibility for the holders thereof. The title of professor given by a school should indicate that the school vouches for the fact that the honored individual is not professing to be what he is not: the school should jealously guard the dignity which attaches to these titles.

Our school has a definitely organized departmental system. The head of each department is the professor of that department. Should the head of a department be the only member thereof to hold the title of professor? This is a question.

I have been asked by a doctor to recommend that he be given professorial rank on the ground that for twelve years he had served in the outpatient dispensary, and I find that in many minds this long service justifies the claim for recognition in the form of professorship.

It seems to me that a college professor should profess something in the line of teaching, and that his profession should be justified by his works. If an efficient man gives two hours a day to a college he might be honored by the title of assistant professor; If he gives six hours a day to the college, perhaps a full professorship would not be too great a recognition.

Then there is that term "full-time professor" which is not standardized and has no definite meaning. I do not like the term anyway. It savors too much of wages and labor. Some such title as director, it seems to me, would be more appropriate than that of "whole-time" or "paid" professor.

As to the duties and responsibilities of the whole-time professor, there also seems to be a general disagreement. In reply to a query by our Board of Directors I defined a whole-time professor as one who was paid to renounce every obligation upon his time and energies which might conflict with his primary obligation to serve the best interests of his department and the college. We encourage our clinical whole-time men to take consultations, and even private cases, because these contacts with extramural interests are necessary to them as teachers of medicine and surgery. They cannot open an office and advertise their services to the public because by this act they would be assuming an obligation to the public which would conflict with their primary obligation. The whole-time man must be able at all times to refuse to perform any private duty

should conflicting college duties demand his services. Furthermore, the whole-time man must be permitted to make the decision as to the extent to which his primary obligations shall monopolize his time and attention: The university authorities act only when the results of his efforts are unsatisfactory to them or conflict with the broad interests of the university as a whole.

To answer Dr. Myers' question briefly, I believe that the full-time man should be allowed to practice if he does not, as a result of assuming private interests, neglect his college work: that the whole-time clinical man who does no outside work will in a very short time become an unsatisfactory teacher of students. He must not become "institutionalized" if he expects to remain an efficient teacher.

DR. RAY LYMAN WILBUR, Stanford University, Calif.: The problem of titles is much more important than it seems. The human animal is so constructed that he likes to stand out from the rest in some way or another and he pays a good deal of attention to what you call him. He is not very different from the colored butler who asked for an evening out. His employer said, "George, is it very important that you should go out tonight"? He replied, "Pretty important, boss. I've got to attend a meeting of the lodge". "Are you an officer of the lodge"? "Well", he said, "Yes, but I've only the supreme king; there are three others higher than I is".

We like these titles, and we need some definition of them.

In the development of the laboratory as a part of the medical school, in the bringing in of the academic spirit, and in the attempt to harmonize academic standards of teaching with the ways of medicine, together with the fact that medical education has been increasingly expensive, this device of the clinical professorship has been set up. It is a good device. We want it in our medical schools for men who are needed and are willing to come in and help in the work of instruction. It is good for them and good for our own academic professors and for the students. Some institutions can handle this problem much better than others. We need some distinction in titles. Let me offer this suggestion in regard to departmental head: the greatest fault I find in academic administration in handling a faculty is the confusion that exists in the minds of the faculty, the students, the alumni and the public, between the scholar and teacher, and the executive departmental head. There seems to be an idea that the greatest man must be the head of the department. The greatest man ought to be the greatest scholar in the department. Administrative ability is comparatively common; real scholarship is not so common.

We have to make scholarship the prominent thing. One way to do it is to have a departmental head appointed annually, and not always appoint the same man. Let us shift the program somewhat, bring in the younger men, and make them departmental heads. Do not have these places so that there are certain rights that become habitual from year to

year. If we can bring this about, it will encourage a little elasticity in our academic and medical school faculties.

Also, there must be a definition of the duties of the clinical professor. That is where our real problem comes in. In one medical school with which I am familiar, the members of the clinical staff receive annually from the president of the university a statement of just what their duties are to be during the following year. They are informed that they are to have charge of such patients, of such and such a ward, and for a given length of time. This is all done and settled at once, so that a man knows what he is accepting and what he is expected to do. Worked out on that basis, it makes clinical professorships and instructorships much more tangible, and a definite responsibility is fixed. By doing these two things you make the departmental heads less significant; you make scholarship the significant factor in the school, and define the duties of the clinical staff, so that there is a tangible and clear understanding of what is to be expected on all sides. This plan goes far to solve the problem.

DR. LYON (closing) : I did not include anything in my remarks concerning the department head. I agree with President Wilbur as to what ought to be. On the other hand, I am compelled to say that the title, "head of department", has come to be more honorable and therefore more sought after in the American university than the professorship, and, in my opinion, acquires altogether too prominent a meaning.

We have had an experience this year which emphasizes my point. Two years ago in organizing a student health service, we put a promising young man in charge. A year later we desired to organize public health as a teaching department and keep the health service and public health teaching together. Therefore, we made this young man, who is in rank only as assistant professor, the head of the new department of public health. Then we tried to get the best man we could as a professor in that department.

We found a man who met the requirements of a professor from the standpoint of scholarship. With some misgivings he accepted the professorship under the assistant professor headship. He has been with us one year. In the last two weeks this professor received a good call elsewhere, and he stipulated as a condition for his staying with us that he should be given the title of head of the department. He said it was invidious to be under an assistant professor. He felt he could not stay under that condition, although the personal relations of the two men were excellent. We were unwilling, however, to depart from our original plan, and he has resigned to take the other position where he will be the administrative head.

I doubt whether we shall try again to place a professor under one of lesser rank. We shall rather get young men to grow up under our assistant professor head.

I also have had a similar experience with a committee organization. Especially in a clinical department it seems hard to make a committee-administration work well.

In other divisions of the university I understand that it works fairly well. My experience, it is true, is an isolated instance, but I got the impression that in a clinical department, involving a large number of part time teachers such as we have to have, one man power is necessary.

I agree with President Wilbur in regard to setting forth the duties of the people who have a small amount of work to do, and to define them in such a way as to avoid confusion. On the other hand, a title and a definition of duties do not necessarily go together. I cannot quite see why a real scholar doing one hour's work a week should not be recognized by the same title as another real scholar who is doing full time university work. We would all be glad to recognize with the professorial title a prominent researcher who did no teaching at all.

In St. Paul we have a man who is particularly noted for his work on the esophagus. He is a man of international reputation. His title is "associate professor of surgery", and he comes to our hospital when he is called for that particular line of work a few times each year. I feel no doubt that when a man stands so high in his profession the title is well deserved, whether he does much teaching or not. The main trouble is we give the title too frequently for teaching or medical service rather than for scholarship.

THE SPECIAL MEDICAL STUDENT

JOHN T. McCLINTOCK

Junior Dean State University of Iowa College of Medicine

The term "special student" at once brings our attention to the fact that this is an exception to the ordinary procedure in the registration of the student, and it naturally opens up the question as to the reasons for this exception. This is a question that has occurred to the minds of many deans because of the different varieties of the use of the term "special student".

It is impossible to classify all the different reasons for registering applicants as "special students" but two general groups seem to give the greatest amount of trouble.

The first group of special students have wandered from one institution to another; they have been "turned down" on account of a lack of some entrance requirement, but finally finding a berth somewhere under the head of "special students" with the proviso they shall remove the conditions of entrance requirement before they enter on the second year, and sometimes with the proviso that they will be required to spend five years in the course instead of four. This opens up the question, is not that a direct evasion of the intent of the rule of not permitting any entrance condition? Furthermore, it brings up the question, does the proviso of the additional fifth year make up for the entrance condition? With a student admitted under these conditions, going through the four years of his course, we will say with a satisfactory record, when he comes up at the end of the fourth year, having completed what work is required of the other members of the class, is it just to that individual at that time that he should be required to take another additional year of work.

Another use of the "special student" registration is the result of the growth of public interest in matters of health, and disease prevention, as well as the greater dependency of medical practice upon various types of laboratory procedure which has given rise to a demand for clinical laboratory workers, whose training involves a number of the fundamental medical sciences. Among these we have technicians, bacteriologists, serologists, physiological chemists, etc. Then, there are those who desire to specialize as directors of physical education, as nutritional experts, sanitary engineers, and who find it of great advantage to include some of the courses given in a medical course in greater detail than elsewhere.

It would seem that as the growth of the medical sciences and practice is responsible to a large extent for these new demands, the medical schools should use their facilities to help in training

those who expect to enter these sidelines, in order that they may have the best training possible. In those medical schools which are integral parts of and which are located in the immediate proximity of the university, arrangements can be made so that students registered in other colleges of the university, can secure courses in such medical subjects as may be of advantage in their desired specialty without registering as special students in medicine.

In medical schools isolated from the university, and even at times in the university medical school, it seems advisable to admit to certain courses as "special students" those who are preparing for a field of activity other than the practice of medicine. Such practice seems justifiable when it can be done without in any way jeopardizing the efficiency of the medical course.

The real difficulty generally comes later. After completing some of the medical subjects, the student, not originally a candidate for the M. D. degree, now desires to change his plans and after finishing his premedical credits, should these have been lacking, he seeks admission as a regular medical student. To what extent shall he be given credit for the regular medical work which he has completed very satisfactorily? There at once arises the question, is there any justifiable reason why he should not be given full credit for such work? If credit is withheld because he lacked certain entrance requirements when he took the subjects, is not the value of premedical credit overemphasized? Surely, the satisfactory completion of a subject is a better criterion to the student's real ability than any amount of premedical credit submitted in his credentials. Shall the technical fact that the student was registered as a "special student", or the technical fact that he was registered in a nonmedical school outweigh the actual fact that he took the work in the medical school, and completed it at the standard required of a medical student? Is there not a tendency to give too much value to the number of hours of work which a person must put in as a registered medical student instead of whether the student has acquired a sufficient knowledge of certain required subjects?

On the other hand, if full credit is granted in such cases, it immediately opens the way for students whose real purpose is to secure the M. D. degree, but who lack certain admission credits at the time they wish to enter on their medical course, to apply for registration as "special students". Such a student applies for admission as a "special student", giving as his purpose the preparation for one of the sidelines, and after satisfying the entrance requirements, asks to be transferred to the regular registration, thus defeating the intent and purpose of the nonconditional admission.

It is doubtful that any rule will be entirely free from objections or abuse but the policy which is adopted should be such as to carry out the real intent and purpose of the rules as they are adopted. It should be such as will permit the freedom of the individual student, without injustice to the regular student and without compromising the college's agreements with its sister institutions.

DISCUSSION

DR. W. H. MACCRACKEN, Detroit: This is a very important question, but like many of our question it is to a considerable extent a matter of definition. If I could have my own way about it, and could have suitable machinery, every medical student would be a special student. We have determined that the medical course should cover a period of four calendar years and we mean that in our judgment four years is the minimum of time in which a student can acquire a modern, fundamental medical education. Unfortunately, too many students get the idea that it is up to a student to do the work required in four years and that if he cannot do it in that length of time he will be disgraced.

So far as we are concerned in Detroit, we are a developing school and do not pretend to be anything else. The school is a small, undergraduate medical college, and in a school of this kind there is only one course to pursue so far as the admission of students to the freshman class is concerned. Such a school must outdo Cesar's wife in that it must be so far above suspicion that it makes itself generally disagreeable. So with us, we simply say, "You must not only have the prescribed entrance qualifications, but if you present grades below 'C' in your premedical work you cannot secure registration". And that is all there is to it. We enforce this rule. It may often be an injustice—we sometimes turn away people who are better qualified to study medicine than are those we accept. Nevertheless, the foregoing is the position we take and maintain for the present.

A student who enters the freshman class is absolutely eligible, so far as documentary evidence is concerned, and considering the beautiful letters we often get concerning him from the colleges of arts and sciences, he should be a wonder, taking into consideration the splendid record he made in his two years of premedical work. The majority of students present credentials which show them to have averaged a good deal more than 30 semester hours of premedical work a year, but when they get into medical school they are immediately confronted with the hardest task of their school life, as you know.

There are a certain few students who can do the full quota of work of the medical school year, do it in the prescribed time and do it well. I submit to you gentlemen that the number of these students who can do this work and do it well is much smaller than we realize, but there are a large number of them who "get by" somehow.

When the first quarter of the freshman year has passed, our faculty discuss the freshman class and we find that a certain percentage of this class are doing very well and show every indication that they will succeed in the year's work. Others of the class are absolutely hopeless and obviously ought to drop out right there. They are conspicuously unfit for the study of medicine. A number of the class are doing pretty well along some lines and poorly along other lines, and the probability is that if they are permitted to continue to the end of the year they will come out with conditions or failures and will be in a very awkward predicament and suffer much humiliation because they have failed. From this time on they are difficult students to handle. We have tried the following experiment and it seems to work. We call these students into the college office, talk to them, ask them what is the matter and try to get some idea of the way they find things—of the way they are reacting, and then we say to appropriate students, "You had better drop your work and become special students and accept a special program which the faculty will arrange for you. When, as special students you have cleaned up satisfactorily, taking—it may be two years, to do the prescribed work of the freshman class, then you may reregister as sophomores".

We find that this saves much anxiety on the part of the students concerned, and we find that there are many students who were not able as freshman to carry the full program of the freshman class because they were of slower mentality and had to spend too much time thinking about the things presented to them before they could thoroughly master them. These students are glad to accept this classification as special students and to remain so registered until, in our judgment, they are prepared to receive formal classification.

This is what I mean when I say I sincerely wish we could make every student a special student with a program suited to his individual needs. There is no particular trouble about it. No man is permitted to take a subject until the prerequisites for that subject have been satisfactorily completed. This plan, as we administer it, has largely done away with the feeling on the part of the majority of our students that if a man cannot complete the routine medical course in four years he is of necessity humiliated and must consider himself less able than a more superficial student who does the work in what is considered the prescribed time.

DR. E. P. LYON, Minneapolis: We have found it advantageous to draw a close line between what we call time credit and subject credit. I can see no reason for not recognizing subject credit for work done anywhere, provided the work itself is satisfactory. Time credit is determined by the laws governing the medical schools, and we must conform to those laws where students are likely to ask for a license.

There is one other point which is a little different—one which has bothered us, although Dr. McClintock probably had the same idea in mind. In a university like ours, the departments of anatomy, physiology and bac-

teriology are general University departments; and students in any college, theoretically, and especially in the arts college, can elect much of their work for the bachelor's degree. They can elect from these departments of the medical school.

We were much bothered two or three years ago, when we began to limit classes, by a few students who did not get into the medical school and so remained in the arts college. They would elect two or three subjects in the medical school, and at the end of the year would have a good part of the freshman work completed. Then they would ask to be classified in the medical school with advanced standing. This was evidently a way of getting around our requirements and limited registration. We got the arts college to rule that nobody should take more than one course in a medical department without our special permission, and that prevents students from accumulating credits and coming in by the back door.

DR. BURTON D. MYERS, Bloomington, Ind.: There was a time years ago when a student coming from an arts school was permitted to complete the medical course in three years. Then the Association went on record that that could no longer be permitted. The rule as stated in the constitution is something like this: There are two requirements for the M. D. degree—a work requirement and a time requirement. A man who comes with part of the work requirement completed, for instance, the course in chemistry, may receive work credit for that course, but he is not given time credit. He still has to meet the full four years' time requirement. If a man comes with the premedical course completed and in addition has completed physiology, histology, bacteriology and biochemistry, I do not see that we can in any way shorten the four years that he must spend as a medical student, but the constitution does not require that he repeat these courses if already satisfactorily completed. We may ask for additional time in chemistry or in histology, or we may, as I understand it, ask him to do special advanced work along some other line as a part of the work of the freshman medical year.

DR. IRVING S. CUTTER, Omaha: If I understand Dr. McClintock correctly, he uses the term "special student" unnecessarily. A man who has fulfilled the requirements for medical entrance is a medical student, and if he chooses to take one-half or two-thirds of the medical curriculum, it should not vitiate his standing as a medical student. He is a medical student as he has fulfilled the medical entrance requirements and carries the work he does take satisfactorily. Let us not confuse the terms. A special student is one who has taken two-thirds of the medical curriculum in the extended course.

DR. HENRY PAGE, Cincinnati: We have defined a special student as one who is not a candidate for the M. D. degree. An irregular student is a candidate for the M. D. degree but is taking his studies in an irregular manner. For example, a man who is taking his course in five years, instead of four is called an irregular student.

DR. McCLINTOCK (closing) : In connection with the classification mentioned by Dr. MacCraken and Dr. Lyon, we have used the term "part time student" for those students who take only a part of the course. The difficulty with the part time student is to coordinate subjects properly. You can do it at first nicely, but later it becomes difficult to group subjects in a coordinated manner so that there is proper interlocking of the subjects. That is the difficulty we have found in handling the curriculum for part time students.

In connection with allowing subject credit and not allowing time credit, that has not been clearly brought out. Yesterday, we spent a good deal of time on entrance requirements, and the point was emphasized that quality of the work was more needed and not more hours. When we hold that students must have 4,000 hours, we place emphasis on the amount of time, so many hours spent in the curriculum, and not on the quality of the student's work.

During the past year we have been called upon to rule on this question a number of times. We have taken the stand that a student in applying for the regular course with deficiency in entrance requirements, cannot be admitted as a special student, but that a student presenting work from any source as from a college of liberal arts, which is equivalent to the work of the medical course, may be granted subject credit, but he must take additional work, equal in the number of hours to the work in which he has been granted subject credit.

DR. MACCRACKEN : I think the subject is largely a matter of definition. With us a special student is one who, for some reason, must have a special program prepared for him and supervised in a special manner by the faculty.

ENTRANCE EXAMINING BOARD FOR PROSPECTIVE MEDICAL STUDENTS

HENRY PAGE

Dean University of Cincinnati College of Medicine

The existing method of selecting applicants for admission to medical colleges is far from being satisfactory. Only about 15 per cent of the applicants can be admitted, for we have a restricted registration, and we feel very sure that we do not make as good a selection as it would be possible were applicants required to present themselves for examination. As premedical standards are fairly well standardized, an examination would be valuable chiefly in that it would enable us to make an estimate of character and to straighten out any disputed points concerning premedical credits.

Since we have adopted the plan of asking deans or professors of liberal arts colleges to vouch for the applicant, we have been making a better selection of students, but even now we make serious errors. It also frequently happens that applicants are accepted who never report for registration, and, I understand, that students often apply for admission to a number of colleges and make their final selection just as the college year opens. The vacancy created in such instances is usually filled by the most available applicant, rather than by a selected applicant.

As our students are not usually of the well-to-do class, I have hesitated to ask them to appear for an examination at the college and I have felt the need of some arrangement whereby I could send men to appear before an examining board near their homes. Such a board could vouch for character and premedical preparation very satisfactorily.

Would it be advisable for the Association of American Medical Colleges to establish machinery to remedy the deficiencies I have spoken of? I think so. Such a committee could not only perform these services, but it could classify premedical courses given in colleges and exert pressure upon those which do not meet our requirements.

I also deem the plan practicable, and as a suggestion I will outline an organization which, modified, perhaps, would work. I have not given more than passing attention to this suggestion and it must not be considered as a final opinion.

THE CENTRAL COMMITTEE—ASSOCIATION OF AMERICAN MEDICAL COLLEGES

1. This Association could appoint a central committee on entrance requirements which at this annual meeting would define policy for action by the Association.

2. The Committee could appoint an assistant secretary, who, under the direction of the secretary of the Association could perform all of the routine duties of the Committee.

3. All expenses could be paid from the \$1 or \$2 charged each student for his "certificate of eligibility for admission to a medical college" to be issued (one copy only) to applicants vouched for by the Examining Boards.

THE EXAMINING BOARDS

4. The Central Committee could appoint such Boards as may be necessary to cover the United States geographically.

5. These Boards would vouch for the character and standing of the applicant and upon this certificate the Central Committee could issue to the applicant a single copy of an eligibility certificate which will be retained by the College granting him admission.

DUTIES OF THE CENTRAL COMMITTEE

While it is conceivable that this Committee may perform a variety of services and be an active constructive agent of this Association along many lines, it suffices to say at this time that if it should promote standardization of admission requirements, influence the selection of men from the standpoint of character, and influence the quality and quantity of premedical education in colleges of liberal arts, it will have justified its existence.

RESPONSIBILITY OF THE MEDICAL SCHOOLS FOR THE FUTURE OF THE MEDICAL PROFESSION

MANFRED CALL

Dean Medical College of Virginia, Richmond

Among present problems causing anxiety to the medical profession, and a feeling of uncertainty as to the final outcome, may be mentioned the encroachment and power of various cults, the development of group practice and the menace of state medicine. Corrective measures have produced no material change in the situation. Unfortunately, attention has been focused on present difficulties, and little consideration has been given to those of a more distant future. The result of present day effort on the status of the profession fifty years from now is problematical.

There is one thing, however, that will determine the character and status of the profession in the next generation, and its place and power in the community, and that is, the type of students we admit to our medical schools. If we admit a high percentage of mediocre students in this generation, no power on earth can save the medical profession from mediocrity in the next generation. On the other hand, if we admit a preponderating number of students who have in them the qualities of greatness and of leadership, we need not concern ourselves about the little problems that will crop up along the way.

If our problem is to induct into medicine the right kind of student, we are confronted by three difficulties.

1. We do not know how to select the students who will develop into able men and leaders.

2. If it were possible to single such men out of the multitude, we do not know how to induce them to enter the profession.

3. If we could get them into our schools, we do not know how to further this development of talent by proper individualization and training.

Lack of knowledge along these three lines, while discouraging, indicates a line of investigation.

The problem is peculiarly our own, for it is only through our doors that students enter the medical profession, and, unless we admit the very best, our profession will not be all that it could be in the future. An inquiry into the grade of students now choosing medicine could be conducted this coming year. The problem of a selective assimilation by the medical colleges of the best men suggests consultation with psychological experts.

The suggestion is made "that a carefully chosen committee be appointed to take this matter under advisement and to report at our next meeting".

As an addenda to these remarks, I would cite the division of the medical profession, by Martin, into three groups: (1) an upper third, leaders in research, thought, and helpful activity; (2) a middle third, strong, able, clear-minded men, who follow the lead of the upper third; (3) a lower third, prejudiced, ignorant, selfcentered.

Granting that this 33 1/3 per cent represents the undesirable element of the profession, and that a certain proportion of these, in turn, represent the products of low grade colleges, now happily out of existence, the fact remains, that, a certain number of young men enter upon the study of medicine who are unfitted for it in education, in spirit, in morals, and in courage. These men, finding it impossible to carry on successfully in ethical fashion, disappointed in the gratification of ambition, or in the desire for high financial returns, backslide into quackery, knavery, suicide, drug addiction. Are not these professional misfits analagous to any industrial misfit, unhappy, unsuccessful, discontented, irritable, possibly the possessors of an inferiority complex?

Bishop Lawrence of Massachusetts has recently asked, "What's wrong with the ministry"? and states that the great body of the ministry, as is the case with the great body of doctors and lawyers, must be men of only middle class ability. A college degree does not make big character. Even the middle class positions call for men of fine and positive character, of good sense and devoted life. In addition, there must be a certain proportion of men of stronger type, who have been drawn out from the multitude by a process of selection, and have been given adequate training. How are these men to be found and equipped? He answers, "That personal touch and leadership will draw young men. If they are to become leaders, they must have teachers who have the intellectual and moral courage to be leaders of the future leaders." To this I would add that trained teachers who have been under discipline are the need of the day. Our methods are probably as much to blame as our material.

To me a part solution lies in offering to men selected from each Class A college opportunity for graduate work, the object of which is expressed in the September Bulletin of the University of Minnesota, "To train for medical practice fully equipped and properly certified specialists, investigators, and teachers of medicine." Such leaven, implanted at strategic points in medical faculties, would inspire both faculty and student body, and would materially hasten the day when the science and art of medicine can fit the human race for the gigantic social tasks and problems which are bound up with its future development.

TEACHING OF HYGIENE IN NORMAL SCHOOLS,
COLLEGES AND UNIVERSITIES

T. A. STOREY

Professor of Hygiene in the College of the City of New York

My presence on your program this morning is due to the mutual interest of certain of you fellow members who are concerned with the improvement in quality and with an increase of the quantity of the hygiene taught in our normal schools, colleges and universities. The organization that I represent, the Presidents' Committee of Fifty on College Hygiene, is particularly devoted to these objectives. Your organization is concerned with the preparation and training of men and women for service to the individual, the home and the community in relation to problems of health. But such service cannot be rendered unless the recipient is willing to be served. Standards of health in the home and in the community and even the standards of the individual are molded and fashioned by the dictates of the all-powerful public. There is much evidence today that this public is not always ready to be served. The public gets what it wants. It has not yet learned to want scientific health protection. It will not take what it does not want!

Whenever higher education unites upon a common objective, whenever the educational institutions of the country have a common thought, it always follows that within a reasonable time the public finally unites on the same objective and takes possession of the same thought.

The college graduate is a potential leader. More than half the positions of influence and leadership in this country are filled by college men and college women. This is one big reason why common objectives in higher educational institutions and common thought in those institutions sooner or later dominate in the great public.

The members of this organization because of their relationship to leading universities and colleges in this country may have a powerful influence upon public opinion in matters of hygiene. If the Association of American Medical Colleges will influence the leading normal schools and universities of this country to exercise a common pressure toward the achievement of certain great objectives in hygiene, a final effective influence on public opinion will be inevitable. These objectives may be stated concisely as: first, rational health judgment; second, periodic health examination and a discriminating demand for scientific health advisers; and third, regular constructive health habits emphasizing particularly habits of physical exercise and play.

If the leading institutions of this country were to unite on these objectives in hygiene, it would be only a matter of a few generations until we would have a supporting, demanding and compelling public opinion that would effectively safeguard individual health, group health and community health. I urge you, therefore, to use every reasonable resource within your great power to influence the normal schools, colleges and universities of America to improve their departments of hygiene and maintain therein persistent program pressures for the realization of these objectives.

DISCUSSION

DR. A. C. ABBOTT, Philadelphia: It is obvious that the suggestion of Dr. Storey receives favorable consideration by the audience. At the school with which I am associated we have been making an effort to give such instruction to the freshmen and have met with some degree of success in so doing. The instruction has been given by a thoroughly competent member of my staff and has comprehended only those subjects which we think properly adapted to the needs of laymen, notably, the question of personal hygiene, of domestic sanitation and of municipal sanitation.

About a year ago, the question arose in the faculty as to the value of this instruction, many believing that the time given to it could be more profitably spent in other studies; I was invited to meet with the curriculum committee to discuss the question. To my surprise, the committee knew nothing whatever of the aims and objects of that instruction and, in fact, had scarcely a very intelligent view of many of the fields covered in that instruction that should be familiar to every citizen. For instance, I cited to them the fact that in the near future they were going to be called upon to vote on a large loan—perhaps forty or fifty million dollars—for the purification of the sewage of Philadelphia: I did not find that anyone of the committee could intelligently discuss the reason for voting either for or against that loan. It occurred to me that this is a matter on which every citizen should have some information. It was explained to the committee that such subjects as that were discussed before the freshmen in a manner comprehensible to them, as well as all other important municipal questions having to do with health, comfort and decency; that the discussions were not of a highly technical nature but were of such character as to enlighten the hearer and give to him information that a voting citizen should possess. Also that a part of the instruction had to do with the care of the body and the common, trustworthy means that might be taken to avoid disease.

After one such meeting, it was decided that the course should continue. It is still in operation.

DR. W. S. LEATHERS, University, Miss.: One of the most important things we can do in a public health way is to impress upon the students in the medical schools and universities the importance of the principles of

preventive medicine. I have had during the past twelve or thirteen years opportunity to observe the need for emphasizing hygiene in a public way and I find that the problem which Dr. Abbott referred to is one of the great difficulties in putting over a public health program and in improving local conditions. In other words, the leaders, the men who are going out from the colleges, will have a great deal of influence in their respective communities relative to questions that may arise from day to day pertaining to the improvement of sanitary conditions. If these men who become leaders are informed while at college and impressed with the importance of public health, it will be a step forward in securing such results as may be conducive to the public welfare.

It is very difficult frequently to educate men who have been trained in such a way as not to have appreciated the value of public health as a factor in the up-building of the community. It seems to me that the medical profession should lead in promoting this work in the colleges and universities of the country. There should be a course given in hygiene in all of the colleges and universities and it should be taught in such a way as to emphasize the practical aspects of the subject.

I was discussing the difficulties involved in a personal way recently with a colleague and we were of the opinion that one of the greatest difficulties in medical education at the present time in effecting the above result is that the average medical student leaves the medical college with very little appreciation of the importance and value of preventive medicine in so far as it should be applied in community life. There is too much indifference on the part of the average physician in maintaining proper standards along this line. He is too often passively interested in public health questions. I do not think it is the fact that physicians are not interested but this interest does not take active form in many instances. I am confident that this situation is in part due to the kind of training received in the medical college and of course, it can only be corrected by creating a new ideal and vision within the walls of the medical school. The physicians should have a clearer conception of their responsibility to the community in the practice of medicine. There should be a keener interest in the social pathology of the community on the part of the average medical man than there is at the present time. This can only be successfully attained through a proper attitude of the medical faculty in teaching students. There is no question of the fact that the laity should be trained while at college relative to the problems of preventive medicine and the medical profession should take the lead in this work. It will make the effort of the physician in the practice of medicine easier and will also serve to accomplish a larger purpose from the standpoint of the community at large.

I feel that we should be in thorough sympathy with Dr. Storey in his point of view, and I trust that a body of this kind will place itself on record in advocating what he has suggested.

DR. BURTON D. MYERS, Bloomington, Ind.: I am a great believer in the importance of the subject that has been discussed by Dr. Storey, and for twelve years I have assisted in giving the course in hygiene required of every student during the first or second year of his course in Indiana University. It seems to me that if any body in the world is interested in and should take the place of leadership in this matter, it ought to be the medical profession, the profession that has given the people of the civilized world so great an increase in average life rate. (Here Dr. Myers moved that a committee of three be appointed to prepare a resolution approving the teaching of hygiene in normal schools and colleges. Seconded. Carried.)

REV. P. J. MAHAN, Chicago: There is one feature along this line that has come to my attention because of my activity in hospital work which I would like to have brought to the attention of the deans of the medical school through clinical faculties. In looking over the records of hospitals, I find histories are very much slighted from the point of view of the domestic and occupational habits of the individual and the environment, as causes of disease. I believe if histories were very complete in these details, entering into the family life and surroundings in the community in which these people live, we would find that the hospitals would become a splendid clearing house for the mapping out of the health conditions of cities. I think it is unfortunate that our hospitals are not visualizing to their communities conditions of sickness there, the causes of that sickness, as may be found out by the proper questioning of patients. By emphasis upon these points I believe medical students can have this question of hygiene very properly impressed upon them in the teaching of proper history taking, stressing those facts which pertain to hygiene. I think the deans of the various medical colleges could help this movement along very well by having their clinical teachers give more attention to this feature in the taking of histories, as also in their hospitals by endeavoring to have the histories reviewed from the point of view of conditions under which patients live, and then presenting to the various communities the results as found out from these histories.

UNIFICATION OF MEDICAL TERMINOLOGY: IS IT WORTH WHILE TO MAKE THIS ATTEMPT?

W. F. R. PHILLIPS

Professor of Anatomy Medical College of the State of South Carolina

It hardly seems necessary to bring before teaching deans and medical teachers, the greatly confused state of our medical terminology. I think every teacher realizes that we are using a ponderous vocabulary, one that is probably about ten times as large as it should be, because there are nine synonyms more than are necessary. We know very well that to master nine synonyms means that we have to master nine terms in the place of one, thus imposing upon the memory nine times the amount of work that it does to master one.

It is worth our while as medical educators to be precise in our educational terminology? To cut out all this extra work, every one will admit needs no argument. It is absolutely necessary. This tremendous terminology has gone beyond the limits of any one's ability to master. Is it worth while to make any attempt to simplify our terminology? An attempt was made some years ago to simplify our anatomic nomenclature, which is what the zoologists are endeavoring to do with zoology, and what other organizations are endeavoring to do for their sciences. I believe it is worth while to make the attempt, because if the attempt is not made, conditions will get worse and worse.

A few months ago, Colonel Garrison, editor of the *Index Medicus*, told me that the medical terminology coming across in foreign literature was appalling; that it was impossible to keep up with it; that it was impossible to find out what a person was writing about unless one read the article. This multiplication or new words, having five or six or eight synonyms for one thing, is absolutely confusing. Only recently Colonel Garrison's successor as editor of the *Index Medicus*, had a letter in the *Journal of the American Medical Association* bearing upon the same subject.

Speaking as a teacher, I know that students who have passed through the anatomy course come back continually to the department of anatomy to find the meaning of some term a professor of physiology or of surgery has used. They cannot find that anatomic term in their standard books.

Is it worth while for us as an educational association to make any attempt toward the general unification of medical terminology? It is a tremendous task. It cannot be accomplished in a year or two or in ten years, but it can be accomplished if we go at it, and unless we make an effort it will not be accomplished,

and it will remain a sort of old man of the sea hanging on our necks. It has hindered medical education. I believe we can eliminate the unnecessary mass of synonyms we have to learn, and by so doing we will probably save a thousand hours of the medical curriculum.

DISCUSSION

DR. IRVING S. CUTTER, Omaha: I should dislike very much to have this Association go on record in favor of abolishing the synonyms of disease in spite of the fact that we have to learn them. Take, for instance, Graves' disease, Basedow's disease, Parry's disease! The eponyms have a wonderful association.

THE DEAN'S PROBLEMS

IRVING S. CUTTER

Dean College of Medicine University of Nebraska

So much might be said relative to the dean's problems because the dean's job is a continuous series of sequences of interesting problems, but I want to speak simply of one which was dealt with, in a sense, in the president's address this morning.

I noticed several years ago that students were loth to come into the dean's office and talk to him "on the level". They rather felt that to be seen in his office, with a glass door separating him from the corridor, where other students might see was in a sense a disgrace. I tried at once to remedy that situation. I feel that the hold the dean has on the student body is of paramount importance.

You will pardon me for talking about my own problems, because I can only talk in terms of what I know. The personality of the student ought to be known by the dean, and this you cannot know except you get acquainted with him. I have for many years at a certain hour of each day, from four to five, had as many students as could come to my office to talk over their problems—their successes, their failures, their financial struggles, their social problems—in fact, anything they chose to talk about, and this is not done individually. Occasionally, a student may want to see you alone regarding a matter of a personal nature, but, as a rule, they are glad to talk in front of each other because their problems have an interrelation, and they learn from each other as they talk things over, and it is not uncommon to have six or eight students come at a time to discuss matters. This is all for the purpose of trying to get each student to do his best and appreciate the problems of the other fellow.

In furthering efficient work of administration among the student body, I feel we are neglecting to use some of the means immediately at hand. One of these is the college fraternity. In a group of 300 students we have five medical college fraternities. I asked some one of the faculty, not a member of a given fraternity, to visit that fraternity once a month to talk over with these fellows their successes and failures and their problems as they come up, and you would be surprised how keen those groups are for that monthly visit of the faculty member.

We do one other thing which stimulates scholarship among students, namely, having a university record or register publish annually a statement of the scholarship of each medical fraternity as well as each fraternity group in the university hall, and these fraternities vie with each other who shall win this honor year after year.

Another factor is the graduate student. We try to infuse into the student body community of spirit, which makes for the development of the moral sense of the individual student.

We have for several years encouraged students at the end of the sophomore year to drop out of the medical course and become graduate students in one of the departments. Let him take up biochemistry, physiology, anatomy, bacteriology or something else. We have at present nine men in that category. Some of our graduate students have finished their medical course. These graduate students meet with the departments when they have their meetings to talk over their problems. They are put on a sort of level with the other men in the departments. They go right along with the professors, the instructors, etc. These men live in fraternity houses and they carry back not only the viewpoint of the students but the fraternity spirit and the viewpoint of the staff. This does a lot of good in our student examinations, which is one of the big problems of the dean in the administration of the school.

The very rare situation which obtains in Virginia as the result of eighty or ninety years of tradition is admirable, but that cannot be accomplished in a school without that long standing tradition. In order to get as near as possible to the remarkable situation which obtains in the University of Virginia, we are dealing with our students in the manner in which I have mentioned through monthly visits of the staff members to the fraternity houses, and you will be surprised how well the staff members are received.

We have a small dormitory which accommodate fifty or sixty men. There is at the present time great rivalry in student scholarships between dormitory groups and groups living in the several fraternity houses. There are so many things that can be taken up in which informal discussion can be had, that I will simply mention one of the points.

At the present time there is so much dependent on the clinical side of medicine that I think the dean's job is getting larger and larger every day, to this extent; he must study hospital problems. No matter how efficient the hospital superintendent may be, the university or teaching hospital is one of the dean's important problems, such as the details of nursing, school organizations, the interrelationship of the medical school, etc. A study of those things will enable us to get a more coordinate plan. Hospital problems are engaging the attention of specialists which must be of considerable importance, but the more conscious we are and the more we know about what the hospital is doing, what the hospital costs in all its branches, its offices, and things that we have to struggle with, the better will be the teaching in the medical school. There is no question that the hospital itself is going to be more and more an important factor as time goes on.

DISCUSSION

DR. WM. KEILLER, Galveston, Texas: While I do not feel able to discuss Dr. Cutter's opening paper, I should like to take this opportunity to ask any help you may be able to give me in what has been a very serious dean's problem in my own experience in the past year.

Last year we decided, although we are part of a state university, to limit our freshman medical class to such numbers as we could take proper care of with our present laboratory and other facilities. We, therefore, asked the Board of Regents to permit us to limit our freshman class to 80. This permission was granted, and it was one of the dean's very difficult problems to adopt some method of limitation. We had at least 15 per cent more applications than we could possibly accommodate, all within the minimum requirements of the school. We decided to consider applications on the fifteenth of July and the fifteenth of September, and in working out a method of limitation, we first decided to take all those applicants who had academic degrees. That has not appeared to be a very successful decision as out of eighteen applicants with such degrees, two were dropped for defective scholarship at the end of the first semester, including a B. A. from a small school in Texas and one from a great eastern school. Similarly, we found it impracticable to accept men with three years' premedical work in preference to those who had had only two years, as frequently the third year was taken because men had failed to make good in two years, and many of our men with 10 college courses have done better medical work than those with 15. We finally decided to accept men on a scholarship basis, counting those premedical subjects which seemed to be most allied to the class of scholarship necessary in medicine. Among these subjects we include English as unfortunately we

find that in Texas there are more failures in English than in any other subject in the curriculum. Physics, biology, vertebrate zoology and embryology, where the student presented them (although these are not among the required subjects), and general and organic chemistry, were the other subjects on which we based the scholarship requirement. We fixed our minimum at a general average of 65, 60 being the passing grade and, as matters developed, we found this average too low. Next year we shall adopt a 70 per cent grade and we shall, in addition to this scholarship grade, require a personal letter of recommendation in the case of each man from the dean and two science professors of his school. We hope in this way to exclude students who, while presenting the necessary scholarship grade, may in other respects seem unsuitable for the medical profession. Any help that you gentlemen can give me toward the solution of this difficult dean's problem will be very welcome.

DR. E. P. LYON, Minneapolis: There is one point I might mention which is along the line of Dean Cutter's remarks to the effect that men coming from a variety of colleges are not equally competent. Last year we had a statistical study made of the grade of work which the men from all colleges in our neighborhood had done in the medical school as compared with the marks they presented at entrance. We furnished each college with the comparisons so far as its own students were concerned. We repeated the study this winter, and we find it is bearing some fruit. The presidents have been interested in these cases, particularly where their students have had much higher premedical marks than they obtained later in the medical school, and are attempting to correct the matter by getting a stricter grading of their students.

DR. WILLIAM PEPPER, Philadelphia: This discussion has been very interesting to me because it is one of my duties to select the students, and having a limit on the size of our classes, I try, of course, to choose the best men.

I have made various statistical studies, some of them interesting, but often confusing. We have found that the college graduates have a higher percentage of brilliant students than the two or three year college men. There is a higher percentage of brilliant students among the three year college men than among those with two years; but we have had a higher percentage of failures among the college graduates than among the other two groups. The two year men have the smallest percentage of failures. In selecting men we take from year to year more and more of those with the most preparation, influenced by the fact that there are apparently more brilliant men among the college graduates, and also because a man who has taken four years is deserving of more consideration than the one who has taken less preparation.

In endeavoring to decide as to which of two men is the best, I find that a personal interview is more useful than any other means at our disposal. You can tell more by actually seeing the man and talking with him than you can by the marks he has made, or the letters you get concerning

him. The instruction in various institutions varies in its excellence, but I have come to the conclusion it is largely the man and not the school where he has prepared, that tells in the long run. A good man will do well in a medical school, no matter what college he went to, just as the man who does well in his first year, will graduate with a high average. The marks in chemistry, biology and physics are of more help than those in other subjects. If you can get really a frank opinion of a man's ability from one of the applicant's science teachers, you can generally rely upon it to a certain extent.

We have also collected statistics similar to those mentioned by Dr. Lyon and sent them to the different colleges, showing how many men we have admitted from their college, and how they have succeeded in the medical school. We show the number admitted, the number dropped on account of failure, or in good standing; how many are above the average of their class and how many below and how many can be called excellent students. As a result, the professors and deans are much more careful in their letters of recommendation than they were before. You can build up a spirit of cooperation with the colleges that will help your medical school, if you will let the colleges know how their men are doing. They either want to improve the record if it is a good one, or they want to better it if it is a poor one.

DR. WILLIAM DARRACH, New York City: This problem of selection of students is a most difficult one. We feel it seriously at Columbia. I hope some day it will be possible to so select students that come to our medical schools that the mortality will be very small. Some of the other dean's problems have made me wonder how it was my predecessor could carry on the work of dean all by himself, and do the work which he did in addition to that. I am lucky enough to have an associate dean, and two of us are spending most of our time on the job. We have been at it for four years and have learned a little about it. We hope to learn a great deal more. We are getting a little "cockey" on cutting down the mortality very markedly. Last year, our second year class ran into some kind of infectious disease which resulted in twenty men dropping out, and eighteen more being conditioned. It so happened that when the admissions were gone over, the associate dean was off on a vacation, and the work devolved on me. Having profited by that experience, the associate dean is doing most of the work of selection of students, so that I think in the future our results will be better.

I think Dr. Pepper struck one of the real notes when he stated we are dependent on a heart to heart talk and advice we get from the men who are working with the students in the colleges. We have been more dependent on that than anything else. Our best opportunity is with the men who are doing premedical work at Columbia. We get from 35 to 55 men from Columbia in each of our classes. There is a group of men in the college teaching in the premedical subjects who have taken this matter seriously and from whom we get very valuable help.

About seven years ago they started a concentrated premedical course which contained 72 points that were required. This was received by the students as a sort of guarantee of entrance into the medical school. The result was that four years ago, 450 students were taking that premedical course, many of whom were most undesirable. The great rush on the part of men to do premedical work, hoping it would insure them of getting into Columbia, was tremendous. We "passed the buck" to Columbia men to straighten out the situation. They have accomplished a good deal as a result. In the first six months they are advising these men to go over into other fields as soon as they size up their potentiality. Each year, after the applications are in, a number of men working with them at Columbia go over these individuals in three or four long sessions, comparing them, trying to size up their abilities. They divide these men into three classes: the evidently desirable student, the evidently undesirable student, and the doubtful one. So far we have taken all their Class A men, and they have so far not made a single mistake regarding the evidently desirable students. Those that came in have done well. We take none of the third class, and of the second class we take according to the numbers applying from other colleges of apparently the same grade.

We have gone over the statistics of men who have come from Columbia, where we get more exact figures of the qualifications other than their grades in college, and it has been interesting to find the general grades in the science department apparently have but little to do with the results of the work in the medical school. You can draw almost no conclusions at all from that, but a rating of the kind described above, by the group teaching premedical subjects has been about 85 per cent correct. They have more or less faith that they will become good doctors.

We are trying to get into intimate contact with the colleges that are sending us men. Some of our best men, who have done very poor work in college, spend most of their time and energies there in things other than their scholastic work. When they get down to the medical school and take on other forms of endeavor, and concentrate their attention on their studies, they have done remarkably well.

I was much interested in seeing a little while ago the record, while attending medical school, of one of our old colleagues. He had four conditions in the first year, three in his second, three in his third, and one in his fourth year. The general average was a little under five. That was in a medical school, and I happened to know what his general work in college was. He was playing on the baseball team, playing at musical clubs, and doing various other things of a non-scholastic nature, and doing them well. We got a lot of men of that type who paid very little attention to scholastic work in college, yet later on they do excellent work in a medical college. It is a safe bet that if you could pick out in this room a collection of the most prominent men in medicine and get their collegiate grades, you would find their average would be fairly low, so that I think it is unsafe for any medical school to pick its men on scholastic

grades alone. It would be unsafe for us, and I do not think we will do it.

I was very much impressed with the remarks of Dr. Emerson and Dr. Cutter. I believe one of the dean's problems which is as important as anything else has to do with intimate personal contact, the personal influence that the dean has on the individual student, either directly or indirectly. If you have a large number of students, it is rather difficult to do, but personal contact with the student should be emphasized at all times. If you cannot do it individually, see that it is done through other representatives of the faculty. We have several forms of organization at the school which have a bearing on this. Each class has a class faculty, whom we hold responsible for keeping in touch with the individual problems of the men. We have also the preceptorial system whereby each student has a preceptor, that is, an older brother, who carries him through the whole four years. Each preceptor has ten students under his wing. These preceptors meet with the class faculties, so that if a man is in trouble his preceptor learns about it, whether it be social, financial or otherwise, and extends help which bears on that problem. That has been a great help.

We also try to have the dean's office door open to the individual students at any time and try to have them realize that the dean is standing between them and the faculty and represents them to the faculty as well as having the dean represent the faculty to them. The attitude of the dean is one of councilor and representative, so that a visit to the dean's office has lost, I think, a great deal of those terrors that sometimes prevail. A student who goes into the office of the dean now is much more apt to do so with a smile than he was at first, when he came in with an attitude of fear and trembling. Some of the problems the students bring to us have been a source of more profit to us and the school than probably anything we have given them.

DR. C. SUMNER JONES, Buffalo, N. Y.: I consider the real problem of the dean is not so much that he feels he is the head of the department, but instead that he is the middleman. If he performs his part in this capacity, he does well, although he may find himself between the devil and the deep sea, the faculty being the devil and the students the deep sea.

Furthermore, I think I find more pleasure and success in an effort to keep in close touch with the needs of the students, rather than attempting to whip them into line when they fall short of the type of work they must do in order to pass their examinations. By watching their marks, particularly if they are freshmen or sophomores, and noting the rating given them by their instructors during the term, and also by referring to the records of the premedical course, one can arrive at a fairly definite opinion. Then, if happily the dean enjoys the students' confidence, if they come to know him as their friend, and feel that the office door is always ajar, where they may come for a conference and receive a cordial welcome, the problem is largely solved. The way becomes open to inquire how

they are getting along with their instructors, and to refer to certain subjects in question. We are very apt to take for granted that the faculty members individually are entirely capable of putting their teaching across to the students. In this we often times make a great mistake, with a faculty such as we have of about 130 teachers. A student may say we are at sea in this subject with this teacher. We do not know where we are. If the dean will occasionally drop in to clinical lectures, or didactic lectures, and also observe the quizzing, it seems to me he can in most instances determine just wherein the failure lies, and may by suggestion (it must be a diplomatic one) indicate how the instructor may make his efforts more direct, more conclusive, less rambling, and more concise. When students are carrying a load of 4,300 hours, a portion is often superfluous and may well be eliminated. I believe many teachers go too much into detail instead of confining themselves to the very essentials of their subjects. It therefore appears to me a dean may to advantage devote a portion of his time between the faculty and the students.

DR. W. F. R. PHILLIPS, Charleston, S. C.: I wish to emphasize the remarks just made by Dean Jones. I think one of the troubles we have in our teaching is that there not proper connection between the students and the faculty. Some of them go to the faculty and complain that their teachers are not presenting their subjects in the manner they should for the benefit of the students. Probably we do not appreciate the attitude of the student as much as we should. A student does not like to go to the professor himself and complain. He would like to go to some one; he is a little afraid to go to the dean and complain of a certain professor because he thinks the dean will take the part of the particular professor and defend him rather than criticize him. I am quite sure from my experience in several schools that a real service can be performed by the dean or executive officer by dropping around and seeing how things are going on, and what and how the professors are teaching the students. I would like to emphasize that particular point.

DR. CUTTER (closing): I am very glad the discussion has taken the turn it has. With regard to Dr. Keiller's remark about English, it is well taken. I do not believe we will ever solve that problem. Many schools are now giving freshmen students an examination in English. It is perfectly justifiable and necessary in a great many instances that this examination be given in pure English, and not strictly technical rhetoric. The English given to students in the college course is not English but technical rhetoric. They know all about figures of speech but little about the English language as it is supposed to be used among ordinary individuals. The man who comes from college, who has had four years of English and of English literature and general reading, is fairly well prepared in English. But the man who comes with two years of college preparatory work, of which six hours are in English, he has not had good training in the English language.

I find, for instance, that you can stimulate general reading much by having a little medical history club such as we have had for a number of years. It is purely voluntary and the membership comprises the junior and senior classes. They prepare their own papers, and usually one or two or three of the staff members are there to help them out. We happen to have a group of men much interested in medical history with a lot of old stuff to show them. That itself stimulates not only specific but general reading. That can be done through the same contact I speak of between the staff, the dean and the student himself. It is very desirable that our students shall be cultured and have a good command of the English language. They have to have it, and our students will not take their places in the community unless they have it.

I do not regard the things Dr. Keiller mentioned in his paper as so very essential because they are matters of technical detail.

Let me cite an illustration. Freshmen students came to us from twenty-one different colleges. One of the colleges as a college has not been recognized by the Northcentral Association and will not be recognized. They have refused to recognize it, yet the students of that school have made better averages and better grades than any other single school. The personality of the faculty of that school has so impressed itself upon those men that they are in the medical work for all they are worth. They are in it to win. They come to us with an ideal, and that ideal they can carry through. The technical side of it is a small problem compared with personal contact between the staff and student.

MINUTES OF THE PROCEEDINGS OF THE THIRTY-THIRD
ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN
MEDICAL COLLEGES HELD IN ANN ARBOR, MICHIGAN,
MARCH 2 AND 3, 1923.

FIRST DAY

The delegates to the thirty-third annual meeting of the Association of American Medical Colleges, held in Ann Arbor, Michigan, March 2 and 3, 1923, assembled in the Reading Room of the University of Michigan Union, and were called to order at 9:30 a. m. by the vice-president, Dr. Irving S. Cutter, owing to the absence of the president, Dr. Charles P. Emerson.

The Secretary announced that Dr. Emerson was obliged to return to Indianapolis for the day, but would preside over the meeting on the second day. The delivery of his presidential address was deferred on this account until Saturday morning.

PROGRAM

The first paper on the program was read by Dr. Harley E. French. It was entitled "Problems of the Two Year Medical School".

The discussion on this paper was opened by Dr. Charles R. Bardeen, continued by Drs. C. P. Lommen, W. S. Leathers, John A. Simpson, William Darrach, Walter L. Niles, and closed by Dr. French.

The next paper was contributed by Dr. Thomas Ordway on the topic, "Four Years in Medicine".

The discussion on this paper was opened by Dr. G. Canby Robinson, continued by Drs. A. C. Abbott, Hugh Cabot, E. P. Lyon, J. Parsons Schaeffer, Ray Lyman Wilbur and Louis M. Warfield, and closed by Dr. Ordway.

Dr. Charles N. Meader being absent from the meeting owing to the need for his presence during the session of the Colorado legislature, the secretary was ordered to read Dr. Meader's paper entitled "The Teaching Hospital".

The discussion of this paper was participated in by Drs. L. S. Schmitt, C. G. Parnall, Henry Page, Irving S. Cutter, L. W. Dean, and A. P. Mathews.

The secretary here announced that because of the serious illness of his son, Dr. Augustus S. Downing was unable to be present at the meeting. Dr. Downing asked permission of the Association to substitute Dr. W. D. Cutter, of his staff, to read his paper.

Permission was granted and Dr. Cutter spoke on the subject "Shall a Fifth or Intern Year Be Required for the M. D. Degree and for Admission to the Licensing Examination"?

This paper was discussed by Drs. Arthur T. McCormack, John S. Rodman, C. A. Hamann and Dr. Cutter, in closing.

Dr. William Keiller followed with a paper on "The Place of Anatomy in the Medical Curriculum".

The paper was discussed by Drs. H. von W. Schulte, W. F. R. Phillips, Alexander S. Begg, Charles R. Bardeen, Thomas Ordway, G. Carl Huber, J. Parsons Schaeffer, and Dr. Keiller, in closing.

Dr. Theodore Hough read a paper entitled "Shall the Premedical Requirement Be Increased"?

Discussion on this paper was participated in by Drs. A. P. Mathews, W. S. Buller, Willam J. Gies, C. A. Hamann, C. R. Bardeen, G. Carl Huber, Burton D. Myers, W. F. R. Phillips, J. Lucien Morris, Hugh Cabot, M. P. Ravenel and Dr. Hough, in closing.

REPORT OF COMMITTEE ON EDUCATION AND PEDAGOGICS

Dr. Hugh Cabot, chairman of the Committee on Education and Pedagogics, stated that the report of the committee had been mimeographed so that every one present would have a copy which he could follow while the report was being read.

REPORT ON CURRICULUM

Presented by HUGH CABOT, Chairman

Your Committee submits this report as a continuation of, and an addition to, its report of last year.

We continue to regard the rigidity of the curriculum as its greatest fault, operating as it does to cramp both the student and the institution. Under the present plan, there is a stated minimum requirement in which the precise number of hours devoted to each subject is set down. As it stands, this is not a very large total number, but there are few, if any, schools which have not added extensively to that requirement in the more or less natural line of development. There has thus resulted in many schools a very fixed schedule in which practically every hour of the day, to say nothing of the night, is occupied by assigned supervised work throughout the four years. It is a matter of common knowledge that it is not rarely impossible to find a single hour which can be placed at the student's disposal, so to speak, for his own use. In fact, a situation has developed in which the number of hours of teaching has become a fetish worshipped as such, and regarded as evidence of good teaching, when in fact it is only evidence of time occupied. There is abundant evidence that many schools have felt that this method is unsound, that considerable periods of unassigned time should be allowed and that the total amount of supervised work had become excessive.

Your Committee believes that sounder and, so to speak, rounder development of students will take place with a lesser amount of assigned teaching, giving more time for general outside reading not necessarily of a medical character, for exercise and, perchance, for contemplation. We think that there is evidence that on the present system of what might be called "forced feeding", considerable intellectual indigestion has resulted and that students come to the later years of their medical course intellectually fagged.

We therefore, submit the following plan for the curriculum:

TOTAL NUMBER OF HOURS

A minimum requirement of 3600 hours and a maximum requirement of 4400 hours devoted to assigned or supervised work distributed over four

calendar years of from 900 to 1100 hours per year. It is clearly important that the four years should be specified as it would undoubtedly be possible to condense the requirement into a shorter period which would, we think, be undesirable.

ELECTIVE WORK

There is as yet no general agreement as to the place in the curriculum which should be occupied by elective work. It is, however, clear that many schools have found this essential to their development and though it would clearly be possible to carry this elective allowance too far, it would equally clearly be improper to advise a schedule in which allowance was not made for electives.

Your Committee, therefore, advises that the elective allowance be limited to a maximum of 24 per cent. so that schools may, at their option, give no elective or any amount up to 24 per cent. of the total allowance.

It is further clear that each school should be required to prepare and publish in its catalogue a list of the elective courses which it has adjudged to be proper as a part of the requirement for the degree of Doctor of Medicine.

In addition to these elective courses, it is desirable that there should also be placed at the disposal of the student optional courses which he may take to fill up the unassigned time on the schedule. It must be clearly understood, however, that these optional courses are not to be confused with elective courses and may not count in the total of hours required for a degree. The appended table will show how the situation would stand under this arrangement.

AVOIDANCE OF DANGER FROM CONCENTRATION OF PRECLINICAL SUBJECTS

There is some reason to believe that the arrangement of the curriculum which concentrated the preclinical subjects in the early part of the course has tended to create in the mind of the student an amount of separation of these subjects from their clinical application which is undesirable. Though it is obvious that these subjects are fundamental and form the basis of the study of medicine, it is of first class importance that their relation to the practice of medicine should at all times be kept before the student. There is distinct danger in the teaching of these subjects as exact and isolated sciences, that may come to live in almost water-tight compartments. Such isolation is, of course, undesirable if we are to hold before ourselves as an ideal the turning out of young physicians with a broad training fitted to take their place as practitioners of general medicine or begin their preparation for a life of science or of specialization. This danger might be avoided by what one might call the infiltration of these preclinical courses with their clinical applications. For instance, in the teaching of anatomy, there may easily be shown the results of injuries or diseases of the bones and joints either by the use of specimens or by the careful working over of the pathological conditions found in the anatomical material. Attention might be drawn to the anomalies of development which are frequently found in the dissecting room. Physical diagnosis is chiefly applied anatomy in normal cases and the elements might be taught here. The roentgen-ray has come to be of great value in this connection, and in the study of the function of nerve and muscles, patients with various paralysis, particularly poliomyelitis, might be shown. In physiology it would be relatively simple, for instance, in teaching the circulation, to show instances both of normal and abnormal blood pressure. In pathology and bacteriology the closest contact should be maintained with the clinical departments and the teaching of the pathology of disease should go hand in hand with the clinical demonstration of these conditions.

HYGIENE AND SANITATION

We wish to call special attention to the increased requirement in hygiene and sanitation. It will be remembered that in the various reports submitted to this Association during the last three years this has been strengthened and the allotment made to this subject increased. This increased allotment has been reproduced in the table of per cent. and the importance of this increase will, we think, be generally admitted. We would, therefore, strongly urge that the importance of this subject justifies attention where the courses at present given have not come up to this standard. It is not intended that this course should cover the whole field often referred to as "preventive medicine" but rather that it should deal with the fundamentals of the subject and lay the basis for a sound grasp of the problems of public health.

The whole subject of preventive medicine cannot be taught as part of hygiene and sanitation because it must, of necessity, deal more or less with the individual. It should, in fact, be felt as an obligation upon practically every department in a medical school to call attention to the application of this particular department to the prevention of disease. Undoubtedly, the heaviest part of the burden will fall upon the clinical departments and perhaps most heavily upon the department of general medicine. The various teachers in the medical departments must feel a greater requirement to point out the methods of preventing disease, and, perhaps, lay greater stress upon what may properly be regarded as the normal standards of soundness and health. If the physicians of the future are in fact to be more important agents in preventing disease, they must have a sounder knowledge of the standards of health than has been the case in the past.

(Signed) HUGH CABOT, *Chairman*
 RAY LYMAN WILBUR
 A. S. BEGG
 E. P. LYONS
 WALTER L. NILES.

REQUIRED SCHEDULE OF HOURS IN 4 CALENDAR YEARS. FROM 3600 TO 4400
 HOURS DISTRIBUTED AS FROM 900 TO 1100 HOURS PER YEAR

1. Anatomy, including Embryology and Histology..	14	—	18½ %
2. Physiology	4½	—	6 %
3. Biochemistry	3½	—	4½ %
4. Pathology, Bacteriology and Immunology.....	10	—	13 %
5. Pharmacology	4	—	5 %
6. Hygiene and Sanitation.....	3	—	4 %
7. General Medicine	20	—	26½ %
Neurology and Psychiatry			
Pediatrics			
Dermatology and Syphilis			
8. General Surgery	13	—	17½ %
Orthopedic Surgery			
Urology			
Ophthalmology			
Otolaryngology			
Roentgenology			
9. Obstetrics and Gynecology.....	4	—	5 %
	<hr/>		
	Total.....	76	—100 %
Electives	24	—	0 %

COMMITTEE ON TWO YEAR SCHOOLS

Dr. E. P. Lyon, University of Minnesota, at this juncture moved the appointment of a committee of three, to be chosen by the Chair, to consider the problem of the two year school as presented by Dr. French, the committee to report a plan of procedure at the next annual meeting of this Association.

The motion was duly seconded and carried.

The Chair appointed on this committee Drs. E. P. Lyon, H. E. French and Guy L. Noyes.

SECOND DAY

The meeting was called to order by Dr. C. P. Emerson at 9:30 a. m.

The first order of the day was the reading of the president's address. Dr. Emerson chose for his subject "The Moral Qualifications of the Medical Student".

ROUND TABLE CONFERENCE

The first subject discussed at the Round Table Conference was "Should the Association Define What is a Professor, a Clinical Professor, and Suggest a Minimum Requirement for Qualification to Enter Academic Ranks and Enjoy Academic Titles"? Dr. E. P. Lyon was the first speaker. He was followed by Drs. Burton D. Myers, Henry Page and Ray Lyman Wilbur.

Dr. John T. McClintock introduced the subject of "The Special Medical Student". Others who spoke were Drs. W. H. MacCraken, E. P. Lyon, A. C. Abbott, Burton D. Myers, Irving S. Cutter and Henry Page. Dr. McClintock closed the discussion.

Dr. Irving S. Cutter spoke on "The Dean's Problems". Other speakers on this subject were Drs. William Keiller, E. P. Lyon, William Pepper, William Darrach, C. Sumner Jones and W. F. R. Phillips. Dr. Cutter made concluding remarks.

At this juncture the Chair announced that Dr. T. A. Storey of the department of hygiene of the College of the City of New York, and chairman of the President's Committee of Fifty on College Hygiene, had been granted the privilege of the floor in order that he could present to the Association a resume of what the organization he represents is trying to do, and to enlist the support of this Association.

Dr. Storey said: (See page 137).

This subject was discussed by Drs. A. C. Abbott, W. S. Leathers, Burton D. Myers and Rev. P. J. Mahan.

COMMITTEE ON TEACHING COLLEGE HYGIENE

Dr. Burton D. Myers moved the appointment of a committee of three to prepare a resolution to be presented at the business session, recommending the subjects to be taught to college students in preparing for the course in hygiene. Seconded and carried.

The Chair appointed on this committee Drs. A. C. Abbott, chairman; W. S. Leathers and Mazyrcck P. Ravenel.

Dr. W. F. R. Phillips then spoke on the "Unification of Medical Terminology. Is It Worth While to Make This Attempt"?

Dr. Irving S. Cutter also spoke on this subject.

Dr. Manfred Call introduced the subject "The Responsibility of the Medical School for the Future of the Medical Profession"?

MEDICAL COLLEGE ENTRANCE EXAMINING BOARD

Dr. Henry Page, University of Cincinnati, spoke on the question of appointing an examining board for prospective medical students on the same plan and functioning in somewhat the same manner as the College Entrance Examining Board. He said: (See page 133).

Dr. W. F. R. Phillips moved that this matter be referred to a special committee to be appointed by the Chair, and that a report be made at the next annual meeting of the Association on the feasibility of having such a board, and, if possible, to outline a plan of appointment and functioning. Seconded.

Dr. Irving S. Cutter amended this motion to the effect that the matter be referred to the Executive Council. Dr. Phillips accepted this amendment, as did also the second to his motion.

The amended motion having been seconded, was put to a vote and carried.

INTERN PROBLEM

Dr. Wm. Darrach, Columbia University, introduced the question of the time of appointment of interns by hospital authorities, suggesting that the present methods and the time of appointment interfered with the work of the senior student, disturbed the college curriculum and was not conducive to the best interests of the student, the hospital, the patient or the college. New York hospitals have agreed to defer examinations for interns until after March 22. Other states should do likewise in order that uniformity might be had throughout the country.

The subject was discussed by Drs. Walter L. Niles, G. Canby Robinson and Wm. C. Borden. Dr. Borden suggested that the medical colleges should rule that students should not be allowed to take any examination for internships until a certain specified time so that their studies would not be interfered with. In fact, this Association should pass a rule to that effect.

Dr. Borden then moved that the matter of the intern problem be referred to the Executive Council for consideration with instructions to report at the next annual meeting. The motion was seconded by Dr. Cutter.

Dr. W. F. R. Phillips offered as a substitute that this Association request hospital authorities not to conduct examinations for interns before the first day of April, and that the deans of medical colleges call the attention of the hospital authorities to this action.

The Chair called for a vote on the question "Shall this substitution be made". The vote was in the affirmative.

Dr. Niles suggested that the words "or make appointments" should be added after the words "conduct examinations".

This suggestion was agreed to by Dr. Phillips as well as by those who voted for the substitution as a whole.

The question was further discussed by Drs. C. C. Bass, H. T. Karsner, L. S. Schmitt and Stuart Graves.

The vote on the motion, as amended, was called for by the Chair, and was overwhelmingly in the affirmative. The Chair announced that the motion had passed.

COMMITTEE ON TEACHING HYGIENE IN COLLEGES AND NORMAL SCHOOLS

The Chair at this juncture appointed the following committee on the Teaching of Hygiene in Colleges and Normal Schools, pursuant to the motion made after the reading of Dr. Storey's paper: Drs. Alexander C. Abbott, chairman; W. S. Leathers and Mazyreck P. Ravenel. This committee was instructed to make its report at the time of the executive session of the Association.

There being no further business to come before the convention as a whole, the Chair announced that the Association would go into executive session.

EXECUTIVE SESSION

The delegates convened in executive session at 3 p. m. with the president, Dr. Emerson, in the chair.

ROLL CALL

The roll call showed that the following colleges were represented:

Stanford University School of Medicine.—Ray Lyman Wilbur.
 University of California Medical School.—L. S. Schmitt.
 George Washington University Medical School.—Wm. C. Borden.
 Howard University School of Medicine.—Collins Marshall.
 Emory University School of Medicine.—W. S. Elkin.
 Loyola University School of Medicine.—P. J. Mahan.
 Northwestern University Medical School.—Arthur Isaac Kendall.
 Indiana University School of Medicine.—Charles P. Emerson.
 State University of Iowa College of Medicine.—L. W. Dean.
 University of Kansas School of Medicine.—Mervin T. Sudler.
 University of Louisville Medical Department.—Stuart Graves.
 Tulane University of Louisiana School of Medicine.—C. C. Bass.
 Johns Hopkins University Medical Department.—G. Canby Robinson.
 University of Maryland School of Medicine and College of Physicians and Surgeons.—J. M. H. Rowland.
 Boston University School of Medicine.—A. S. Begg.
 Medical School of Harvard University.—Worth Hale.
 Tufts College Medical School.—Stephen Rushmore.
 Detroit College of Medicine and Surgery.—W. H. MacCracken.
 University of Michigan Medical School.—Hugh Cabot.
 University of Minnesota Medical School.—E. P. Lyon.
 University of Mississippi School of Medicine.—W. S. Leathers.
 St. Louis University School of Medicine.—Don R. Joseph.
 University of Missouri School of Medicine.—Mazyreck P. Ravenel.
 Washington University Medical School.—Nathaniel Allison.
 John A. Creighton Medical College.—H. von W. Schulte.
 University of Nebraska College of Medicine.—Irving S. Cutter.
 Albany Medical College.—Thomas Ordway.
 Columbia University College of Physicians and Surgeons.—Wm. Darrach.
 Cornell University Medical College, Ithaca and New York.—Walter L. Niles.
 Long Island College Hospital.—Wade W. Oliver.
 Syracuse University College of Medicine.—H. G. Weiskotten.
 University and Bellevue Hospital Medical College.—Arthur M. Wright.
 University of Buffalo Department of Medicine.—C. Sumner Jones.
 University of North Carolina School of Medicine.—I. H. Manning.
 Wake Forest College School of Medicine.—Wm. Louis Poteat.
 University of North Dakota School of Medicine.—H. E. French.
 University of Cincinnati College of Medicine.—Henry Page.
 Western Reserve University School of Medicine.—C. A. Hamann.
 Hahnemann Medical College.—G. W. Pearson.
 Jefferson Medical College.—J. Parsons Schaeffer.
 University of Pennsylvania School of Medicine.—William Pepper.
 Woman's Medical College of Pennsylvania.—Martha Tracy.
 Medical College of the State of South Carolina.—W. F. R. Phillips.
 University of South Dakota College of Medicine.—C. P. Lommen.
 Meharry Medical College.—J. J. Mullowney.
 University of Tennessee College of Medicine.—O. W. Hyman.
 Vanderbilt University Medical Department.—G. Canby Robinson.
 Baylor University College of Medicine.—W. H. Moursund.
 University of Texas Department of Medicine.—Wm. Keiller.

University of Vermont College of Medicine.—H. C. Tinkham.
 Medical College of Virginia.—Manfred Call.
 University of Virginia Department of Medicine.—Theodore Hough.
 West Virginia University School of Medicine.—J. N. Simpson.
 Marquette University School of Medicine.—Louis F. Jermain.
 University of Wisconsin Medical School.—C. R. Bardeen.

OTHERS PRESENT

The following delegates and visitors were also present: Alan Gregg, Rockefeller Foundation; H. E. Robertson, Mayo Foundation; William D. Cutter, New York State Education Department; Arthur T. McCormack, Board of Health of Kentucky; J. S. Rodman, secretary, and Everett S. Elwood, director, National Board of Medical Examiners; J. C. Simpson and Edward Archibald, McGill University; Frederick P. Lord, Dartmouth Medical School; G. H. Whipple, W. R. Bloor and Nathaniel W. Faxon, University of Rochester; John T. McClintock, State University of Iowa; Burton D. Myers, Indiana University; T. Addis, Stanford University; Carlin P. Mott, Detroit College of Medicine and Surgery; Louis D. Moorhead, Loyola University; Frank K. Boland, Emory University; Howard T. Karsner and J. Lucien Morris, Western Reserve University; Mont R. Reid and A. P. Mathews, University of Cincinnati; William J. Gies, C. C. Burlingame and H. B. Williams, Columbia University; William W. Root, Alpha Omega Alpha Society; A. C. Abbott and O. H. Perry Pepper, University of Pennsylvania; Frank B. Trotter, University of West Virginia; S. P. Brooks, Baylor University; J. B. Franklin, Baylor Hospital; S. R. Guild, John Sundwall, C. W. Eberback, C. W. Edmunds, H. B. Lewis, P. M. Hickey, Donald M. Morrill, D. M. Cowie, L. M. Warfield, G. Carl Huber and C. G. Parnall, University of Michigan; Dr. F. S. Storey, President's Committee of Fifty on College Hygiene.

MINUTES OF PREVIOUS MEETING

The minutes of the 1922 meeting of the Association were called for. The secretary stated that unless it was the wish of the delegates assembled that these minutes be read, he would offer, as having been read, the minutes as published in the transactions, pages 106 to 112, with the following corrections: (1) The School of Medicine of the University of Alabama was not included in the list of members of the Association on page 113. This was caused by the dropping of a slug by the printer in making up the type matter into pages. (2) Dr. G. Canby Robinson was listed as representing the University of Nashville. This should read, Vanderbilt University.

Dr. W. F. R. Phillips stated that on page 111 the statement is made that he "moved" and that his motion was "seconded". In reality, Dr. Phillips said he moved that the Association now proceed to comply with Article VII, section 1, of the Constitution which required that the Association should itself decide the place of its annual meeting, stating that this provision of the Constitution had been violated for many years but that he called for its observance. The motion being in the nature of a call for the regular order of business, the President then stated that in compliance with the provision of the Constitution to which attention was called the next order of business was the selection of the place of meeting for the next year.

On motion, duly seconded, the minutes as printed and corrected were approved.

REPORT OF SECRETARY TREASURER

The report of the secretary-treasurer was called for, and the following was submitted:

REPORT OF SECRETARY-TREASURER

The secretary desires to call attention to the unusually early distribution of the volume of transactions of the 1922 meeting—within less than ninety days after the close of the meeting. A substantial supply was furnished each college, and in several instances a further demand was met. These volumes are becoming scarce, but broken sets may still be had.

INDEX OF ALL TRANSACTIONS

In order to make more accessible the proceedings of these meetings, an index of all the volumes published, from 1890 to the present, will be prepared and issued with the next volume of transactions. This will make possible ready reference to papers read before this Association at various times, many of which had an important bearing on the solution of problems arising in medical education. Every effort is to be made to enhance the potential value of the proceedings of this Association.

PROGRAM

Another tangible evidence of the work of the secretary is the program for this meeting. The excellence of its content is in keeping with that of the programs of former years—and the usual variety of subjects is presented. It is hoped that the Round Table Conference will meet with your approval. It is intended to give opportunity for free and informal discussion of subjects of interest to administrative officers and for which there is not room elsewhere on the program.

Papers on pedagogy have appeared on the program each year since 1907. The greatest function of this Association is the solution of pedagogic problems. No other organization deals with these topics. Therefore, it is proposed to devote more time to medical pedagogy at the next annual meeting, introducing, if possible, practical demonstrations of teaching methods.

INSPECTION OF COLLEGES

The inspection of colleges in membership has been continued during the past year and a report on this work will be made by the Executive Council to which the inspectors make their reports.

No applications for membership were received during the year—but four schools have given notice of their intention to make application: University of Oregon School of Medicine; Dartmouth Medical College; College of Medical Evangelists and McGill University Faculty of Medicine.

CONGRESS ON MEDICAL EDUCATION

The Association will continue its participation in the congress on medical education and licensure this year. Four papers have been contributed to that program, by Drs. Emerson, Cutter, Robinson and Bardeen. These papers will be read Tuesday morning, March 6, at the Congress Hotel, Chicago.

The usual customary routine business was transacted by this office during the year, a report on which would be wearying because uninteresting. Matters of import, on which adjudication was called for, were referred to the Executive Council, and a report on these will come from that source.

The cash balance on hand is \$2625.12.

Respectfully submitted,
(Signed) FRED. C. ZAPFFE.

On motion of Dr. H. von W. Schulte, the report was received and accepted, except the portion dealing with the finances which was to be referred to an auditing committee for audit and report.

The chair appointed on this committee Drs. W. F. R. Phillips, H. C. Tinkham and J. H. M. Rowland.

REPORT OF EXECUTIVE COUNCIL

The next order of business was the report of the Executive Council, which was read by the chairman of the Council, Dr. John T. McClintock.

REPORT OF EXECUTIVE COUNCIL

Special Students.—During the past year the chairman of the Council was called upon to make a ruling in regard to admission of students under the term "Special Students". The ruling of the chairman was formally sustained by action of the Council. The ruling is as follows:

"As the rule of the Association requires a minimal amount of credit before admission is granted, students known to be candidates for the degree Doctor of Medicine but who lack complete entrance requirements are not to be admitted as "special students".

Students, not candidates for the degree of Doctor of Medicine, but who desire to take certain courses which may be helpful in their special work other than the direct practice of medicine, may, under proper restrictions, be admitted as special students. Such students, should they later desire to take the regular medical course, may be granted subject credit but not time credit. That is, they may be granted subject credit for courses satisfactorily completed, but they must be required to take other work equal in hours to the courses in which credit was granted.

Because of the increase in the number of junior colleges and the introduction of the premedical courses into colleges of pharmacy, the Council calls attention of the colleges, members of the Association, to the present published requirement which states that the premedical work shall be "sixty semester hours of collegiate work in a college approved by a recognized accrediting agency".

Inspection of Medical Colleges in Membership.—Under Section 2 of the By-laws, inspection was made during the past year of the following schools: University of Kansas, School of Medicine; Detroit College of Medicine and Surgery; and University of Oklahoma. School of Medicine.

Baylor University School of Medicine.—A year ago, upon recommendation of the Council and approval of the Association, Baylor University School of Medicine was continued in membership for one year, and further membership was to depend upon the report of a reinspection to be held early in the academic year of 1922-1923. This reinspection was made, and it is reported that the promised changes and former recommendations of the Council were being carried out, and that the improvements made were such that the Council recommends that Baylor University School of Medicine be restored to full membership.

Albany Medical College.—Last year the Association voted to give Albany Medical College full membership if on inspection it was found to conform to the standards of the Association. An inspection was made by the Secretary, and it was found entirely to meet the Association standards. Albany Medical College, therefore, came into full membership in the Association.

Publication of Proceedings.—The Council recommends that not only shall the full proceedings be published in volume form for distribution, but that the various papers upon a similar subject be grouped together and issued as separates to be more widely distributed to those persons directly interested in the particular subjects of each group.

General Index of Proceedings.—It is also recommended that a complete volume and general index covering all issues of the proceedings of the Association be published as a separate volume, and be available for general distribution.

Place of Next Meeting.—The Council has received two formal invitations for the 1924 meeting. One from the University of Cincinnati College of Medicine at Cincinnati, and one from the University of Nebraska College of Medicine at Omaha. The Council would recommend that the invitation to meet in Omaha be accepted.

The Council also recommends that the college entertaining the Association provide opportunity for visiting the institution, and that provision be made on the program whereby the entertaining college can give a demonstration of its teaching methods.

(Signed)

JNO. T. McCLINTOCK, Chairman
 FRED. C. ZAPFFE, Secretary
 CHARLES P. EMERSON
 THEODORE HOUGH
 G. CANBY ROBINSON.

On motion, duly seconded, the report was received and the various items mentioned were considered seriatim.

1. Dr. McClintock moved that the recommendation that the Baylor University School of Medicine be restored to full membership be concurred in.

Dr. Worth Hale seconded the motion.

An affirmative vote sustained the recommendation.

2. On motion, duly seconded, the actions and rulings of the Executive Council as stated in the report were approved.

3. The recommendation made by the Executive Council that Omaha be selected as the place for the next annual meeting—in 1924—was read.

The motion made by Dr. McClintock to that effect was seconded by Dr. H. von W. Schulte.

Dr. C. Sumner Jones extended an invitation that the meeting be held in Buffalo.

Dr. Henry Page extended an invitation to meet in Cincinnati.

Dr. Alexander C. Abbott moved, seconded by Dr. J. Parsons Schaeffer, that no further invitations be received. and that a ballot be taken to determine the selection of the place for holding the 1924 meeting.

This motion prevailed.

A vote was taken accordingly and resulted as follows: Omaha, 23; Cincinnati, 13; Buffalo, 8. The Chair declared that Omaha having received the majority of votes cast, a motion to make it the unanimous choice for place of holding the 1924 meeting of the Association would be entertained.

Dr. McClintock made such a motion, which was duly seconded, and passed. Omaha was declared the unanimous choice for holding the 1924 meeting.

4. At this juncture, Dr. McClintock moved that the report of the Executive Council be accepted in its entirety. The motion was seconded and carried.

Dr. Walter L. Niles moved that the next annual meeting be held early in the college year. The motion was seconded by Dr. Darrach. Being put to a vote, it was declared lost having failed to secure a majority of the votes cast.

REPORT OF COMMITTEE ON MEDICAL RESEARCH

The report of the Committee on Medical Research was then called for, and Dr. L. S. Schmitt, chairman, submitted the following report:

The Committee on Medical Research desires to present the following as a progress report:

The relation of medical schools to medical research is fully covered by the able report of Drs. Frederick S. Lee, Richard M. Pearce and W. B. Cannon, which was published in the "TRANSACTIONS OF THE TWENTY-SEVENTH ANNUAL MEETING" and also in the "*Journal of the American Medical Association*", April 14, 1917, vol. LXVIII, pp. 1075-1079.

The Committee desires to report that the antivivisection initiative in Colorado during 1922 was defeated by a vote of approximately six to one and a similar initiative held in California during the same year was defeated by a vote of approximately two-and-a-half to one. During the last Congress, a bill was presented, which, if passed, would have prevented the use of domestic animals in pursuit of any research, investigation, or test, of any gases, liquids, powder, or any other noxious substance. This bill was known as HR12605 and was considered an entering wedge for additional legislation of a similar type. Numerous letters in opposition were written. This attempt to institute antivivisection legislation also failed.

The Committee desires to invite attention of all medical schools to the medical fellowships now offered by the National Research Council. Your committee recommends that wide publicity be given to the opportunities afforded by these scholarships. In this connection, the Committee

stands ready to assist the schools which are members of this Association in any way possible.

W. B. CANNON
NATHANIEL ALLISON
L. S. SCHMITT, Chairman.

On motion of Dr. Robinson, seconded by Dr. Schaeffer, the report was received and ordered published in the transactions of the Association.

REPORT OF COMMITTEE ON EQUIPMENT

The report of the Committee on Equipment was called for, but none was submitted. The committee was not represented at this time.

REPORT OF COMMITTEE ON TEACHING HYGIENE IN COLLEGES AND NORMAL SCHOOLS

Dr. Alexander C. Abbott requested permission to make a report for the special committee appointed to consider the question of teaching hygiene in colleges and normal schools. He submitted the following resolution:

RESOLVED: That it is the sense of the Association of American Medical Colleges that all universities and colleges and teachers' training schools provide for a brief but comprehensive course of instruction in personal, domestic and community hygiene and sanitation for all their students. such instruction to be given, preferably, in the freshman year.

The word "hygiene" as here used includes the necessary instruction in the fundamental principles of human physiology.

(Signed)

MAZYRCK P. RAVENEL
W. S. LEATHERS
A. C. ABBOTT, Chairman.

On motion, duly seconded, this report, and the contained resolution, was accepted and adopted.

FEDERAL HEALTH DEPARTMENT

Dr. Arthur T. McCormack, secretary of the Board of Health of the State of Kentucky, asked permission to introduce the following resolution:

Whereas, the health activities of the Federal government have been distributed in various bureaus in the several departments of government, a manifestly uneconomic procedure, and,

Whereas, the Congress of the United States has now before it legislation creating a Department of Education, Health and Welfare, which shall collect all existing Federal health agencies in a sympathetic department,

BE IT RESOLVED: That the Association of American Medical Colleges approves in principle of the creation of a Federal

Department of Education, Health and Welfare, with a secretary in the cabinet, and with the coordination therein of proper public health activities of the Federal government.

It was moved, and duly seconded, that this resolution be accepted and endorsed. Carried.

INTERNSHIPS

Dr. Wm. C. Borden then moved that the Executive Council be instructed to consider the matter of the time of examination and appointment of interns by hospitals, confer with the various hospital associations as to the possibility of determining a time at which such examinations and appointments may be set with the least interference with the instruction of students, and report at the next annual meeting.

Dr. Wm. Darrach seconded this motion.

The motion was put to a vote and carried unanimously. (A similar motion had passed at the preceding session.)

REPORT OF COMMITTEE ON EDUCATION AND PEDAGOGICS

The report of the Committee on Education and Pedagogics, having been submitted in accordance with the notice given at the 1923 meeting, and having been read twenty-four hours previously, as required by the By-Laws, was then presented for adoption by the chairman of the Committee, Dr. Hugh Cabot. (See p. 153).

This schedule of subjects and percentages was offered as a substitute for that portion of Section 8 of the By-Laws which provides for hours, subjects and percentages, so that the new section will read as follows:

Sec. 8. CURRICULUM: The entire course of four years shall consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours per year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the course as stated.

(For this schedule see p. 155).

Dr. Cabot moved to adopt this new curriculum. Seconded by Dr. Niles.

Dr. Theodore Hough moved to amend Dr. Cabot's motion to adopt as follows: "that it is advised that the entire course of four years, etc".

Seconded by Dr. Worth Hale.

Dr. L. S. Schmitt moved to amend the amendment as follows: "the entire course of four years to consist of not less than 3,600 hours, divided as follows":

The amendment to the amendment was seconded by Dr. H. C. Tinkham.

Dr. Cabot, for the committee, accepted this amendment to the amendment, as did also the second to his motion, Dr. Walter L. Niles.

Here Dr. Phillips raised the question as to the legality of acting on this amendment at this time, stating that no notice had been given, as provided for in the by-laws.

The Secretary called attention to the action taken at the 1922 meeting on the motion made by Dr. L. S. Schmitt to the effect that action on the report of the Committee on Education and Pedagogics was to be taken at this meeting as the report would be considered in the nature of an amendment to the constitution and by-laws. Furthermore, two written notices of such action had been sent out by the secretary since the last meeting, calling attention to the proposed action on this report. And, inasmuch as the report had been read twenty-four hours previously, all the provisions of the constitution and by-laws had been complied with and action on the amendment was in order at this time.

The Chair ruled that any amendment offered must be stated in the exact words in which it is to become a part of the by-laws.

Dr. Hale moved that the ruling of the Chair be supported. This motion was seconded by Dr. Joseph.

Dr. Ray Lyman Wilbur appealed from the decision of the Chair on the grounds that no amendment ever is accepted in the exact wording as first presented; that it is sufficient to give notice of an amendment and to state it in the words which will convey the thought in such form that it is possible, there being no objection, to adopt the amendment in the exact words as presented. On the other hand, if no change in wording could be made, the whole question would have to lie over for another year, and so on, because the changing of a single word would prohibit action at that time. The central thought or object of a proposed amendment cannot be changed, however.

The Chair put the question as to whether Dr. Wilbur's appeal from the decision of the Chair should be sustained. The vote was in the affirmative.

The Chair ruled all previous motions out of order and declared that a new motion as to the adoption or rejection of this report would be entertained.

Dr. Phillips moved that the report of the Committee on Education and Pedagogics be adopted.

Dr. Wilbur amended the motion by asking that the change previously suggested by Dr. Schmitt, that "the entire course of four years to consist of not less than 3,600 hours, divided as follows": be incorporated. Dr. Phillips consented to the change and Dr. Wilbur then seconded Dr. Phillip's motion as changed by himself.

Dr. Cabot, on behalf of his committee, accepted this change.

The motion being put was carried unanimously. The Chair declared that the amendment as proposed by the Committee on Education and Pedagogics and amended by Dr. Phillips' motion as amended by Dr. Wilbur had passed, becoming Section 8 of the By-Laws.

AMENDMENTS OFFERED BY UNIVERSITY OF VIRGINIA

The Secretary then called attention to the fact that the University of Virginia had submitted two amendments, in writing, under date of Jan-

uary 22, 1923, a copy of which had been sent by the University of Virginia to each college in membership in the Association. The letter of transmissal, including the proposed amendments, was as follows:

University of Virginia. Department of Medicine, Charlottesville. Office of the Dean.

January 22, 1923.

To the Members of the Association of American Medical Colleges:

The reference in the circular letter of the Secretary of the Association, under date of January 10, 1923, to the amendments to the By-Laws proposed by the University of Virginia may give an incorrect impression of the intention of our faculty. I am therefore sending you herewith the exact wording of the proposed changes in the By-Laws with certain reasons for these changes. The matter will be fully dealt with in my paper at the Ann Arbor meeting.

The two following changes proposed are not, in our judgment, of equal importance. We think that the first, involving an increase in time devoted to premedical work in organic chemistry should be adopted, whatever action is taken on the second, proposing an increase in the required number of semester hours for admission.

The present requirement in organic chemistry is pedagogically unsound for two reasons: first, insufficient time is allotted to secure the necessary mastery of the subject; and second, no laboratory work is required in this course by the rules of this Association.

I

Organic chemistry should be placed *as a whole* either in the premedical or in the medical curriculum. It should not be divided between the two. No one can claim that four (4) semester hours of organic chemistry (the present premedical requirement) is an adequate preparation for the medical work in biochemistry. It is also difficult to see on what grounds organic chemistry should be made an exception to the general rule that teaching of science subjects should be by the laboratory method. It should also be pointed out that the requirement of the American Medical Association already calls for two semester hours of laboratory work.

The Medical Faculty of the University of Virginia therefore proposes that Section 7, Clause II of the By-Laws (p. 83, Proceedings of the Association of 1919, or p. 7 of the 1919 edition of the Constitution and By-Laws) be changed so as to read as follows:

II. (a) Chemistry.—*Sixteen* semester hours required, of which at least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work and *eight semester hours in organic chemistry, including four semester hours of laboratory work*. In the interpretation of this rule, work in qualitative analysis may be counted as general inorganic chemistry.

The change in the present By-Laws is indicated by italics.

II

The second proposed change involves an increase of the total number of semester hours required for admission to the medical school. In the opinion of this faculty, premedical students spending only two years in college can and should do more work in two college sessions than 60 semester hours. We are of the opinion that at least 6 additional semester hours should be added to the two year premedical course, and that 12 semester hours may be profitably added to this premedical requirement without calling for more than two sessions of college work. In order to

bring this subject up for discussion, the Medical Faculty of the University of Virginia therefore recommends that By-Law 7, Clause II be changed to read as follows:

II. PREMEDICAL COLLEGE COURSE: Beginning January 1, 1925, the minimum required for admission to acceptable medical schools, in addition to the high school work specified above, will be *seventy-two* semester hours of collegiate work in a college approved by a recognized accrediting agency. The subjects included in the *seventy-two* semester hours of collegiate work in a college approved with the following schedule.

REQUIRED SUBJECTS:	SEMESTER HOURS:
Chemistry (a)	16
Physics (b)	8
Biology (c)	8
English composition and literature (d)	6

SUBJECTS RECOMMENDED:

A modern foreign language.
Comparative vertebrate anatomy.
Psychology.
Social science.

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

(a) Chemistry.—*Sixteen* semester hours required, of which at least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work and *eight semester hours in organic chemistry, including four semester hours of laboratory work*. In the interpretation of this rule, work in qualitative analysis may be counted as general inorganic chemistry.

(b) Physics.—*Eight semester hours required, of which at least two must be laboratory work. It is urged that this course be preceded by a course in trigonometry.*

(c) Biology.—Eight semester hours required, 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, is required.

The explanatory statements regarding the requirements in Physics and Biology have been changed to correspond to the requirements of the American Medical Association. Inasmuch as these standards of the A. M. A. are universally adopted, there seems no reason why the Association of American Medical Colleges should have a different standard.

(Signed) THEODORE HOUGH, Dean.

Dr. Theodore Hough, University of Virginia, suggested that the amendments be referred to the Committee on Education and Pedagogics for consideration, together with the whole entrance requirements, and be reported on at the next annual meeting. He stated that this suggestion was based on the assumption that the delegates present had not been informed sufficiently as to the need or reason of these amendments, hence it would not be advisable to consider them at this time.

The suggestion having been converted into a motion by Dr. Hough, which was seconded by several delegates, a vote was taken and was favorable to such action.

The Chair stated that this motion empowered the Committee on Education and Pedagogics to consider the entrance requirements as a whole, and report at the next annual meeting.

REPORT OF NOMINATING COMMITTEE

The Nominating Committee appointed previously by the Chair, consisting of Drs. William Pepper, Alexander S. Begg and L. S. Schmitt, presented the following report:

President: Dr. Irving S. Cutter.

Vice-President: Dr. Ray Lyman Wilbur.

Secretary-Treasurer: Dr. Fred. C. Zapffe.

Executive Council (for two years): Dr. Walter L. Niles, Dr. Nathaniel Allison.

(Signed) A. S. BEGG
L. S. SCHMITT
WM. PEPPER, *Chairman.*

Dr. Bardeen moved that the report be adopted and that the secretary cast the unanimous ballot of the Association for the election to office of those named. Seconded and carried.

The Secretary announced that such a ballot had been cast by him. The Chair then declared the nominees duly elected to office, and appointed Dr. Hough to escort president-elect Cutter to the chair.

Dr. Hough did so and resumed his seat.

REPORT OF AUDITING COMMITTEE

Dr. Phillips, chairman of the Auditing Committee, reported that the committee had audited the accounts and found them correct. The committee suggested that a detailed report be made of receipts.

On motion, duly seconded, the report was accepted.

VOTE OF THANKS

Dr. Bardeen then moved a vote of thanks for the splendid entertainment furnished by the University of Michigan. Seconded and carried unanimously.

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

(Signed) CHARLES P. EMERSON, President
FRED. C. ZAPFFE, Secretary.

MINUTES OF THE ORGANIZATION MEETING OF THE
EXECUTIVE COUNCIL

A meeting of the Executive Council was held in the University of Michigan Union, Ann Arbor, Michigan, March 3, 1923, at 4:30 p. m.

The following members of the Council were present: Charles P. Emerson, John T. McClintock, Irving S. Cutter and Fred C. Zapffe.

The meeting was called to order by the secretary.

On motion, duly seconded and carried, Dr. John T. McClintock was elected chairman of the Council for the ensuing year.

On motion, duly seconded and carried, Dr. Fred. C. Zapffe was appointed the delegate from the Association to the Federation of State Medical Boards and to the American Conference on Hospital Service. Dr. Irving S. Cutter was also appointed a delegate to the American Conference on Hospital Service.

On motion, duly seconded and carried, an honorarium of \$1,000 was voted to the secretary-treasurer for the ensuing year, and an honorarium of \$200 to the chairman of the Council.

On motion, duly seconded and carried, the following membership of the three standing committees of the Association was appointed:

Committee on Education and Pedagogics.—Ray Lyman Wilbur, chairman, Stanford University; Alexander S. Begg, Boston University; Theodore Hough, University of Virginia; G. Canby Robinson, Vanderbilt University and Kendric C. Babcock, University of Illinois.

Committee on Equipment.—William Pepper, chairman, University of Pennsylvania; C. R. Bardeen, University of Wisconsin, and L. W. Dean, State University of Iowa.

Committee on Medical Research.—L. S. Schmitt, chairman, University of California; Charles N. Meader, University of Colorado and W. B. Cannon, Harvard University.

The Council then adjourned.

(Signed) JOHN T. McCLINTOCK, Chairman
FRED. C. ZAPFFE, Secretary.

OFFICERS AND COMMITTEES FOR 1923-1924

President: IRVING S. CUTTER, Omaha.

Vice-President: RAY LYMAN WILBUR, San Francisco.

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

EXECUTIVE COUNCIL

JOHN T. McCLINTOCK, Chairman, Iowa City, Iowa.

WALTER L. NILES, New York.

NATHANIEL ALLISON, St. Louis.

DAVID L. EDSALL, Boston.

CHARLES P. EMERSON, Indianapolis.

IRVING S. CUTTER, Omaha.

FRED. C. ZAPFFE, Chicago.

COMMITTEES

Committee on Education and Pedagogics

RAY LYMAN WILBUR, Chairman, Stanford University.

G. CANBY ROBINSON, Vanderbilt University.

ALEXANDER S. BEGG, Boston University.

THEODORE HOUGH, University of Virginia.

KENDRIC C. BABCOCK, University of Illinois.

Committee on Equipment

WILLIAM PEPPER, Chairman, University of Pennsylvania.

L. W. DEAN, State University of Iowa.

C. R. BARDEEN, University of Wisconsin.

Committee on Medical Research

L. S. SCHMITT, Chairman, University of California.

CHAS. N. MEADER, University of Colorado.

W. B. CANNON, Harvard University.

MEMBERS

ALABAMA

University of Alabama, School of Medicine, University.

CALIFORNIA

Stanford University School of Medicine, San Francisco.

University of California Medical School, San Francisco.

COLORADO

University of Colorado School of Medicine, Boulder and Denver.

CONNECTICUT

Yale University School of Medicine, New Haven.

DISTRICT OF COLUMBIA

Georgetown University School of Medicine, Washington.

George Washington University Medical School, Washington.

Howard University School of Medicine, Washington.
 Army Medical School, Washington.
 Navy Medical School, Washington.

GEORGIA

Emory University School of Medicine, Atlanta.
 University of Georgia Medical Department, Augusta.

ILLINOIS

Loyola University School of Medicine, Chicago.
 Northwestern University Medical School, Chicago.
 Rush Medical College (University of Chicago), Chicago.
 University of Illinois College of Medicine, Chicago.

INDIANA

Indiana University School of Medicine, Bloomington and Indianapolis.

IOWA

State University of Iowa College of Medicine, Iowa City.

KANSAS

University of Kansas School of Medicine, Lawrence and Rosedale.

KENTUCKY

University of Louisville Medical Department, Louisville.

LOUISIANA

Tulane University of Louisiana School of Medicine, New Orleans.

Correction

MARYLAND

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

MASSACHUSETTS

Boston University School of Medicine, Boston.
 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 School 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, Omaha.
University of Nebraska College of Medicine, Omaha.

NEW YORK

Albany Medical College, Albany.
Columbia University College of Physicians and Surgeons, New York.
Cornell University Medical College, Ithaca and New York.
Long Island College Hospital, Brooklyn.
Syracuse University College of Medicine, Syracuse.
University and Bellevue Hospital Medical College, New York.
University of Buffalo Department of Medicine, Buffalo.

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.
Jefferson Medical College of Philadelphia.
University of Pennsylvania School of Medicine, Philadelphia.
University of Pittsburgh School of Medicine, Pittsburgh.
Woman's Medical College of Pennsylvania, Philadelphia.

PHILIPPINE ISLANDS

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

SOUTH CAROLINA

Medical College of the State of South Carolina, Charleston.

SOUTH DAKOTA

University of South Dakota College of Medicine, Vermilion.

TENNESSEE

University of Tennessee College of Medicine, Memphis.
Vanderbilt University Medical Department, Nashville.

TEXAS

Baylor University College of Medicine, Dallas.
University of Texas Department of Medicine, Galveston.

VERMONT

University of Vermont College of Medicine, Burlington.

VIRGINIA

Medical College of Virginia, Richmond.

University of Virginia Department of Medicine, Charlottesville.

WEST VIRGINIA

West Virginia University 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. James R. Guthrie, Dubuque, Iowa.

Dr. William P. Harlow, Boulder, Colo.

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

Dr. William J. Means, Columbus, Ohio.

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

Dr. Henry B. Ward, Urbana, Ill.

Dr. Fred. C. Zapffe, Chicago.

HONORARY MEMBERS

Dr. Henry S. Pritchett, New York.

Dr. Kendric C. Babcock, Urbana, Ill.

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