

# **ASSOCIATION OF AMERICAN MEDICAL COLLEGES**



**PROCEEDINGS OF THE THIRTY-FIFTH  
ANNUAL MEETING, HELD AT BOSTON,  
MASSACHUSETTS, MARCH 5, 6 and 7, 1925**



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## ADDRESS OF PRESIDENT

### THE FUTURE PRACTITIONER

RAY LYMAN WILBUR

President Stanford University

The physicians of the next generation are now in the public schools. What is done for them or to them there is in our control only in so far as we interest ourselves in general education. How they are to be chosen from the rest is perhaps our concern, but certainly what will and can be done for them in the way of medical education is to a unique degree in the hands of the institutions represented by this organization. We are entering a fortunate period in public education where we are less sure of just what work should be required from children. We still have many advocates of return to the good old days of the three R's. There are always people who turn backward to go forward so that they may watch the rear and meet the future blindly. The mental preparation of a growing boy or girl who is to meet the unknown difficulties of a new era requires much more looking forward, much more taking of inventories to discover the out-worn stock on the part of educators, than is often given. It is always easier to exercise prejudices than to think, and particularly at a time when all the currents of life are flowing at an accelerated rate and faster than ever before in history.

We must necessarily prepare men more thoroughly and more rapidly for professional life than we have done hitherto. A short time ago in discussing this question with an admiral of the navy I was informed that a few years after graduation from the Naval Academy the young officer must accept responsibilities on board ship which, twenty years ago, would have come to him only after he had reached his fortieth year. The great advance in medical knowledge and the peculiarity of the relationship between patient and physician, so that the very first patient coming to a young



physician may be the one that demands superior knowledge and attention, makes it imperative that our young physicians be trained most thoroughly in essentials at the time they actively enter on medical practice.

Since a physician must be world wise in order to be a satisfactory guide for many of his patients, it is necessary that he should not only have a first class preliminary and general college education but that his medical training should have made such use of his time so as to broaden his public and social conceptions. The young doctor who has learned to become a mere technician and who has failed to sense his relationship to the whole human family is apt to prove a liability to the medical profession in its forward march.

In thinking of the practitioner of the future, it is worth while to review some features of a recent experience in which large numbers of medical men were brought into military service. While there may be some argument as to just what the so-called intelligence test gives us in the way of information, there can be no dispute that in a large percentage of instances it does give certain values of importance in estimating intellectual ability. It is rather disconcerting to study the report of Cobb and Yerkes on the intelligence test rating of various branches of our great army in 1917-1918, published in the *Bulletin of the National Research Council* for February, 1921. It is true that a considerable number of the physicians they surveyed were the product of medical schools in times which have largely passed. They state that "the typical medical officer is a high school graduate with about four years of professional training. He has devoted more of his life to schooling than has the officer of any other arm of the service. His median length of schooling is 15.8 years, whereas that of the engineer is 15.3 and of the quartermaster 12.4." In spite of this, medical officers, while ranking in intelligence above the quartermaster's department, fell below several other branches of the service, particularly that of the engineers. "Four principal causes have been suggested for the relatively low intelligence rating of medical officers," state Cobb and Yerkes. "They are, first, lack of agility and speed in the examination because of age, second, tendency to work carefully and accurately as a result of professional training and experience; third, special characteristics

of tests rendering them easier for men of mathematical and mechanical training than for medical officers; and fourth, method of selection for military appointment. . . . It is reasonably certain that age and method of military selection" (according to Cobb and Yerkes) "are largely responsible for the relatively low intelligence of medical officers. The medical department obtained the services alike of the best and the poorest members of the profession, but the proportion of intellectually inferior and professionally incompetent men was much larger in this group than in many other arms of the service. These explanations of the status of medical officers must not be taken as a justification of that status. It is wholly clear that the medical profession has a large number of men who are intellectually incompetent and who should not have been allowed to study medicine, or, having studied it, should not have been licensed as practitioners. The army was constrained to accept their services because of an imperative need of medical officers. Ordinarily their applications would have received scant consideration." The authors state that neither professional training and experience or the characteristics of the test were important influences, so far as their analysis indicates, upon the intellectual rating of the medical group. But they further believe that, given identical age groups, it would seem probable that the status of the medical corps would differ little from that of the engineers or artillery. It is encouraging to note their conclusion that "the intelligence of the medical officer is highly correlated with the standard of entrance requirements of the school from which he was graduated. The median score, in army examination alpha, of graduates from schools requiring but one year of college work in addition to high school graduation is 118.7, whereas that of graduates from schools requiring more than 3 years of college work is 154.2, a difference of 35.5 points. The earnings reported by men from schools with high entrance requirements are also strikingly larger than those from schools with low entrance requirements."

Such studies as those of Cobb and Yerkes, together with the point of view that comes to one after considerable experience with medical students and physicians, indicate that, while a good brain is required, there are certain vocational adaptabilities on the part of those individuals particularly happy and most successful

in the actual practice of medicine. A large percentage of the ordinary class in medical school is made up of men and women who have determined at a comparatively early age that they would go into medicine. Others find their way to this field after trying one or more others. Modern medical training, particularly when carried to a high degree of specialization, must necessarily prepare men for a great variety of occupations all having medicine as their foundation. The type of medical man we most require, the general practitioner, must have a certain physical and mental make-up to be a success. If we watch any graduating class over a period of years we find how they gradually go into business or industrial medicine, or hospital work, or into the laboratory, into research, or into one of the specialties, or into surgery, or become general practitioners. In the constant persistent competition of medical practice, in the constant search for happiness by the individual, most of the profession learn to capitalize their strong points and to minimize their weaknesses. The old saying used to be that "doctors were born, not made." Certainly a large percentage of them seem to go directly to the goal without unusual difficulty of any sort.

I have been struck by the large percentage of medical students who seem to have an incapacity in higher mathematics, certain parts of physics and in advanced theoretical chemistry, but who are quite successful in biologic subjects and later in clinical work. Some of them are also quite lacking in mechanical sense. This diversity in special abilities does not interfere with real capacity in clinical work and in dealing with the problems of patients. We all know the college dud who has become the wise, popular and most useful practitioner. The more we study the personalities, abilities and successes of our fellow physicians the more willing we ought to be to allow diversity in preliminary training, the more flexible we ought to make our medical school curriculum and the more careful we ought to be in setting up rigid requirements of a specific sort. The army tests show that without a certain amount of what we perhaps roughly call intelligence no one is apt to succeed in the prolonged period of persistent study required of all medical students.

It would be a great advantage not only to the profession but to those who were preparing to enter it if some form of test could



be devised that would indicate vocational adaptabilities for medicine. If this could be combined with a study of individual qualities so that the student could be guided toward that field of medicine in which he could most succeed, it would be a great saving of time and a great advantage to the profession and to the public. Are we to go on permitting men to choose themselves for such an important vocation as medicine, or is it possible that we can deliberately go to work to segregate out of each student group those men whose chances for success in medicine are the best? If we can make a preliminary study of the human material which is being developed in the schools and the colleges and detect the embryo medical men, it would be a very great advantage to the medical school and the future practitioner.

Recently, Professor E. K. Strong and Mr. Cowdery of Stanford University, made preliminary attempts to see whether there was any such possibility. By asking a series of questions of selected and successful representatives of various professions, to see whether they liked, disliked, or were indifferent to certain things, they obtained very marked groupings of the answers, the engineers, lawyers, doctors and dentists showing a striking tendency to react as groups. The questions covered miscellaneous occupations, various objects and abstract ideas. It was rather interesting to find that the lawyers were more tolerant than either doctors or engineers in their reaction to people holding views contrary to their own. The engineers had more likes in the occupational field. Doctors for the most part were not as positive in their likes and dislikes as either the engineers or the lawyers. Though many of the questions asked seemed to be irrelevant and somewhat foolish, nevertheless, apparently similar group reactions occurred in the minds of the individuals in answering them.

Of course, vocational tests of this character are still merely suggestive and are to be distinguished from those testing intelligence. They simply manifest certain reactions which indicate the potential adaptabilities. So far, these experiments have been made on established physicians. They are now being tried on students, where there are apparently similar tendencies on the part of the group most inclined to take up medicine. If our psychologists are able to provide studies and data which will

help a student to point himself, and if we can then go still further and make segregations for the kinds of service open to men of medical training, we may be able to guide our prospective practitioners from a comparatively early period in their education clear through into some branch of the profession. At any rate, we are about ready to stop hit-and-miss methods, since many of our schools have waiting lists and must make choices between students.

Again, in medicine it is of more than ordinary significance to obtain men who really love their profession and like medical work. As I have often said to students who were thinking of going into medicine, I know of no profession more undesirable for a man who is going into it simply as a means of making a livelihood. Its calls on time and energy and its demands for self-sacrifice are such that only one loving the work would be justified in taking it up. In considering the future practitioner we must not think only of his intellectual capacity—because he has one of the very hardest and longest periods of study in professional training—but we must think also of his capacity to continue as a student throughout life. While in many vocations one can die at the top in the late twenties, and many do so, in medicine one must have a reasonable capacity to grow intellectually during much of maturity. The potential health of the physician must be of the best and his temperament adaptable enough to enable him to deal with individuals of all ages and varieties. Particularly must he have that temperament which invites the transfer of responsibility from one individual to another. All practitioners of medicine must have this quality, though they may vary greatly in other ways. Stability, emotional control, acceptance of responsibility, high moral and spiritual qualities, are always essential for physicians and will certainly continue to be in the future. Most outstanding of all is the necessity on the part of the physician to be able to see out from the other fellow's mind and give him help in solving his mental as well as his physical difficulties. Since people differ greatly, there is need of a great variety of qualities in medical men in order to care for the whole population. The avoidance of uniformity in the qualities of medical men, and particularly of uniformity in their training, is most essential, not only that we may keep medicine serving all

classes of the population, but also that men with variety of training and experience may keep on building up a profession which has had the thought, attention and intelligence of many types throughout its history.

The general practitioner is coming back. No matter how far we may carry our specializations, how great our skill may become in special fields, it is inevitable that a large part of the care of the sick must be done by men of broad training, broad experience and broad perceptions. There is a better prospect for the future practitioner since the recent efforts to develop a sensible curriculum and to eliminate from the required medical courses the refinements of the specialities and the intensities of the laboratories. Just as it is the function of West Point to train a military officer for general military duties and just as it is the function of Annapolis to prepare an officer to control war ships, so it is important for the medical schools to accept this general training in medicine as a primary duty. It is true that officers in the army and navy must later learn to specialize in certain fields, and so will many in the field of medicine, but the basic training must be full and complete enough for all general purposes.

Pressing in on our future practitioner will be the question of his relationship to the state. Who will own our future practitioner—the state, the patient, or the doctor himself? With increasing information of benefit both to the individual and to the public there is necessarily an increasing amount of medical work coming under the domain of the state. The battle which man must constantly wage against the hosts of microscopic enemies which threaten him and his civilization cannot be fought successfully by a multitude of isolated duels or by mere guerilla warfare. There must be a union of all the known forces under governmental auspices to carry on the campaigns. Organized government must see that our enemies do not win against those who can not care for themselves, the indigent, the insane, the prisoners, for victories here mean the spread of disease. But the state, outside of this struggle, cannot step in between the citizen, who is economically independent, and the practitioner, to the benefit of either. Medical men in the future must give relief because they want to and the patient wants to have it done, not because the state demands it or pays for it. The independence of

the practitioner is one of the reasons why the practice of medicine is attractive to many men. They are not working on a salary for somebody else, they control their own time, they pick up their problems as they come to them and solve them the best way they can, they do not have to fit in as cogs in the great big machine. All physicians have a prominent part to play in public health. For generations much of the public health work has been in their charge. With the development of men who specialize in this particular field and are under the pay of the state, there is some diminution of the immediate responsibility of the ordinary physician. But in the handling of a single patient, whose disease may be a simple casualty in the long battle line against such an organism as the typhoid bacillus, or the spirochete of syphilis, the neighbors, the fellow citizens must get consideration. Perhaps the state should pay for that part of the service of the physician that is not rendered to the individual but that protects the public. There is such a large measure of public service or disservice in many of the acts of physicians that the future practitioners must be informed on the social relationships of his life. Besides the patient can only be treated with the fullest success when there is a clear understanding of his social, industrial and domestic relationships.

Thus as we think of the future practitioner in terms of our responsibilities as teachers in medicine we must not be narrow or technical or petty or pedantic at the expense of a more extended horizon. The training of thousands of chosen men who will as social engineers, research workers and practitioners serve over a hundred millions of people as well as a great world science is a major responsibility. As we face it may we ever keep in mind the suffering human being and his hope and comfort and guide the future practitioner.

## ENVIRONMENTAL MEDICINE: MEDICAL SOCIOLOGY

CHARLES P. EMERSON

Dean Indiana University School of Medicine

The official family of a professor of internal medicine formerly consisted only of those interested in internal medicine. Now it includes also at least a clinical bacteriologist, a clinical chemist, a biochemist and a clinical pathologist. Some either have, or plan to have, also a clinical anatomist and even a clinical psychologist. In this way one department of a medical school becomes almost a complete medical school and includes also some departments of the arts faculty. When we propose, as we now do, to add to the medical department a clinical sociologist, it is not merely that we may suggest one more, but rather to call attention to the one who should have been on this staff before most of these others had been appointed.

The terms medical sociology and environmental medicine are not quite synonymous, yet it is difficult in theory, and impossible in practice, to separate them. The term medical sociology is almost self-explanatory; by environmental medicine we mean the study of, and the art of controlling or attempting to control, all those factors external to the patient's physical body which aid in the production of his diseases.

Environmental medicine, so far as we are concerned, dates back to 1897 to a remark by William Osler who, when looking over a large group of patients in his medical dispensary remarked, "What a pity! Probably not over three out of every ten of these persons will actually get from us the relief they are expecting. For the treatment of the other seven we have not yet the necessary organization." In that clinic they were given the necessary drug, no matter how rare; for their benefit was arranged every possible operation which their case demanded;

and yet seven out of each ten of these strictly medical patients would require something more than medicines, serums or operations, if they were actually to get relief from the medical conditions which had brought them there.

To illustrate this in terms of patients: In that clinic that morning there were doubtless several cases of so-called "nervous dyspepsia," "chronic dyspepsia," "chronic gastritis," etc.. patients with very definite disturbances of gastric secretion, motility and sensation. Careful diagnosis would separate these into several different groups. In one group were men and women who needed strictly medicinal treatment, and they got it. Surely that medical clinic would have considered it a humiliating confession of inefficiency could it not provide the exact drug or serum which each patient needed. In the second group were patients with very similar symptoms, but who needed some surgical operation; a gastro-enterostomy, a cholecystectomy, an appendectomy, etc. If these were the exact treatments which these particular patients needed, surely these were the precise treatments which these particular patients should receive. One would doubt the efficiency of a medical clinic which could not arrange the operation which one of its patients needed.

But there were other patients there whose gastric symptoms were practically identical with those in the other two groups but who needed something more than medicine or an operation. Some, for example, might require some physical form of therapy, others some correction in their diet; perhaps the wife should be educated to choose and prepare better food for her husband. And other patients also were there with symptoms quite similar to those in the other two groups, but whose gastric troubles were, in part at least, caused and perpetuated by worries; this man perhaps had a wayward son; that woman had matrimonial difficulties greater than she could endure. There our clinic failed. Ideals inherited from generations ago, prejudices dating back several hundred years, suggest to us that our duty does not include these forms of service. If these patients had needed medicine, of course, we could have given it; if an operation, of course, we would have insisted on that; but social aid for that son, or spiritual comfort for that mother, if these were necessary for the cure of these cases;—what false philosophy could excuse us from rendering

these patients the only service which could give them relief?

Simply stated, the facts are these: about seven of each ten medical patients, while they may need medicines, perhaps operations as well, need also, if they are to recover, some social readjustment or emotional relief. Failing to receive this, our treatment fails.

There is always a tacit contract between the patient and the clinic. The patient knows he is suffering, but he does not know why, nor the remedy. The fact that he enters the clinic proves that he trusts that the doctors will do all they can to relieve him. Would he entrust himself to the clinic as readily did he know that these doctors would make certain mental reservations which might render their treatment futile? Of course, we have always been willing to advise our patients in these social matters, to tell them just how to readjust their affairs, but what advice<sup>1</sup> Often we might as well advise one how to remove his own gall bladder.

One result of Dr. Osler's remark was the organization, in 1901, of groups of medical students who should visit the poor man in his home, in order that they might understand the way he lives and works and appreciate just what some of the problems are which he has to meet. This had as its object not so much any benefit which the poor might derive, but rather a benefit for the students, an improvement of their medical education. Nor would this benefit our students merely as regards their relations with poor patients; it would make them more successful in private practice, for they would understand better why dispensary and hospital treatment so often fail, why quacks sometimes succeed so brilliantly, and why the public feel, as they do today, that the medical profession is unable to meet the needs of the public.

This social work was at first purely volunteer in nature, but for the past fourteen years in Indiana the medical students, while encouraged to volunteer for such service, have been required to take a one semester hour course in this subject, the successful completion of which is as necessary for the medical degree as is any other one hour course of the curriculum.

The next step in this movement was the organization in Indiana of a department of environmental medicine with a woman trained in sociology in charge, who should be one of the clinical medical team. She attends medical rounds with the students and

assistants and "does her bit" in the diagnosis and treatment of each medical case. She is not a social service worker in the general use of that term; she does not pick and choose her own problems any more than the clinical chemist, bacteriologist or roentgenologist does. Each is assigned his problem in each case. Such work is not intended as a philanthropy any more than is that of the roentgenological department a philanthropy. The simple truth is this: we desire as high a per cent of accurate diagnoses and of good therapeutic results as we can get, and to accomplish this we need a sociologist just as truly as we needed a serologist, to improve the quality of our work.

Unfortunately, our infant project, environmental medicine, was quickly engulfed by the great social service movement begun in 1904 by Richard Cabot in Boston, a movement which swept over the whole country. We are proud on this occasion of the opportunity to express our admiration for Doctor Cabot's splendid contribution to hospital efficiency. We have in Indiana a very efficient social service department which is doing fine work and of which we are proud. We are eager and help these social service workers to do all they can for the patients in our wards, and this they do under the supervision of their own chief case worker. But now I am not discussing social service.

The worker in environmental medicine does not belong to the social service department but to the medical department, and she works with a different method and aim. She is one of a clinical team and must play her part. She is told just what we want to know and just how she can help the patient later, and her reports become a part of the patient's record in just the same manner in which each laboratory record or the record of each consultation becomes a part of this history.

But the object of this department is educational, and the reason for this paper is to emphasize the value of this work in the training of our students. So far as I know, this is the best antidote for certain tendencies now felt in our schools. In the first place, it emphasizes the importance of the problem of each individual patient; they are individuals, not names on a lot of laboratory report sheets; each one is to be helped to the utmost; and second, it teaches the value of thorough work in diagnosis and treatment. The surgical cases are either treated or



OCTOBER 15, 1922 to SEPTEMBER 30, 1923

Social Service Department of Indiana University

1502  
INDIVIDUAL  
CASES  
FOLLOWED

1359  
VISITS  
TO HOMES,  
AGENCIES  
and  
INTERESTED  
INDIVIDUALS

186  
COOPERATING  
AGENCIES  
and  
INTERESTED  
INDIVIDUALS

EACH DOT  
REPRESENTS  
A COMMUNITY  
VISITED BY THE  
STATE WORKER  
of the SOCIAL SERVICE  
DEPARTMENT IN  
INTEREST OF ONE OR  
MORE PATIENTS

ROBERT W. LONG HOSPITAL  
INDIANAPOLIS

not treated, and when they leave the hospital there seldom is any doubt whether the treatment has or has not been successful. In the case of the medical patients there often is doubt just how completely we have treated our case. Of course, the separation from the home and the rest in bed and plenty of sleep, even though aided by mild hynotics, alone would naturally lead to some improvement in the case of those who, in addition to the treatment of their real troubles, needed these also. But the value of our most direct therapy in the chronic cases might well be in doubt. In these cases the student seldom sees a clear-cut therapeutic victory. Of course exceptions may be made in the case of malaria, of early lues and other diseases of this type; exception should certainly be made of those self-limiting diseases like typhoid fever and pneumonia, provided we can evaluate our results in terms of percentage of recoveries versus the percentage which would obtain in the absence of a well organized routine treatment; and, finally, exception should here be made of the many cases which we refer to the surgical side. But for other conditions, the reason that the students do not see more therapeutic failures is largely due to the fact that we do not encourage large groups of medical cases with chronic conditions or with marked neurasthenic or psychasthenic tendencies but with physical diseases to enter the wards unless they are in extremis, when therapy is of little value, and yet these are the very ones who need us most. These are the patients who will form the rank and file of the future patients of our graduates and who, if they fail, will try the irregulars.

But even considering the ward population as it actually now is, teaching hospitals should desire for their patients as high a percentage of cures, and as large a percentage of relief for those who cannot be completely cured, as possible. This, unfortunately, has not been the direct aim of our university teachers, especially as regards the public ward cases; and, as a result the increasing success of rival sects may leave to the coming generation of medical students a harvest of tares to reap which our own lack of intellectual honesty has sowed.

The great problem in American medicine today is to rid itself of the influences of the German physiological-pathological school which has not borne the same fruit on American soil that it did

in Europe. I refer to that belief that one sees clearly in the laboratory but darkly at the bedside; that a man's career should depend on his laboratory work; and that the public ward patients are useful in proportion as they suggest new problems for our research or confirm or disprove the theories which our laboratories have elaborated for us. True, this is the chief way medicine has advanced, and the chief way in which it will advance, but good practitioners of medicine are not likely to be produced in such wards. We would urge the American schools to return to the older Leyden, French and English ideals; to teach that it is the ward which is the holy ground for the physician, and that the ward laboratories fulfill their highest function when they focus their research eye on the problems which each patient presents and all do their best to send him out well. It is not good clinical teaching if the students see patients treated chiefly with a view to research; it is good teaching if they see a well organized medical staff make every effort to help each patient to get well, and, to do this, use every means, whether drugs, physical means, psychotherapy, everything, anything, which can possibly help the patient to get well.

When the student really gets acquainted with the poor, one of his first discoveries is often that, with few exceptions, the poor are not the victims of hard luck, of unjust social conditions, etc., but that the fact of their poverty is itself evidence of an intellectual or emotional defect or of both. Their brothers and sisters without such defects often are able to forge ahead into better social conditions. He also soon becomes convinced that if these patients actually were able to follow the advice given them so glibly in hospital or dispensary, it is not at all likely they would have been obliged to resort to a free clinic. They not only must have advice concerning certain adjustments or reforms but they must also have aid in following simple advice. And if we desire results we must give this aid. If you reply that our students do not expect always to treat the poor but the prosperous, the lesson is the same.

There are few of the most prosperous patients with chronic diseases but have some problems which need readjustment if they are to get better, and these problems are likely to be far more complex and difficult than are those of the poor. That is why the

training which the student will have received when working with the poor is the best of training for this later service.

Second, the student soon learns how very complex are the problems of all chronic disease: how important in their production and continuation are the ways the man lives, works and plays, are the habits of his life, even some apparently trivial ones; and in relieving the patients, for example, those with cardiovascular renal diseases, how important it is to consider each detail; how numerous are the measures we have to take, and how foolish it is that a prejudice shall lessen his efficiency.

And, lastly, practical work in this field will convince the student that we cannot consider our duty done when the patient leaves the hospital. He sees the immoral quality in our willingness that he should return to just the same conditions which originally made him sick.

I remember well, when an interne, a woman with mitral stenosis who died, I think, on her twenty-fifth admission to that same hospital; also a man with aortic insufficiency who died on his sixth admission. He was a blacksmith and he said, when discharged with our advice to undertake no heavy work, "I must go back to the forge until I drop dead, for that is the only work I can do. I have a wife and five children to support." Then such cases seemed unfortunate enough. Now a new conscience is awakening. Have hospital authorities any right to waste so much expensive hospital care? I remember well a baby, the child of foreigners, brought into a certain hospital with some gastro-intestinal trouble. He left in two weeks very much improved but having cost the hospital \$42.50. A few months later the same child returned with the same trouble and again was discharged at the end of two or three weeks much better. A few months passed and the same child returned with the same complaint. Then the trustees of that hospital took this ground: the money which they had spent on two previous occasions on the care of this child had been wasted. Would it not be a misappropriation of trust funds to spend any more money on that particular child? The conclusion was that the hospital staff should be instructed to so educate that mother, that the treatment might not again be lost.

That hospital trustees in 1906 should have taken that stand

certainly showed the awakening of a new conscience. It was not a splendid charity; it was a definite misappropriation of funds to have treated that woman twenty-four times or that man six times. Those persons were allowed to return each time to exactly the same conditions as before. Proper social readjustment would have resulted in less suffering and longer life for these patients and the hospital would have saved money. Surely a hospital has no more right to let treatment go to waste than it would to allow barrels of bread or quarters of beef to be ruined because of carelessness. The plea of the department of environmental medicine is to conserve the work done for patients in the wards and so prevent its waste. This cannot be done nearly as well by social service departments, which work independently as by those under the immediate control of the medical staff.

Under the titles "medical sociology" and "environmental medicine" are included, at Indiana University, several subjects which elsewhere are considered separately. The consideration of the occupational diseases naturally would belong here, since they illustrate the effect of man's environment in the production of disease; and in nearly every case treated there are definite social problems to be met when the patient is discharged. Under these headings come also the later care of all patients with injured hearts, of chronic arthritis, chronic nephritis, etc., as illustrated by the two heart cases mentioned above, since one cannot allow them to return to just the conditions under which these conditions developed. This also is the proper title under which to consider climatotherapy, a much neglected subject; also this is the best training to lead the student to an appreciation (1) of the more difficult occupational therapy which so many wealthy patients need, and (2) that readjustment of the necessary occupations in the case of so many neurasthenics and psychasthenics who have "miscast" in life. This is the title under which we study also the relation of house infection to diseases, as in the case of tuberculosis; here belongs a study of the administration of the modern public school system, so important in the control of the contagious diseases of children. Here also can be taught much of the so-called public health and sanitation as applied to the individual rather than to the community, for instance, the importance of water, and food borne infections as typhoid fever,

etc., and these subjects can be taught with much greater reason by the department of medicine than in a course taught by sanitary engineers or health officers who have had very little if any experience in the practice of medicine.

Under the title medical sociology we consider the ways and means of financing a patient's convalescence in order to allow him sufficient time to recover strength before he resumes full work. This is our business, since we propose to get patients well, and a poor convalescence may ruin our ward work. Here the state worker is invaluable. She visits the community where the patient lives and before he returns has organized his relief for him. Should any of you feel that while such work may be fine, yet it is outside the real duties of university medical teachers we would call your attention to our confreres. The surgeons do not consider their duty done when the operation, say, a herniotomy, is finished, but they control the postoperative care jealously, knowing that the results of their operations will be judged by the later, proven efficiency of the operated man. For the hernia to return later they consider a failure of the operation. Surely the same thing applies to all our diseases which are not self-limiting. The results may not be as clearly cut or easily judged as successes or failures, but the general principles are the same: we should seek for all the improvement possible in each case and must assume the responsibility for any unfortunate social condition which we could have controlled.

Another subject of medical sociology which should be required of our students is the study of the various public institutions for the relief of physical and mental cases. The hospitals for the sick, the asylums for the insane, the various sanitariums, etc. A study of the modern state insane hospitals will be very instructive to those who are being taught how to actually treat such cases. The students should also know more or less about the various charitable organizations from which the poor can get relief.

If objection is raised that this may not interest our very scientifically minded graduates, we would reply that this training is designed primarily to teach the students the importance of that completeness of therapy which alone will give results; and that this is the best practical training for one who dreams of a rich clientele; for the problems which the rich present are quite the

same as the problems of the poor, only more complex and difficult. Our graduates must, if they are to succeed, handle their patients, environmental and sociological as well as their physical and mental problems, and for this we know of no better training than that outlined above.

In conclusion, we would again insist that our object has never been to make medical students uplifters, reformers, etc. Indeed, this work was really never philanthropic in purpose. We do encourage patients to enter our hospitals, and we do desire to keep our part of the contract. We also wish our students to succeed. Then why do we allow them to see ward work which because of conventions, prejudices and jealousies lack some elements in therapy, which tends toward incompleteness and therefore spells failure. This is not good pedagogy. The influence of such training cannot but prevent our boys from getting lasting success in their practice whether it be among the rich or among the poor.

## PSYCHIATRY, PUBLIC HEALTH AND MEDICAL EDUCATION

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The deep and widespread interest in psychiatry in its various relations that has developed in recent years has brought to those working in this field an appreciation of how generally inadequate are the facilities for instruction in this branch of medicine in the great majority of American medical schools. This has been further emphasized in the practical demonstration of what psychiatry has to offer in the few schools that are fortunate in having special hospital facilities, that have made it possible to develop psychiatric instruction in ways comparable to what is done in other branches of medicine.

Those who are familiar with the interests of psychiatry in recent years know how widely their scope has extended, both in the direction of a closer interrelation with most of the fundamental subjects that concern the organic functioning of the body and its disorders and in the direction of developing a medical interest in the human personality in its life relations.

In the first of these directions it has found that an adequate understanding of the problems with which psychiatry is concerned is only to be gained by using the accumulated knowledge and methods of medical science, and conversely it has demonstrated that many diseases of the body structures and functioning can be better understood and treated by physicians if their psychic interrelations are appreciated.

In the second direction it brings medical interest into relation with the human individual in his environmental experiences. It would consider how his personality is shaped by the interaction of the constitutional qualities of the individual with the



experiences of life. The end results of this, as they show in the feeling, thinking and behavior of the individual, produce a situation that can best be understood and treated from a psychiatric approach. From this viewpoint medicine assumes an interest in the individual in his social relations and must consider how he has been influenced by his environment and how he reacts upon the environment.

This aspect of psychiatric interest may seem somewhat apart from direct medical concern, but it is one that is closely interwoven with the problems of health and disease. It is intimately a part of the field of public health and preventive medicine and has many analogies in the scope of medical interests.

One can have but a narrow conception of what is now regarded as the field of psychiatry if he regards it as a division of medicine solely concerned with the problems of the insane and the more gross disorders of mind. The knowledge gained from the study of these more concrete disorders has shown how the influences and mechanisms producing these are also factors determining the psychic functioning of the individual in both health and disease.

The practice of medicine deals with the human individual in relation with disease, but in this practice it must take into account that the human individual must be considered as something more than a problem involving structural, physiological or chemical qualities isolated in their pathological relations. The human individual has a psychic life through which it carries on its relations with the environment and with the normal and pathological functioning of its own body. It is an organism that feels, thinks and acts. Its ways of reacting have in a large measure been determined by the mutual interaction of the constitutional qualities with which it was endowed and experiences of life. Into the shaping of these have entered most complexly organic structural and physiological relations with environmental forces. The results of this have determined the ability of the individual through its psychic functioning to meet the requirements of life. If these have produced an incapacity, there is presented a problem of disease, quite comparable in its effect to a disability resulting from a somatic disorder.

To maintain a well balanced attitude toward etiologic rela-

tions of disease, it is essential to determine what part physical and what part psychic factors have in producing the situation confronting a physician in a problem of disease. There are, of course, numerous instances in which the one or the other so dominates as to make the other of minor significance. But, in most instances both can be recognized and should be evaluated correctly in the approach of the physician to the solution of his problem.

It is in the reactions and disorders of the individual at the psychic level that psychiatry finds its problem. These may be manifested in the form of a psychosis, a neurosis or some peculiar mental attitude or act of behavior. Psychiatry, however, clearly recognizes that these disorders can only be understood adequately by considering the individual as a synthetic whole. A unit of complex organic and functional qualities, intimately interworking with the experiences it encounters in life. Its viewpoint thus is that of definite biologic relationships and in this attitude it is in fundamental harmony with other fields of medicine.

From such a viewpoint it approaches the understanding of the human individual in wide relationships. It has shown that it can contribute to an understanding of many neuropsychiatric disturbances that occur in relation with disorders of the endocrine system; the disordered consciousness and delirious states of uremia and diabetes. The intoxications from gastro-intestinal pathology and pellagra, and from a variety of external toxic agents, as alcohol, lead and narcotics; the psychotic disturbances in relation with exhaustion and infectious diseases, the reactions from severe surgical traumas, and cataract operations, the psychogenic dermatoses and the more definite psychoses from syphilis and arteriosclerosis. It gives a more concrete insight into a number of physiologic disturbances, such as the affective abnormalities of the menstrual period, adolescence and the climacteric.

Apart from these directly medical aspects it can contribute much toward the understanding of the personality of the patient as an individual in relation with the physician. In this direction one is concerned with the appreciation of qualities of temperament, affective reactions, unusual mental attitudes and peculiar habits. While not directed with a conscious psychiatric appreciation of their significance, this has always been a part of the art

of medicine, and the degree to which this has been used has been a measure of the success of the physician as a practitioner. It has been shown in such qualities as intuition, feeling, tact and common sense in the interpretation of what has been observed. These more or less unconsciously sensed qualities can now be linked up with psychiatric experience that gives to their interpretations helpful explanations that make for a better treatment of the problem of the patient.

The importance for the physician of an understanding of behavior is no where greater than in his contacts with children. Parents bring their children with peculiar behavior problems to the family physician far more commonly than to the psychiatrist. It is here in the childhood years that temperamental qualities and reaction trends are beginning to form the roots of what later will often become serious psychic or social disabilities. The appreciation of the nature of these should at least direct the child toward an intelligent treatment.

The recognition that human behavior is a matter for psychiatric consideration and that it can be interpreted in terms of determining forces, which are approachable in a scientific attitude, brings medical interest into relation with behavior reactions in their widest manifestations. Problems of the psychoses, the psychoneuroses, crime, delinquency and social disabilities become subjects that have an interest for the psychiatrically trained physician. With his medical viewpoint he can bring to their understanding a knowledge and scientific method that is much needed in the solution of a host of social difficulties that are troubling our civilization.

The need of an adequate understanding of psychiatric medicine can be appreciated better as one becomes familiar with the extent to which mental disorders exist in our public life and are matters that in some way or other usually come at some time under the care of a physician.

There are in this country more than 800 hospitals for mental disorders, and in these there are under treatment more than 343,153 patients. The number of beds occupied by patients in mental hospitals exceeds the total number of beds in all other hospitals combined. The number of insane in hospitals in this country is in ratio of 220 to every 100,000 of the population.

Each year more than 50,000 new cases of insanity are admitted to the hospitals of this country. In the next ten years there will be admitted more than 500,000 new patients to such hospitals. Each one of these will at the beginning of his illness be a patient of a physician who in most instances is in the general practice of medicine. The number of beds in public mental hospitals occupied by cases of dementia praecox alone is twice as great as the number of beds in all hospitals and sanatoria for tuberculosis in this country. One out of every twenty-six persons in this country reaching adult years will at sometime become a patient in a mental hospital. One out of every six patients entering a state hospital for mental disease for the first time comes there because of syphilis. In the state of New York one in every twenty-two adult deaths occurs in a mental hospital.

The extent to which mental abnormalities are determining factors in great social problems is equally impressive, and presents a comparatively recent viewpoint bearing on the treatment of these disorders which has a direct medical appeal.

In a recent report of the National Committee for Mental Hygiene, giving the results of a survey of approximately 10,000 prisoners in prisons and correctional institutions of this country, it is stated that "These surveys have shown that as many as 60 per cent of these prisoners are classifiable in terms of deviation from average normal mental health and are suffering from conditions that appear to have a causal relation to their antisocial behavior," and "of 781 boys and girls studied in the Juvenile Court of New York, 69 per cent exhibited such conditions."

In this connection one may consider the great problem of drug addiction, a situation that is closely interrelated with mental abnormalities. If the information given in the congressional investigation of 1919 is correct, narcotic addiction is present in 4 per cent of the adult population of the country.

Physical disease and mental abnormalities have an etiologic importance in the vast number of cases of dependency and social disabilities that come under the care of welfare and social relief organizations, and in the solution of these problems medical assistance must have a part.

In the cases coming to Detroit welfare organizations, four-

fifths presented a health problem and in about one-fourth of these this was of mental nature.

The Boston Associated Charities have found that 36 out of every 50 persons in the average intake needed psychiatric treatment.

In similar studies it has been found that psychiatry has a great deal to offer toward understanding the health and efficiency problems of school children and of employees in industrial life.

In another aspect we have recently learned how important a relation neuropsychiatry has in the military needs of the country. In the late war, for the first time in the history of medical assistance in war, psychiatry took a part among other medical divisions. It contributed much toward the elimination of those mentally unfit for military service. Its work in mobilization camps gave important information as to the mental capabilities of those in service. In active service it was organized to treat neuropsychiatric disorders in the field. In the after effects of the war, psychiatric disorders have been some of the most numerous problems of diseases that have concerned the medical departments of the government. Since the war one-third of all ex-service men cared for in hospitals at government expense have been cases of neuropsychiatric disorders.

If we have shown the need for a somewhat better knowledge of psychiatry on the part of the physician, the question which should be of special interest to this Association is how shall this knowledge be given in the course of training of the medical student and what should be its part in the medical curriculum.

The fundamental purpose directing psychiatric instruction should be to give to the medical student an orientation and familiarity with what is known regarding psychic factors and mechanisms and the relations these have to the human individual in health and disease; to give him an insight into the understanding of behavior reactions to the experiences of life; to acquaint him with the technical methods necessary for the acquisition of the data essential for a psychiatric understanding of the patient and how to interpret this; to give him an understanding of the more specific psychoses, reactions and clinical types and to train him in methods of treatment.

While it is to be hoped that the interest awakened in this instruction may in many instances lead to a desire to carry on later medical work in this field, this should be a secondary purpose in the carrying out of undergraduate instruction.

As a special field for practice, psychiatry is becoming increasingly attractive and important. Until recently the practice of psychiatry as a specialty has almost exclusively been centered in public and private institutional relations. This has tended to make it less attractive in comparison with general medicine, surgery or other specialties. It has also suffered in its appeal from the traditional attitude that medicine and the laity have had toward whatever has to do with the mind and its disorders. In the past, and still to a considerable degree in the present, it has been looked at as something apart from the conventional interests of medicine. It has not yet entirely grown away from the historic background in which it has developed, in which it was looked upon as a field which was dominated by vague, speculative and philosophical attitudes, that dealt with the phenomena of the disordered mind as something apart from the concrete relations of disease which held in other fields of medicine.

Apart from its institutional relations psychiatric practice has been almost entirely in connection with the specialty of nervous disorders. The common interest of both neurology and psychiatry in the pathology of the nervous system and the intimate interrelation of structural and functional neurologic disorders with psychiatric has held the two fields so closely together that a sharp separation between these in practice has difficulties and does not seem entirely desirable. But, while neurologic disorders are, in great part, concerned with the interworking of psychic factors, psychiatric disorders exist in a considerable measure apart from neurologic disorders.

The development of psychiatry in relation with psychopathology, its special interest in personality and behavior problems and its special technical methods of approach to its problems has tended in recent years to demarcate a special field for psychiatric practice.

The development of psychiatric instruction in American medical schools has a rather ill-defined beginning. In its earlier years it had some consideration in the instruction given in the teaching

of general medicine. As special instruction in disorders of the nervous systems was organized, it took a somewhat larger part in the curriculum, the extent of this depending largely on the special interest of the instructor and the clinical facilities available. It was definitely recognized in the title of the department which usually was that of a division of nervous and mental disorders. The peculiar nature of mental disorders and the provisions made for their care in special public and private hospitals obviously limited the amount and type of clinical material in general hospitals which might be available for instruction. Such a situation tended to limit specific psychiatric instruction to didactic lectures with but casual contacts with clinical cases. In some instances, in larger cities, some instruction was given in connection with conveniently located mental hospitals. It gained more recognition as a division for special instruction as superintendents or physicians of special mental hospitals became connected with the teaching force of a school. This practice soon became quite general among American medical schools and continues in most schools until the present time. Such instruction was usually given in brief courses of didactic lectures supplemented by brief visits to nearby mental hospitals where patients illustrating clinical types of insanity were demonstrated. Such instruction usually left but fleeting and disjointed impressions of psychiatry as a medical subject and tended to foster the feeling that mental disorders were largely curiosities of medicine and strange manifestations with which the practitioner of medicine would need to have but little concern.

Some instruction bearing on the behavior abnormalities of the insane naturally had a part in the courses dealing with medical jurisprudence, but this was legal in its relations rather than medical.

It was not until the development of special wards for mental patients in general hospitals or the establishment of special psychiatric hospitals integrated with medical schools that it was possible to make any marked advance in methods of instruction. The beginnings of this came with the organization of a special ward for mental cases in the Albany General Hospital in 1895. This brought psychiatric facilities close to the general medical needs

of a hospital service and gave opportunities for a distinct improvement in the teaching of clinical psychiatry.

At about this time there was developing in some of the mental hospitals of this country a spirit of scientific investigation and a more systematic medical attitude toward their problems. This development had its influence on medical schools. Psychiatry also at that time had come into a position to offer in medical instruction a better organized body of facts and experiences. Out of this situation came the beginnings of the establishment of special hospitals for mental disorders affiliated with medical schools. The first of these was opened at the University of Michigan in 1906. Then for the first time in American medical schools it became possible to develop a well organized clinical course integrated among other departments of medical instruction. Since then four other special psychiatric hospitals with excellently organized facilities for clinical instruction have been established as a part of a medical school: the Boston Psychopathic Hospital and Psychiatric Clinic of the Harvard Medical School in 1912; the Henry Phipps Psychiatric Clinic at the Johns Hopkins Medical School in 1913; the State Psychopathic Hospital at the University of Iowa in 1921, and the Colorado Psychopathic Hospital at the University of Colorado in 1924. At the present time two others are in progress of establishment, one at the University of Illinois College of Medicine in Chicago, and recently provisions are assured for a Psychiatric Clinic at the College of Physicians and Surgeons of New York.

It is to the further establishment of hospitals of this type or the organization of special divisions for psychiatric medicine in general hospitals with similar facilities that we must look for any marked improvement in psychiatric instruction and the placing of psychiatry in the position it warrants in our medical schools.

At the present time some provision for psychiatric instruction is to be found in the curricula of practically all American medical schools. The plan of instruction and the extent and character of this varies much.

A survey of the courses of instruction as outlined in school announcements shows that psychiatric instruction is carried out according to one of the following plans:

1. Didactic and clinical instruction in mental disorders in



connection with the courses on nervous disorders with such clinical facilities as may be available in wards or dispensaries of general hospitals.

2. Didactic lectures on mental disorders given by a physician from a public or private hospital for mental disorders with visits of students to a mental hospital where demonstrations of clinical cases are given. In some few instances this plan provides for a more prolonged stay at the hospital and systematically arranged course of clinical study of patients.

3. Well organized and systematically conducted courses of instruction in special psychiatric hospitals integrated with medical schools.

In most instances psychiatric instruction is limited to the last clinical year. In a few schools in which instruction is more systematically developed this is given in two of the clinical years. In one school psychiatric instruction is given in the first three years of the course. The extent to which the instruction is developed in a school has been found to be closely determined by the hospital facilities available.

The number of hours that should be assigned to psychiatry in the medical curriculum and the arrangement of the instruction was considered by this association in 1921 in a special report on the undergraduate teaching of neurology and psychiatry. Of the 160 hours recommended for the entire division, 60 were allotted to psychiatry. Of these six were to be devoted to instruction in medical psychology in the second year of the course. Clinical psychiatry was to be given in the second half of the third year and the distribution between clinical demonstrations and didactic lectures, ward work and outpatient work would depend on local conditions.

Experience has shown that the allotment of 60 hours for the entire course of undergraduate instruction is adequate. It places psychiatry in an equitable position among the other specialties, and permits giving such subdivisions of the course as are needed to give a well balanced knowledge of psychiatric medicine that will meet the requirements of a practicing physician. The importance given to psychiatry in the medical curriculum will be shown less in the number of hours allotted than in the character

and quality of the instruction. In some schools excellent courses are given in a smaller allotment of hours.

In the arrangement of any clinical course of instruction the plan followed should proceed in a sequential development of coordinated instruction carried through in special subcourses. The first of these should be one that would familiarize the student with the general aims of the entire course and give to him a knowledge of the fundamental data and facts essential for understanding subsequent courses. This course is essentially one dealing with psychopathology or psychobiology and it is in this relation that psychology is given a part in the medical curriculum. It is, however, psychology presented with a special viewpoint which is different from that taken in the conventional psychology of the usual college course. It must be a psychology that helps to an understanding of the functioning of mind as it goes on in the human personality in its life reactions and in correlations with its organic somatic functioning. This is a medical psychology which has a much needed place in the training of the medical student.

Such a course should be developed to equip the student to understand the human individual as a personality; to evaluate his qualities of mind and ways of reacting as they show in mental attitudes and behavior. It should be given either before or at the time the student is having his first contacts with patients in the clinical teaching of other branches of medicine. Much will be lost if this instruction is delayed until the later years.

A course such as this cannot be developed fully in the six hours allotted in the recommendations of the report cited. In several schools at least fifteen hours are devoted to this instruction.

As a part of this course, or in one that directly follows, the student should be given a knowledge of the technical methods of examination that will furnish the data for the interpretation of the psychiatric problem. This would include the preparation of the history, the neurosomatic laboratory and psychopathologic examinations, and the acquisition of correct methods of observation and recording what is essential. All of this instruction should be given directly in relation with clinical cases.

The final course should be one designed to familiarize the student with a knowledge of the clinical types of psychotic disorders as they occur in pathologic reactions or well differentiated clinical entities and to acquaint him with what can be done for their treatment and prevention. All of this clinical teaching can be carried on during the years in which the student is having his clinical work in the other specialties.

In all psychiatric instruction it is essential to keep psychiatric conceptions and interpretations in contact with the manifestations of disease in the other clinical fields. It is in this relation that psychiatry will prove its great importance for the student and physician.

Psychiatric instruction carried out in the way sketched in this discussion with adequate clinical and teaching facilities gives to the student a conception not only of a vast group of diseases that are becoming of increasing importance among the ills of mankind, but it gives to him methods of clinical investigation and viewpoints that will aid in his understanding of man as an individual reacting in his life's experiences in health or disease; an attitude and knowledge that will have a direct application to his problems as a practicing physician.

## EDUCATION IN PREVENTIVE MEDICINE IN THE REGULAR CURRICULUM

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It is well within the limits of truth to say that without training in the theory and practice of preventive medicine the physician cannot serve his community either in the manner, or to the extent, which the laity has been taught to expect and properly believes to be necessary and desirable.

An analysis of the methods and results of administrative medicine, that is the services of public and private health agencies, hospitals and dispensaries, medical supervision of school children, visiting nursing, etc., leads one to the conclusion that much of the general improvement in life expectancy, by reduction of sickness, postponement of death, and development or maintenance of health, which has added twenty years to the life of man in the past seventy-five years in this country, has been due to control of environment by the application of sanitary science and engineering resources, and by widespread education of the laity in the control of communicable diseases and the principles of personal hygiene, coupled with an advance in material prosperity unparalleled in amount and breadth of distribution. We find ourselves at present limited in further benefits to be expected from the medical sciences, chiefly by the character of services which the physician is prepared to offer in his capacity as a practitioner of medicine.

It is certainly true that in everyone of the numerous special fields of public health effort, from the prenatal period to advanced age, whether for control of tuberculosis, syphilis, cancer, mental disease or nutritional disorders, progress in prevention depends upon recognition by the physician of deviations from entire

normality prior to the time when the apparently healthy individual suffers inconvenience, pain or disability.

Whether or not authority, organization and appropriations are provided by law to maintain public agencies for health, the full value of the already established facts of science will not be harvested without the active application of preventive medicine in the daily contact between the medical profession and the laity.

At least it was with these convictions in mind that the Committee On Training of Sanitarians appointed by Surgeon General Cumming accepted the invitation of your secretary to take part in this program, and while the committee is not responsible for all the opinions I may express, I believe they are in general agreement with me in this matter.

It must be clearly understood that we are dealing with the preparation of the undergraduate medical student for the practise of medicine and are not considering the relevance of this period of training to special fields of preventive medicine which he may wish to cultivate after he has earned his degree in medicine.

May I take it for granted that neither by adding new subjects nor by increasing at all the number of hours of required class, laboratory, or clinical work, shall the regular curriculum be extended to provide for preventive medicine?

May I further state what I trust will be accepted as pedagogically sound that preventive medicine does not constitute a new or separate branch of medical learning; that it is not a science or art apart from the sciences used in the diagnosis and treatment of the sick; or to express the matter bluntly, the teaching of preventive medicine depends upon the attitude of mind, and calls for an altered emphasis or proportion in the elements of undergraduate medical education rather than constituting a mass or organized body of principles and facts for practice as a specialty of medicine.

If these premises are sound, let us concern ourselves with the ways in which the point of view, the idea of preventive medicine may become in fact a plan of action.

Most of us have been educated medically on advanced disease, our goal being to make such good use of our special senses and the laboratories that we can predict what the autopsy will

disclose. A new type of competition with Nature is due, whereby we may prophesy with at least as much accuracy, how far the adaptable human organism may be strained by adjustments to environment and personal habits without developing abnormal structure and function.

While our objective is to introduce a new conception of medical service, built upon physiologic rather than pathologic pictures, on the communal as well as individual effects of hygiene and sanitation, it is the point of view of teachers which must be altered first.

It takes more imagination and a finer, more accurate and adjustable technic to engage on a study of health and the minimal variations from normal on which preclinical manifestations of disorder or defect are built, than to trace the obvious even though intricate processes of disease through their final stages.

If there is a department engaged in the regular curriculum of medical schools which is exempt from responsibility and incapable of contributing to the subject of preventive medicine, it must be staffed by teachers who are immune to the influence of Pasteur, Newman, Park and Biggs.

Anatomy and physiology with its step-child biological chemistry, providing as they do the very threshold and entry into medicine, offer at every point opportunities to learn the range of variation in the normal body and its functions. The disabilities and defects accompanying faulty posture, the functional weak foot, the results of irregularity in bowel evacuation, of disturbances in the autonomic system, of the emotions on the endocrines, and a multitude of other subjects offer opportunities for teaching prevention of conditions which are detected in the routine examination of school children and industrial workers as perhaps the chief causes of failure to learn, or to earn a living.

In addition to the study of these sciences for their own sake, capable of offering boundless intellectual exercises and training, and beyond their use as a background against which to measure the extent and character of pathologic states, they can be presented throughout with the vision that a constantly increasing number of persons in good anatomic and physiologic condition will offer themselves at every age of life for the study and guid-

ance of their physicians. One is tempted to say that there are more ways of being healthy than of acquiring disease, and the knowledge of these ways will grow through the study of physiology and anatomy under the name of hygiene, that branch of the medical tree which carries the facts of personal habits, and performance of mind and body, as these affect form and growth and function.

Similarly, the subject of sanitation, or environment as it affects human life, is in large part properly presented through physiology and anatomy. Except so far as sanitary science deals with communicable diseases and their control by engineering resources, it is primarily concerned with the possible development of human damage by artificial conditions of heat, light, pressure, dust, fumes, fatigue, etc. In each of these sciences of the normal, anatomy, physiology, biochemistry, there should be on the teaching staff some person particularly concerned with hygiene. A new department, a new subject is not always needed; a new or greater application of physiological and anatomical approach to the human in his environment and as altered by his habits, is the contribution to preventive medicine called for from existing departments.

Preventive medicine grew to its present dimensions so largely through bacteriology that this major topic of the second year is properly considered a foundation stone quite on a par with anatomy and physiology, and one can hardly see how it can be offered without teaching health protection with every fact.

Special treatments of sanitation and hygiene for medical students by separate departments devoted to these sciences is required only where the usual laboratory sciences are taught in too narrow a sense and solely as a background for the study of diseased states.

An element usually lacking in the teaching of bacteriology is familiarity with administrative and statistical material invaluable in convincing the student of the practicability as well as the theoretical desirability of community protection via the public health laboratory.

In spite of the common statement of pharmacologists that their field is outside the range of preventive medicine, it would not be strange if some of them could see that from the point of

view of both method and materials this department is especially suited to a study of the individual and communal results of use and abuse of the habit forming drugs, so serious a problem for practitioner, health officer, hospital executive, and even of prime ministers. The whole program of education and control of habit forming drugs depends upon the facts most readily developed in pharmacology.

In studying the therapeutic use of drugs for the individual, the picture of the national, racial and economic effects of abuse can most appropriately be offered at the same time.

During the study of pathology, which up to the recent era of experimental and functional pathology was blind to its duty to preventive medicine, the chances to open the students' minds to the preventable aspects of disease are countless. Whether it be the tuberculous, the syphilitic, the pellagrin or the suicide, the rachitic child dead of pneumonia or the once operable cancer which caused death, each one can and should be used as a text for education in prevention as well as in the natural history of disease.

Understanding of the nature of the distorted and disordered tissues will be keener and more permanent if an incentive to action, a basis of education for prevention is inculcated while the viscera are passed from hand to hand, while the death is thought of as affecting a personality, not merely as the source of multi-colored tissue slides.

From the moment the student enters on clinical experience, whether it be in physical diagnosis, psychiatry, or clinical clerkship in medicine or surgery, until the last of the specialties is dealt with, there is not a topic or a case that is not capable of increased value, intellectually and for practical use, by having the preventive aspects featured in the teaching.

Pediatrics and obstetrics might almost be considered primarily from the point of view of preventive medicine. Maternity, childhood, growth, reproduction are the legitimate field of the most nearly ideal theory and practice of preventive medicine.

But why burden the argument further? Each opportunity to face a patient, to take a history, to carry through an examination for diagnosis, or to observe effects of treatment, demands attention by teacher and student, not only to the record of past



events which may disclose the preventable element in habit, environment, occupation, inheritance, accident, which led to the present disorder, but to plan of life, the possibility of salvaging a life or reconstructing one by initiating education and control of the patient.

A useful way to bring the question of prevention to an issue is to have the student report on the elements in patients' histories which probably contributed to present or approaching disabilities, leaving it for the teacher to supply the mass statistics which would indicate the relative incidence and importance of these factors.

Clinical presentation or record of patients should include regularly an item covering probable or proved preventable factors and reasons for failure of prevention.

If every opportunity is used to teach the prevention of disease, defect, disability, and every occasion to study the forms and manifestations of health according to age, sex, condition, occupation, race, etc., with the same resourcefulness and determination which is applied in the discussion of the minutiae of disease and its end results, there will be no need or excuse for a department of preventive medicine or hygiene for medical undergraduates.

As Dr. Neagle of Augusta, Ga., so well says, "The successful teacher of preventive medicine will eventually eliminate himself by unloading upon his colleagues the distributed burden where it belongs in every department throughout the curriculum."

This calls for but few, if any, changes in teaching personnel. In some departments, as in anatomy, physiology, pediatrics, obstetrics, medicine and psychiatry, the preventive element is of such great importance and the organization of material for student use in this direction is so backward that an individual should be designated as responsible for cultivating hygiene and preventive medicine within the scope of his subject and for preparing material for use by others in connection with the regular topics of formal teaching.

In physiology the contribution from the field of industrial hygiene is of great moment, not only as a body of scientific facts, but as a source of example in methods of research into human reactions to new and possibly unfavorable environment or duration of occupations.

In medicine, the annual periodic health examination of the students and faculty would provide a type of practical study material particularly useful when checked against the experience of similar examinations at the out-patient clinic. For this, because of the time required and routine character of the work, a new position will be necessary under the department of practice of medicine.

There will remain in the field of preventive medicine certain topics which are essential for a physician who aims to play his part as a social leader, as interpreter of the medical sciences in his community, as an educator of public officers, as a school physician, as a participant in civic health work, while he practices his profession mainly among the sick. These elements now but irregularly provided for in most of our schools of medicine, were defined more than fifty years ago by Billroth who, in spite of his medieval attitude toward preventive medicine, was intellectually honest in his description of the departments necessary for a medical school. Billroth expressed himself as follows:

“Long life is a matter of taste. If longevity is to be attained by the renunciation of enjoyment and by frugality in material and intellectual aspirations, most people will decline it with thanks. To live a full and swift, even if an unhealthful life, and to be speedily destroyed is better than to live healthily and too long and be bored. Overpopulation and increased competition are our worst enemies. It does no harm if epidemics and wars annually take their liberal toll of the population.”

Public health, to which he allotted four hours a week for a half year or two hours a week for a full academic year, was to include medical jurisprudence, public sanitation and hygiene.

At present the tendency is to include medical jurisprudence and forensic medicine under pathology and at best this cannot be included in preventive medicine for the medical student, but rather as a specialty for graduates.

Hygiene belongs more properly under physiology as we understand it, although it is often made to include public health bacteriology.

Sanitation, the science of environment, remains as a subject worthy of inclusion in the education of medical students and whether by medically trained teachers or others. Sanitary science

as an essential for the intelligent practice of preventive medicine should be treated of during such hours as are set aside for public health in the curriculum.

Topics not mentioned as such by Billroth, but which were probably taken for granted as included under sanitation, are what we now describe as epidemiology and vital statistics, and public health administration.

Such knowledge as we have of the natural history of disease as it develops among groups of people in some way related by a common factor, whether or not the disease is communicable, is properly defined as epidemiology and the elements of this should be known by every physician, if for no other reason than that it offers a method of study of cause and effect often quite as reliable as much of animal experimentation. Vital statistics are the hand maiden of epidemiology and public health administration.

Public health administration deals with the application of the sciences to the prevention of disease or development of health by public or private agencies organized under the authority of the law and involving the physician in many ways legally and socially. Under this title we include the whole subject of the organized movement for life saving, including the relation of social, hospital, dispensary and nursing services to the practitioner of medicine and the health of his patients.

The elements of sanitary science, epidemiology and public health practice should be offered to students of medicine in the regular curriculum and if there is complete integration of preventive medicine throughout the so-called regular departments of the school, not more than 60 hours need be assigned for these three topics, although as much as 90 hours is now wisely used for these subjects in some schools, as at Yale.

Flexner's recent book on medical education seems to ignore quite consistently the topic of preventive medicine, merely suggesting that hygiene is a laboratory science. He does not discuss any clinical or practical aspects of hygiene such as child hygiene or industrial hygiene, in spite of their inclusion in various schools as essential elements in pediatrics and general medicine. He confuses hygiene with public health administration and adds nothing to an understanding of the place of preventive medicine in a modern medical school.

There would seem to be no excuse to have the physiology, bacteriology, parasitology of public health students separated from the departments offering these subjects to medical students and many good reasons for having university departments cover all phases of their subject and have teachers of each subdivision represented in their staff.

Departments of sanitary science, epidemiology, public health administration, including vital statistics, belong more appropriately with a medical faculty than elsewhere, but regardless of their assignment, they must be free under some administrative board or grouping, to serve medical students and sanitarians just as a department of physiology or biochemistry serves the school of science as well as the school of medicine.

It is the ambition of devotees of preventive medicine to have the medical student learn to ask and answer two questions in addition to those which Billroth puts as epitomizing the process of study of disease :

“Solitary, meditative observation is the first step in the poetry of research, in the formation of scientific phantasies, the reality of which we then test with the tools of logic, mathematics, physics and chemistry. Our tests will be the more successful the better we have learned to handle these tools. The diseased organism, the patient, must be observed in just this way, and in a state of mental solitude and meditation. Where is the disturbance? Of what nature is it? What have been its consequences to date? How will it proceed? What can we do to prevent its progress? To render harmless the already accomplished effects of the disturbance? At what point can we attack it? How? When?”

The additional questions I would urge are: Why was this condition not prevented? How can its return in this individual, or its development in others be prevented?

Further than this the interests of preventive medicine require that medical students be taught more of the normal human in all his ages, so that he may learn to think of health as an objective in itself worthy of all his skill.

Medical students and physicians long steeped in sickness have come to consider disease as their only field of usefulness and have not acquired an ambition to record healthy lives guided from infancy to old age past, not through, diseases by their knowledge of

hygiene, sanitation and the practice of preventive as well as curative medicine.

Preventive medicine is not to be embroidered on the texture of medical education, but will, when successfully introduced, be woven as a stronger, brighter design in the warp and woof of the great fabric which the medical sciences are weaving as mantle for frail, erring, hopeful, ambitious humanity.

Preventive medicine will never be demonstrated satisfactorily even in the restricted scope to which it is likely to be confined in the teaching of undergraduate medical students without a field of practice comparable to that now universally accepted as essential for the teaching of disease and its treatment. Where the medical school is closely incorporated in a large university community which looks to the medical faculty for protective and curative medical services, under some form of self-supporting or subsidized health organization, there is a good opportunity to observe in a selected age, occupation, economic and educational group some of the effects of a consistent policy of preventive medicine applied to environment, personal hygiene and group relationships (Ann Arbor, Berkeley, Madison).

Where, however, the medical school lives apart from any large student body it is usually located in a community of such size that all the major activities of public and private health agencies are close at hand and available for observation, so that the results of application or neglect of preventive, protective and developmental health services can be referred to, observed, reported upon and in a way demonstrated with no more difficulty than is met in teaching clinical medicine and surgery in public or private hospitals, not directly controlled by the medical faculty (Toronto, Augusta, Cleveland).

Prenatal and neonatal supervision by visiting nurse service, in conference groups of expectant mothers, and at baby health stations, offers many opportunities of demonstration worthy of the attention of the department of obstetrics and pediatrics.

Infancy, preschool age and school age can usually be studied in bulk and in detail through municipal services. The prevailing ignorance of the young graduate in medicine in dealing with the acute communicable diseases of childhood can be met by a study

of conditions in the homes at the side of the health department diagnostician and the visiting nurse.

But in all these fields we shall but repeat the failures of medical education in the clinical branches unless we arrange for university control and personnel in the field of applied preventive or public health work.

Few schools are so fortunate as the University of Georgia where the health commissioner of the City of Augusta is the professor of preventive medicine. Rochester, N. Y.; Memphis, Tenn., are similarly and fortunately situated in the formal and official relationship between large scale public health services under competent direction and the departments devoted to teaching preventive medicine to medical students.

It is not too much to hope that with an increasing tendency towards nonpartisan and technically competent direction of public health services, every medical school will expect to have and should be allowed to direct, subject to the final approval of the health officer, the functions now considered necessary by public and private health agencies. A medical school or university district for teaching communal health is certainly as essential as the wards of a hospital for teaching individual disease.

It would be natural to expect that such a field of training and study would be under the jurisdiction of the department of public health administration, really a department of practice of preventive medicine on groups.

Furthermore, a community or district, especially if representative of the important race, age, occupational, economic and housing conditions of the whole city, is almost indispensable for the development of research in nutrition, immunity, and in testing the theories of causation and the extent of incidence of many of the diseases which offer little information to the clinician when considered as an isolated individual clinical problem in a hospital bed.

It is not enough that each department shall mix prevention with cure, add the idea of health to that of sickness, view the normal as the object of medical solicitude as well as rouse ambition to unravel the secrets of disease.

Specific appropriate supplementary information not generally familiar to teachers in the regular curriculum should be sought

by them and be provided for them, chiefly out of the departments of sanitary science, vital statistics, epidemiology and public health administration.

To those familiar with and expert in the science of the cell, of the individual organism, fact and theory of the demos, or group, and its ills and frailties, its capacities for resistance and its susceptibilities to emotional and physical disabilities are of no little concern, and from the departments dealing with environment, with congregate rather than discrete medical problems, with the story of populations as well as of families, much illuminating and illustrative teaching material can be drawn to aid the laboratory teacher and the clinician in preparing the medical student to take part as physician and as citizen in that field of applied medical science which has stamped itself upon the imagination of the laity as perhaps the finest product of our civilization.

Fourteen university medical schools have available either in the medical or science faculty, departments of preventive medicine, hygiene or public health.

These are often chiefly concerned with the training of graduate students for careers in some branch of public health. They are not all at present influencing the teaching of preventive medicine in the regular medical curriculum. A department of public health is a desirable addition to a medical school.

Public health training can be done only after, preventive medicine should be taught during the undergraduate medical years. It is my opinion that the period in the medical curriculum best suited to presentation of those special phases of sanitary science, epidemiology and vital statistics, and public health administration which cannot be more appropriately included in the teaching in the fundamental laboratory and clinical departments of the medical school, is the fourth year and that not more than 60 and not less than 30 hours should be allowed for lecture, demonstration and conference on these topics, preferably distributed throughout both semesters. An additional 30 hours of field observation, possibly during the summer vacation, is desirable.

The Committee on Standardizing of Public Health Training of the American Public Health Association reported in 1923 that

the scope of courses in public health in medical schools varies from 8 lecture hours to 210 with a median of 61 hours.

It will be apparent that the addition of material directly contributing to knowledge of preventive medicine in the clinical branches will call for suppressing some of the emphasis upon the details of disease. This amount of self sacrifice seems to me not too much to expect since the object of the medical school is to train students for the practice of their profession, which nowadays consists to an increasing degree in guarding and guiding health throughout a patient's life, as well as serving from time to time in emergency and distress as physician of the sick.

The school of medicine or the nation which first incorporates in its plan of education a well proportioned emphasis upon preventive medicine as the outstanding objective of the physician in practice and research will, it seems to me, lead the procession and carry off the honors, as in the past generation eminence has been won by those who builded upon pathology and its expression upon the human form and functions.

Prevention of disease is, on the whole, easier than cure. It is rational and calls for imagination and forethought, and leads to no less tempting visions of accomplishment or to smaller fields of investigation in the borderlands of knowledge than does the study of disease.

Let me close by quoting from that beautiful lay sermon of Dr. Osler's "Man's Redemption of Man."

"The outlook for the world as represented by May and John, and Jennie and Tom has never been so hopeful. There is no place for despondency or despair. As for the dour dyspeptics in mind and morals who sit idly croaking like ravens—let them come into the arena, let them wrestle for their flesh and blood against the principalities and powers represented by bad air and worse houses, by drink and disease, by needless pain, and by the loss annually to the state of thousands of valuable lives—let them fight for the day when a man's life shall be more precious than gold. Now, alas! the cheapness of life is every day's tragedy!

"If in the memorable phrase of the Greek philosopher Prodicus, 'That which benefits human life is God,' we may see in this new gospel a link betwixt us and the crowning race of those who eye to eye shall look on knowledge, and in whose hand



Nature shall be an open book, an approach to the day of which Shelley sings so gloriously:

‘Happiness

And Science dawn though late upon the earth;  
Peace cheers the mind, health renovates the frame;  
Disease and pleasure cease to mingle here,  
Reason and passion cease to combat there  
Whilst mind unfettered o’er the earth extends  
Its all-subduing energies, and wields  
The sceptre of a vast dominion there.’”

## COOPERATIVE PLAN OF TEACHING PREVENTIVE MEDICINE

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Medical history divides the story of the progress of medicine into several periods, and shows how each period was dominated by a theory advanced to explain the existence of disease. The accounts show clearly how important such theories and beliefs were and how great was their influence on the evolution of medicine, either by limiting its progress as was the case with the supernatural and noxious vapor theories, or by pointing the way toward successful advancement as occurred with the germ theory. Now that the etiologic factors in most of the common diseases are known, we are on the threshold of a period which, apparently, is to be dominated by a new theory. This new theory is not one of a cause of disease but is based on the knowledge that many diseases are more readily prevented than cured. It postulates that health education of the public will lead men to the wholesale adoption of healthful habits, convert them to periodic health examinations, and stimulate them to seek medical advice at the earliest manifestation of any disease condition. In other words, the theory maintains that the public should be given a general knowledge of the causes of disease, its processes and sequelae, should be led to understand how infections are spread, and how the resistance of the body may be maintained so that temperance and cleanliness will be exercised in daily life, and so that progressive diseases will be cared for before they have reached uncontrollable stages. Further, it alleges that if these things can be done, much suffering and economic loss from disability can be prevented, the health and vigor of individual minds and bodies can be improved and the average span of life lengthened.

If the theory be carried to successful practice, it is not improbable that historians of the future will refer to this period as the "era of prevention."

Considering the relatively short time during which the preventive idea has been promoted, the success attained has been truly remarkable. Many of the suggestions offered for the preservation of health have been accepted with great enthusiasm in certain strata of society, and much of the actual routine practice has passed into the hands of the lay public. The idea of prevention has itself been greatly magnified so that it now includes not only the prevention and control of acute communicable diseases but also many of the more chronic affections and certain of the constitutional diseases as well.

The signs of the times are seen in the formation by the medical profession of societies pledged to the prevention of heart and kidney diseases, of goiter and for the control of cancer, and in societies made up both from the medical profession and the lay public for the promotion of infant and child welfare, and for the prevention of tuberculosis, venereal diseases, diseases of the mind, and so on. New angles of the preventive problem are appearing every day, and the general public is more alive to medical topics and more capable of measuring the ability of the medical practitioner than ever before. It becomes obvious from such data that a knowledge of preventive medicine is demanded, both by the medical profession and by the public.

The medical school, therefore, must see to it that the student goes out properly equipped to take his place in the field of preventive medicine as well as in general medicine. It is not necessary to make him a specialist, but he must have both a broad general conception of the principles of preventive medicine and a tangible knowledge of the technic of the commoner prophylactic practices. He must be prepared to apply to disease prevention many facts which he has gleaned during his medical education, and to have ready access to them. He must understand the relation of preventive movements to medical ethics. He must be able to recognize the difference between good and bad preventive practices. And, he must be able to supervise the health educational work of nurses, welfare workers and others. Certainly, thorough training in the principles and practice

of preventive medicine is an essential of modern medical education.

There are, no doubt, several good plans for teaching preventive medicine in medical schools. In any case, the instruction must be along two general lines: firstly, the presentation of the broad general idea of preventive medicine, including its aims, purposes, possibilities, educational programs and its relation to sanitation and public health administration and, secondly, technical instruction in the use of specific preventive measures in relation to the respective diseases against which they are used. The first object may be accomplished by establishing a central or "key course" called "preventive medicine" and used as the clearing house for all other teaching of prevention. Proper instruction along the more technical lines is likely to offer difficulty in arrangement for technically preventive medicine has long since become so specialized as to require a group of diversely trained teachers.

In medical schools associated with schools of public health the problem may be solved by drawing upon the faculty of the health school. This may work out satisfactorily, provided the special instruction is not overdone for the time element is an extremely important one. In this connection it may be repeated that it is not necessary to make sanitarians or public health administrators of medical students in order that they may become satisfactory practitioners of preventive medicine.

Where there is no associated school of public health, the quality of the central or "key course" becomes more important, and in supplying the supplementary technical instruction the following points may be worthy of consideration. (1) There is scarcely a subject in the medical curriculum which does not present a method which can be used in disease prevention and scarcely a disease which does not have a preventive phase. (2) It is not possible to have a separate specialist in prevention to teach the preventive side of each of the diseases and the man who ought to know the best preventive practices available for use against any disease is the man who is teaching the clinical aspects of it. Unfortunately, this is not always true. If the instructor does not know the preventive side of the diseases which he teaches he should be made to learn it or to give way to some one

who does know it. (3) Since there is a preventive side to every disease and there is no time to repeat all of the courses in the curriculum from the "preventive" standpoint, the best time to teach prevention is when the other phases of the disease are being taught. (4) Early diagnosis and proper care of the patient are the first steps in prevention. This is true whether the patient is in the early stages of a constitutional disease and the preventive measures are applied to him for his own good or whether he has a communicable disease owing to which he has become a danger to his community and his isolation becomes necessary for the protection of others. Preventive medicine and curative medicine cannot be separated in practice and they should not be separated too widely in teaching. (5) The big thing in teaching the technical side of prevention as a part of clinical instruction is to have both the student and the teacher appreciate and sort out the things which are for treatment and those which are for prevention, otherwise the student may not realize that he is being taught preventive medicine.

A very satisfactory scheme for teaching preventive medicine in a medical school where there is no associated school of public health can be worked out by installing a central or "key course" in which the general and interrelated phases of the subject are presented and by interesting the members of other departments of the faculty in teaching the more technical measures of prevention as a prominent part of their regular courses.

Perhaps a better conception of this plan of teaching preventive medicine may be conveyed by outlining our experiences with it at the University of Pittsburgh. The idea grew out of a discussion by Dr. John M. Dodson of a paper read at the United States Public Health Service Conference on "The Education of Sanitarians" in Washington, in March, 1922. Dr. Dodson said that what was needed was more instruction in prevention at the bedside when a case of a disease like typhoid was presented. "The student should be told that the patient had typhoid because some one had been negligent and should then be quizzed on the ways in which the infection might have come about."

We have enlarged somewhat on this idea and have enlisted the aid of our entire faculty. The plan was written up carefully two years ago and presented to the general faculty at a meeting called

for the purpose. Since that time considerable progress has been made and many departments have been presenting the preventive sides of their subjects regularly.

The progress of this plan was checked up about a year ago by a questionnaire given the students. The questions were designed to bring out criticisms of the "key course," suggestions for its improvement, the statement of any preventive measures which had occurred to the student and had not been brought out by an instructor, and finally a resumé of all the preventive measures taught as a part of courses other than the "key course." The students were not permitted to sign their names to the answers and some very interesting, though not always favorable, criticism was obtained. The indications from the answers were that all of the clinical branches were paying attention to preventive phases and that departments of medicine and gynecology particularly were devoting considerable time to such instruction.

When the teaching plan was first put into practice, a review of the subject matter of the various courses was made to see how much opportunity for instruction in disease prevention was afforded by each. In a general way, it was found that courses which deal with normal structure and function offer comparatively less than those which deal with the causes, progress and results of disease. It is not so much that they are barren of useful practical matter which might readily be applied to prevention but that they are given at a time when the student has too little real conception of disease to grasp their significance. For example, the ill effects of anatomic structures of children from faulty carriage and poorly adjusted desks might fail to impress freshmen, while the same material presented by the orthopedic surgeon to senior students rarely fails to arouse interest in normal and abnormal posture.

Physiology and biological chemistry offer better opportunities than anatomy and histology. Particularly is this true in the division of these courses which deal with nutrition and internal secretion. The value to health and growth of properly balanced food factors, the rôle of amino-acids in development, and the existence of diseases which arise from food deficiencies, may be pointed out and the importance of this knowledge for future use in preventive medicine stated. Also, the requirement of rest for the recupera-

tion of all tissues, the necessity of such substances as iodine, phosphorus and calcium for fundamental bodily reactions and the part played by the abnormal metabolism of these substances as a source of disease may be brought out.

In pharmacology instruction in the absorption and elimination of poisons may be turned to the account of preventive medicine, particularly with reference to poisoning with lead, arsenic, zinc, mercury and phosphorus and their importance as industrial intoxications. The occurrence in industry of gas poisonings, especially carbon monoxide poisoning and the first aid methods for them, are being discussed in our course in pharmacology and on the day in which carbon monoxide is studied in the laboratory the Schaefer method of artificial respiration is demonstrated.

Beginning with bacteriology and the study of pathogenic bacteria there is a real opportunity for laying the foundation of the prevention of communicable diseases. There are two ways of teaching bacteriology. One way deals with it as a pure science treating the bacteria as isolated biologic entities which fall into groups and have certain differential qualities. The other way omits none of the essential points of pure science but emphasizes the relation of the various bacteria to the diseases which they cause. It brings out the ways in which the organism in question enters and leaves the body, indicates its existence in nature, explains its action in disease production, sketches the clinical picture in outline and includes a discussion of its relation to immune body formation. Such a method as the latter makes the repetition of this work in preventive medicine unnecessary.

Immunology, too, may be made to emphasize the importance of immune reactions in disease diagnosis and to include a discussion of the methods of preparation, relative values and applications of the various biologic products used in the treatment and prevention of disease. During the instruction in pathology, practically all of the things come up again in connection with a study of the resulting lesions, and here comment may again be passed on the urgency of preventing disease before it reaches the destructive stages illustrated by the end results.

Through cooperation in teaching by all of the above mentioned courses at the University of Pittsburgh, the student has acquired a fair understanding of the ways in which com-

municable diseases are spread when he takes up his work in hygiene which is begun in the second part of the sophomore year. Hygiene and preventive medicine are in the hands of the same group of instructors.<sup>1</sup> Hygiene is given as a lecture course and is supplemented by eleven afternoons divided between laboratory periods and visits to public service stations. The special instruction in ventilation, heating, lighting and industrial poisoning is being given voluntarily by Dr. McConnell.

The central or "key course" called "preventive medicine" is a continuation of hygiene and is given as a series of 75 lectures extending throughout the junior year. After a brief historical introduction, time is spent in emphasizing the points about diseases which should be known in order that the highest efficiency in prevention may be reached and the student is given an outline which is followed as closely as possible in discussing each disease as it is taken up. This outline is valuable in helping him to organize his knowledge of prevention and is flexible enough to be applied to any disease. Next are taken up the quarantine rules and regulations. A pamphlet issued by the Pittsburgh Department of Health and a series of abstracts from the Pennsylvania administrative code are used as texts for this work. Several hours are devoted to a discussion of the preventive features of the communicable diseases, and these are followed by a series of lectures by the commissioner of health of Pittsburgh on the "Relation of the Practitioner of Medicine to the Municipal Health Department." Four lectures are spent in discussing industrial intoxications, and the remainder of the time is devoted to the prevention of secondary and constitutional diseases, to the control of cancer, and to a general discussion of health educational programs, including the importance of health examinations, the relation of the physician to social movements, social services and to social agencies generally.

Most cordial cooperation in teaching prevention has been met in the department of medicine. Here the importance of health

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<sup>1</sup> The personnel of the department includes: Samuel Reese Haythorn, M.D., director; Thomas McCance Mabon, B.S., M.D., assistant professor of hygiene; Carey Judson Vaux, M.D., health commissioner of Pittsburgh, lecturer in preventive medicine, and William John McConnell, B.S., M.D., past assistant surgeon, U.S.P.H.S., lecturer in industrial hygiene



examinations is being stressed in the course in physical diagnosis. Technical instruction in communicable diseases with reference to prevention is brought out and the care of convalescence after acute attacks of communicable diseases is emphasized, particularly is this true with reference to the prevention of heart and kidney diseases. The danger of neglecting focal infections and the consequences of unchecked "colds" are explained fully. The early diagnosis, the care and the importance of the control of tuberculosis is thoroughly covered by instructors from the Pittsburgh Tuberculosis League. Mental hygiene is dealt with extensively in the departments of neurology and psychiatry.

Thorough early care of wounds and the prevention of infection is stressed in surgery as well as in the prophylactic use of antitetanic serum. In mine surgery particularly the student is warned to keep a constant watch for gas bacillus infection and to remove the infected tissues immediately on its appearance. Orthopedic surgery spends much time in teaching the prevention of deformity and the restoration of function by mechanical intervention and by manipulation. Obstetrics runs a large outpatient department for expectant mothers where the student is taught to follow the urine, examine the patient and is in contact with specially trained workers who instruct the patient in the hygiene of pregnancy.

Gynecology is laying great stress on the preventive side. The dangers of venereal diseases in the female, the technical methods of their care and cure are given in detail, and their remoter connections with sterility and with cancer of the cervix through long continued irritation brought out emphatically.

Ophthalmology emphasizes the prevention of blindness from gonorrhoeal and other infections and instructs the student in the importance of proper refraction, for the control of progressive myopia, and for the preservation of the general health.

And, so the work goes through the entire curriculum, the preventive measures being given equal prominence with the other heads as each disease is discussed.

**SUMMARY.** The modern need for supplying medical students with the essentials of preventive medicine may be met satisfactorily in any school where the entire faculty of the last three years can be interested in including a discussion of prevention

as one of the topics considered under each disease taken up. Publishers of the more important textbooks should be asked to include a paragraph on prevention under each disease, just as has been done with etiology, pathology, diagnosis and the like. Until this is done each instructor should be stimulated to write his own paragraph, to append it to his teaching notes and to teach it to students giving it equal prominence with the other headings considered. Where this is done the idea of preventing disease may constantly be kept before the student. Repetition of this sort is not a waste of time because the matter is approached from many different aspects and each time it is discussed the fact is impressed more deeply upon the student's mind. While a centralized course is still necessary the need for an elaborate department may thus be overcome and the student led gradually to a familiarity with "preventive medicine" which will make him feel that it is a natural part of his daily routine.

#### DISCUSSION

ON PAPERS OF DRs. C. P. EMERSON, BARRETT, H. EMERSON AND  
HAYTHORN

DR W. S. CARTER, Rockefeller Foundation, New York: I don't know that I could add anything to what has been said but I have been very much interested in this idea of presenting preventive medicine in a different way, not as a separate subject alone, but by the cooperation of all the members of the faculty, and particularly, as has been said by the last speaker, by those who are concerned in teaching the clinical subjects. It seems that this will be a very important means of bringing this idea of preventive medicine into the daily routine of the practitioner.

DR. DAVID L. EDSALL, Harvard Medical School, Boston: I am in accord with the points of view which have been expressed by Dr. Emerson and Dr. Haythorn in regard to the general manner of approach to the matter. I have been very much of the feeling for a long time that there is however another element in it which was not mentioned by either of them.

I think there is no question that all intelligent men connected with the education of the medical student at present look upon the preventive aspects of the practice of medicine as having reached the state where they are very significant in the hands of every practitioner. I think comparatively few teachers teach much of this however, and I think the reason they don't is that we have all been trained earlier and even in recent years, to look, as Dr. Emerson

said, upon the whole teaching of medicine as being, essentially speaking, a teaching of disease and the cure of alleviation of disease, not prevention. I think the great majority of teachers in any school are quite unfamiliar with what to teach as to prevention, and intelligent men who are not familiar with what to teach in any line devote their teaching to what they do know. I think for that reason a large part of this is left out.

The one thing that I would add to the discussion is that we here are engaged now upon an attempt to collect the material that is available in the various departments, that is to have one or more men in each department gather together and put in somewhat systematic form the high points, at least, of what should be put into the mind of the student as he goes along through that particular course in regard to the preventive relations of this subject; then to submit this for comment to the Departments, and thus gradually to collect together in that way information in concrete form which will be available for students in printed form but will also be available for those members of the Departments who thus far have not had much interest in or familiarity with this subject. In other words, I think the first thing to be done is to educate a large proportion of the teachers and give them some method of getting educated in it.

A good deal of preventive medicine up to this time has been largely carried by word of mouth. Very little of it is in systematic books on Preventive Medicine or anything of that sort. There must be some way of getting it together in order that teachers who are willing to avail themselves of this may be able to get it in some form. I think gradually you can introduce it in that way. I don't think it can be done effectively excepting in the course of a considerable period of years.

In some of the departments here there has been a very large quantitative change in the way the subject has been approached.

The Department of Syphilology, as it was for years run by Dr. Smith, is really conducted from a Public Health standpoint. They know the actual family conditions and the dangers of exposure in nearly every case of syphilis that comes to the clinic. The student is taught syphilis from that standpoint as well as from the standpoint of a clinical disease, when he treats an individual. Almost the same thing can be said now of the attitude of the Department of Pediatrics, and the Department of Obstetrics in an increasing degree has the same view point, and so in the same way the Department of Psychiatry. In lesser degree but still quite largely, is this true to the Departments of Medicine, of Orthopedic Surgery and of some others. In that way it has infiltrated throughout a considerable number of the departments in the last ten years, until you will find that a number of the major clinical departments are teaching preventive practise to a large degree.

I think the change is, however, quantitative rather than qualitative so to speak. The qualitative change must come when everybody considers that it is his duty. That is what we have in mind now, an attempt to collate into some systematic form something that is applicable to both student and faculty, so that we may increasingly penetrate the course with it, so that within the next five or ten years it may make a decided difference and somewhat approach what we have in mind.

DR ALEXANDER C. ABBOTT, University of Pennsylvania, Philadelphia: I feel precisely as the last speaker expressed himself. This is a matter of viewpoint. I do not believe it is coming immediately. There is no mystery involved in it. It is merely a matter of the teachers in the clinical branches taking stock of the available material and recognizing that there is a phase of the subject that can be taught in the time assigned to them. Such teaching will be of equal or perhaps greater value than a great deal that is now taught. By such a plan there will be developed in our schools this highly desirable atmosphere of prevention. I do not think we should aim to supplant therapeutic teaching and effort but only to add the prevention effort as an important complementary feature.

Where a central Institute or Laboratory of Public Preventive Medicine exist there are, of course, specific responsibilities, but I do not feel that in a medical school such responsibilities should excuse the clinical chairs from their appropriate part of the work. I do not believe a special hour should be set aside for the teaching of preventive medicine specifically in clinical classes, but rather that the teaching should be interwoven with every subject that is brought before the student and the preventive aspect presented in a concise and modern way.

DR. GEORGE M. KOBER, Georgetown University School of Medicine, Washington, D. C.: As a student of medical sociology, I desire to express my deep appreciation to the speakers of the morning. They have presented subjects of great interest and importance to all who have the welfare of the human race at heart. It was human sympathy on the part of men like Osler and Emerson which prompted them to emphasize the importance of the sociological and medical environmental work so necessary for the complete restoration of our handicapped convalescents.

I regret that no reference was made to the importance of convalescent homes because that is the crying need today all over the country. It is very essential that wage-earners of limited means recovering from acute diseases or operations may have an opportunity to recuperate without becoming a burden in the homes of their families. I was fortunate enough to induce a female medical friend to give our university hospital an endowment of \$60,000 for the care of convalescent women in order that they might be as fully restored

to health as possible before they take up the struggle for life in their families. These convalescent homes will also afford a splendid opportunity to carry on other reconstruction work in order to make the cures as complete as possible.

In regard to the second paper, I am very glad the subject has been presented in such an impressive manner because we all realize that the mental and criminal defectives are apparently on the increase. During the great stock taking of our young manhood, the Draft Boards out of 20,000,000 examined rejected 1,721,304 men for other than physical defects. That means, of course, that they were dealing with mental and moral defectives, the crude product of the former feeble-minded and delinquent boys, who sooner or later fill our asylums for the insane and penal institutions.

I took the pains to impress upon a U. S. Senate Committee a few years ago in speaking of the prevention of permanent disabilities in childhood that the place and the time to determine the destiny of these mental and moral defectives was during the school period; that they should be weeded out and placed in suitable environments and farm colonies, so that they might be made self-supporting instead of becoming a menace to themselves and to our families and to society at large and ultimately a source of greater expense to the State.

I have felt the need for greater care of our mental and nervous patients in the City of Washington by urging that the first unit to be erected for our City Hospital should be the Psychopathic Pavilion. This was completed two years ago and I have the greatest satisfaction of knowing that this Pavilion, with a capacity of 200 beds, is taking care of an average of 150 patients a day; we have returned more than 60 per cent of admissions to their families with the disease apparently arrested, though of course subject to recurrence. In connection with this hospital and other clinics we have established a Mental Dispensary so that they may be helped and heartened along as much as possible. At all events, it means a good deal that over 60 per cent of patients were spared from the commitment of a lunacy proceeding which in many instances actually results in a complete breakdown. There is every reason for emphasizing the importance of psychopathic wards as a most humane and satisfactory method of procedure.

As regards the paper presented on "The Teaching of Preventive Medicine," I feel that the future of preventive medicine is quite secure when it rests in the hands of such young blood as has been presented this morning. I entirely approve of the methods which have been suggested and particularly of the suggestion that the teaching should not devolve upon one chair but should be made more general in other departments. The weak point, as I see it today, is not so much with the teachers of the subject in the school as it is with the general practitioners. I doubt very much whether there is a

general interest in the profession in preventive medicine. When the etiology and prevention of disease is made the subject of discussion on the part of the clinical teachers we can hope for a deeper rooting in the student body and the development of a greater spirit of service to God and men. On the whole we can look hopefully to the future and have no occasion to regret the past, indeed we have much reason to feel proud of what has been achieved.

DR. HUGH CABOT, University of Michigan Medical School, Ann Arbor, Michigan: I want particularly to say that I think this is a very valuable symposium at this time, and to me the interesting part of it was that it ties itself together much more than the titles would have led me to expect. I think the striking thing here is that it shows the tendency in the minds of all of us to humanize the curriculum much more than it has been. I think the striking thing about the medical graduate of the last half generation, or perhaps generation, is that he is not particularly a human person; that a good deal of our teaching has been in the direction of dehumanizing; the porridge which we feed him, I think has been pretty cold in a good many instances. It seems to me that I see in this group of papers a very strong tendency to link up the human being with the earlier part of the curriculum.

I am particularly interested, myself, in the views of Dr. Charles Emerson in regard to what he expresses in the phrase "environmental medicine." I don't feel clear that we have been living up, of late years perhaps even before that, to the theory that we are turning out people who will be able to learn how to practice medicine. I think we do a good deal to prevent them from knowing how to practice medicine; we interest them in things which have a very remote connection with the practice of medicine and we don't, at least in their early medical training, interest them in human beings.

I have had a very strong feeling that as our curriculum is now planned, divided more or less into three parts, the premedical, the preclinical and the clinical, we are trying in the training of minds to do in the last two years what should require at least six years to do. I think the balance of the course has been out of true in that respect, and it seems to me that in these papers we see methods—and there must be many others—by which we can infiltrate the whole course with more interest in human beings, which seems to me to have been lacking.

DR MCKIM MARRIOTT, Washington University, St. Louis, Missouri: The papers of the morning have emphasized the importance of developing in the mind of the future practitioner an appreciation of the importance of the environment to the patient and of the importance of preventive medicine. The assumption is that the future practitioner is going to use this information for the education of the individual patients who will come to him. Usually they will

come to him only after disease has already been developed. He is expected then to individually instruct them, this is time consuming and therefore not likely to be done very thoroughly.

The workers of the type that Dr. Emerson mentioned, who go about the hospital wards with the classes of medical students, are also expected to go out and give individual instruction to patients. It seems to me that the question may be fairly asked, if more could not be accomplished if, instead some more general instruction were given which would give to a larger portion of the population an appreciation of the methods of preventive medicine. In other words, I wonder if it is not the function of a school of medicine connected with a university to offer courses not only to students of medicine but to other students in the university as well. In that way a larger proportion of the population would be reached and more good might be accomplished.

There is, of course, the feeling that a little knowledge is a dangerous thing for the layman. The layman already has a "little knowledge." It might be better to give him somewhat more knowledge and in that way make it less dangerous. In such a manner schools of medicine could still further extend their influence.

Dr. E. STANLEY RYERSON, Toronto: Professor Fitzgerald of the University of Toronto has asked me to present to the meeting a type of field work which was introduced at the University of Toronto last year in connection with the course in preventive medicine. After having received their course of didactic lectures and before they enter their final year, each student is required to put in from three to four weeks of the vacation period in actually observing public health work in its operation. I have here before me the timetable for that course and I will just briefly refer to the headings, to indicate how the student is enabled to actually observe public health work and not to receive it in a didactic fashion.

The course has two parts—one a laboratory course, to which I will refer later, and the other is the actual observation of public health work. For several days the student is taken to the various public schools in small groups, two or three students going to each public school with the doctor who is attending the children, and he observes for the morning the actual work of a doctor doing public health work in the schools. He is taken to one of the city dairies and sees the process of inspection as far as the dairy is concerned. He is taken out into the country and observes the inspection of milk and the inspection of a farm which is supplying the milk to that particular dairy. He is taken by the Inspector of Quarantine to the various quarantine activities throughout the city. He observes the food inspection. He is taken to the city filtration plant. He is taken to the sewage disposal plant. In the school classes again there are special classes in what is known as Sight Saving work. He is

instructed in industrial hygiene, and in the above ways he is enabled to actually observe public health work in all its various activities.

In the laboratory course he carries on the different laboratory measures connected with public health work himself. He prepares and sterilizes the various throat swabs and takes a swab of his neighbor in the class. That is followed through and he observes the cultures and the methods of straining and methods of preparation of the various plates which he makes, and he makes a study of the morphology in connection with diphtheria.

In the second exercise he carries on with that type of work and prepares a pure culture of the bacillus of diphtheria to be used for virulence tests; and also prepares the cowpox vaccine and vaccinates his neighbor; each man carries out the actual vaccination. Then he injects guinea-pig and rabbits with the culture of diphtheria and observes the reaction in them. He carries out the Dick test. He examines the animals injected with the cultures, to observe the different virulence of the organisms. He carries out the Schick test. Then on another day he has demonstration on the toxin antitoxin mixture and anatoxin. He observes a brief descriptive method of the preparation of antitoxin and observes the preparation of the outfits in connection with the preparation for the bacillus of tuberculosis. He takes the blood for and carries out the Wassermann reaction, and thus he gets an intensive laboratory course of about ten days on all the various laboratory methods in connection with Public Health Work.

This course is made feasible in Toronto as the result of the very close co-operation which exists between the university, the city health authorities, and the provincial health authorities, and in that way the university is enabled to carry out a practical course in which the student is doing the work, in which he is observing for himself and not receiving didactic instruction and having to have it poured into him. He is required to look out for the work himself and get what he can out of it, and obtain what is very difficult to obtain by the ordinary didactic method of teaching.

DR. N. P. COLWELL, American Medical Association, Chicago: I have listened to these four excellent papers this morning with a feeling of regret that a lot of folks who at present have adopted a fad of criticizing the medical curriculum were not here to listen to them. This reminds me of another fad of the present time, the cross word puzzle. As medical education has advanced new subjects deemed of importance have been thrown together more or less resembling printer's pi. As each subject is studied and its relationship with others is worked out, however, its proper place in the curriculum will be found just as each letter in the printer's pi when properly placed may form a well arranged cross word puzzle. Each subject in the curriculum, as shown by the last paper this morning, will soon



have its proper relationship with other subjects worked out whereby we will have developed a well arranged medical curriculum.

DR. STUART GRAVES, University of Louisville, Louisville: The remarks of Dr. Edsall and Dr. Cabot have encouraged me to give expression to some ideas that have been running through my mind as I have listened to these four papers. They present in a compact, co-ordinate form advanced thinking along some subjects which are extremely important. I find as I go home from these meetings that one of the great difficulties is to get the points of views across to the faculty. I wonder if it would be possible in advance of the publication of the transactions, which will come out some time later, to have these four papers and the discussion reproduced in pamphlet form so they could be distributed early to the schools for faculty meetings.

In many schools this problem of public health and preventive medicine and social medicine teaching becomes a considerable financial question. Right now we are trying to figure out where the next money that we can get can be better invested in a full time Professor of Obstetrics or a full time Professor of Preventive Medicine. One speaker made the point that, if it only could be put into the hands of all the teachers in the right light, without increase in the curriculum, we could increase the efficiency of this teaching to a very great extent. In that way we could perhaps justify the cost of furnishing these form papers in advance of the transactions.

DR. IRVING S. CUTTER, University of Nebraska, Omaha, Nebraska: I want to express my appreciation of the entire group of papers. May I add that no written paper by Dr. Emerson of Indiana could adequately express the tremendous humanizing element that he has thrown into medical teaching at the University of Indiana. It would require a personal visit to really get into one's consciousness the tremendous effects of his social service work upon the general morale of the students in the medical school. No greater example of the teaching of preventive medicine can be had than the observations made in the Social Service Department of the University of Indiana, and the work that Miss Henry has done there under Dr. Emerson deserves the widest possible study on the part of all teachers of medicine interested in medical sociology as well as preventive medicine.

DR. MANFRED CALL, Medical College of Virginia, Richmond: I wish to ask one question of Professor Barrett, and it is based on the paper that Chancellor Capen presented last year and a need I have seen in Richmond in connection with some special work of the social agencies where the doctor has no sociologic background. Dr. Cabot has referred to it in speaking today of the humanizing element, as well as the paper of Dr. Emerson, and what I wish to ask Professor Barrett is: With medical students having 60 hours or more premedical work, part of which is required with a special

premedical study, would he suggest as preliminary to that a better understanding of neuropsychiatry and the social problems that come up as soon as a man graduates?

DR. ALBERT M. BARRETT: Naturally the most suggestive line would be along the lines of psychology and sociology, but, as I have said, I think the psychology that is taught should be of a special kind from the viewpoints of the need as it would be found in the carrying out of a psychiatric course. Then I think courses in sociology have direct implication in the teaching. Then it has occurred to me, as one thinks of these subjects, as to the broadening of the teaching of these subjects in their close relation to philosophy and whether there might not be a practical premedical course, a familiarity with the medical human thought as it relates to the person and his evolution in relation to human thought. Those are the only three courses which seem to me to stand in very close relation with the development of neuropsychiatry.

DR CHAS R. STOCKARD, Cornell University Medical College, New York City: It seems to me in connection with education in preventive medicine, as Dr. Emerson has intimated, that medical men and those teaching medical students should have more interest in the control of human evolution or the future welfare of the human race. This at the present time is too largely in the hands of sentimentalist and fanatics. It seems to me, therefore, that we must go one step further back in preventive medicine to what might be called constructive medicine; that is, the possibility of producing a better physical individual. In stock raising or any division of agriculture all educated animal breeders know something about modern scientific genetics, but it is surprising how little about genetics and the rules of heredity and development medical men actually know and how little they seem to care. In looking at the situation from the standpoint of a practical illustration, if the automobile manufacturers of this country had proceeded along the lines that medical men have, we would not be very much ahead of where we were twenty-five years ago; but instead of specializing on the repair of automobiles and trying to fix old, broken down machines, the manufacturers have interested themselves rather in how to make a better automobile, so that the rattle-trap of 1900 has gotten to be the smooth-running noiseless machine of today.

As a morphologist, I feel that we have really a serious problem in preventive medicine which leads back, you might say, into constructive medicine, where medical men are to be trained for the direction of human evolution, and they should be the responsible ones. The people now interested in this job know little about medicine and little more about real human qualities. Many of these people are working largely on a fanatical basis to regulate behaviors, the consequence of which is often questionable.

Dr. Emerson's paper, which is one of the best I have heard in a very long time, brought the whole subject back just to the point of the importance of stock. No doubt he had that point in mind as well as others, but it seems to me that in anatomy, broadly speaking, there is the greatest opportunity for teaching the fundamentals of improving the human race and in that way laying a foundation in preventive medicine. Without the simultaneous production of an improved stock all preventive medicine has an element of danger, since it tends to preserve and introduce more weaklings as breeders in the population as a whole. Any stock breeder will recognize the danger of such a process to the quality of his stock.

DR. B. D. MYERS, Indiana University, Bloomington: In connection with Dr. Stockard's remarks, I would like to say that we had a bill before the legislature in Indiana this year providing for the sterilization of the socially inadequate individuals. Any of you who know anything about legislation know that you have to present a bill about two legislative meetings before you expect to get it across. But we believe that we are taking a real forward step toward meeting this great problem of prevention, particularly among the mental defectives, in the formulation of this bill. It differs from the one that was passed and was operative in Indiana for a period of five or six years about fifteen years ago, in that the punitive character of the bill is dropped. The old bill was declared unconstitutional because it applied only to inmates of the reformatory. It was declared then a peculiar type of punishment that applied only to a certain class and was, therefore, unconstitutional. The new bill is so framed as to avoid that objection, and I am very confident (it passed the Senate this time but was defeated in the House) that it will be written into our laws within the next four years.

DR HAVEN EMERSON: In commenting on Dr. Edsall's remarks, I wish to support his opinion that one of the chief functions of a department of Preventive Medicine in a medical school is to assemble information which will be useful for other departments to include or incorporate in their teaching as a contribution to prevention, while they are dealing chiefly with diagnosis and treatment of disease. I am convinced that the departments of physiology and anatomy are those where the fundamentals of preventive medicine may be most thoroughly and effectively presented. Although the opportunities for dramatic application of prevention will occur commonly in the hands of the clinician, students most have it made clear to them that in anatomy and physiology they may learn the principles by which they can influence human development and growth and in the main the manner of life. The department of preventive medicine is really more of an instrument for other teachers than an encyclopedia of new facts for students to learn; it should not be used simply to add a new volume of medical knowledge, but to serve as a point of

collection and distribution of well established facts which rarely come into the consciousness of those who are teaching diagnosis and treatment of disease.

## CORRELATION IN THE CURRICULUM

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Dating from what may be termed the renaissance of American medical education when, some fifty years ago, Harvard (1871), through Bowditch, infused it with the scientific spirit, we find the history of this subject replete with excellent contributions by eminent educators. Therefore today it is with justifiable diffidence that one accepts the responsibility of addressing the well informed members of this association.

However, as a fact of common knowledge, the present is a transitional or, perhaps more accurately, an experimental period throughout the entire domain of education. The older order has been called before the bar of "modern thought" and is being forced to defend itself, for a large part, against consignment to oblivion. And, as seems to be inevitable whenever the steam-roller of reformation gets underway, much of the fundamentally sound as well as the admittedly weak is crushed in the dust.

In facing the present status of the medical phase of education, one sees an outstanding fact, namely, that as concerns not only the curriculum proper, but also its preliminary foundation, there does not exist common agreement on what constitutes the logical course of training. So, even at the risk of incurring the criticism, "theoretical," perhaps the presence here of any of us is defensible, if on no other ground except that while assuming, as it were, the role of advocatus diaboli he endeavors to contribute his mite to the canonization of that system alone which is based on principles that are true.

The present system of medical education is unsound; hence, and as a fact of experience, its product is inadequate; therefore it fails fully to meet the responsibility entrusted to it. This proposition is presented with perfect cognizance of the truism

that, to criticize is one thing; to achieve, quite another. And yet, for progress in any phase of human activity, is not frank criticism, with its resultant interchange of opinions, a most potent factor?

In discussing the subject on the basis of principle, one is mindful of the numerous obstacles that beset the path of authorities. From observations, interviews and a quite extensive perusal of the literature there has been gleaned wide divergence of views, views varying from the extreme which emphasizes the practical to that which stresses the ideal: from the opinion that the important need in medical education today is a business course in the curriculum, to that requiring natural aptitude of the student, a sound foundation with its college course complete, the medical school pervaded by the truly scientific spirit with guidance throughout by the principle of integration, and the faculty fully fitted for its functions of teaching and research. In contemplating this, the ideal standard, in the light of the distant past, we are reminded that in essence it embodies nothing that is new; for, to quote in substance the dicta of Hippocrates: "natural aptitude is the fertile soil, suitable instruction is the seed, the school is the nourishing atmosphere, and adequate time is that essential which imparts strength to all things and brings them to maturity."

Heeded, also, are the following familiar sources of objection: The present impracticability of influencing elementary and high-school education, the problem of the rural physician, the supply of interns, the late age of the graduate, the imperative economy of a large number of students, the limits of many institutions' resources; and, final'y, a quite predominant trait of human nature to believe what one wishes to believe, to hold as the truth that alone which is supportive of his own circumstances, thus disregarding an impersonal standard of right. Parenthetically, the present day has been pronounced one in which "principle is discarded for expediency."

Obviously of fundamental relationship to our subject is education beginning with the elementary and extending throughout all grades up to the medical school; for is not the standard of that system the essential source from which the medical standard flows?

Education has been defined and discussed, in substance, as

follows: "It is the leading out, the development and training of all the human powers and faculties in coordination to a definite end. The intellect and will are man's dominant and guiding powers, memory the faculty which links his past and present, the bond of his continuing life. The object of the intellect is *truth*, not mere fragments of knowledge crammed statistically and dataistically into it, for knowledge is of no value unless it lead to understanding or wisdom. The object of the will is *good*, and the will must be trained and disciplined to its achievement. Therefore, to lead out, develop and train these, intellect, will and memory—this is education."

American education has been criticized both at home and abroad. All are familiar with the remark attributed to a noted visitor to our shores, that we are "the greatest little half-educated people in the world;" and the comment on this, by the president of one of our greatest universities, that "the proportion is too high." Some of the many criticisms at home: "We are teaching on a scale that exceeds anything previously attempted, but we do not know what we are teaching. We have abolished the old order of classical education, thrown it bodily out of our schools and colleges. Now we are trying to replace it, but have nothing to put in its place. The period of transition from the classical to the present-day system has left education in a chaotic state. We are teaching, but teaching incoherently." "The striking characteristic of our schools under the process of enrichment of the curriculum is superficiality, coupled with tremendously rising cost." The system "lacks and has lacked the simplicity and thoroughness which are essential to real scholarship. For us the motto seems to have been *multa non multum*," or a little bit of many things without much of anything. The system "stands for the protraction of studies over too long a period of years, the useless repetition of subject matter, and the crowding of the curricula." "Without doubt four years can be dropped out of this program (sixteen years of preparatory study) with advantage to the cause of education and to the interests of the people and of their children. . . . The beginnings of education lie in the sincere learning of a few things rather than in the superficial acquaintance with many." "The immediate question is, what is the trouble with education in this country? The answer is

simply: it does not educate. It does not educate because it has been torn up by the roots." "Havoc" has been played with modern education by the "cutting away from the past, which involves repudiation of human continuity, the reflection of the wisdom of the centuries, and the attempt to build the future on the vagaries of pseudo-science, that dogmatizes in unproved speculation. . . . We are the heirs of the ages and stand on the shoulders of the past generations. To attempt to kick the past from under our feet is to try to suspend ourselves in the void."

It may not be denied that sound education is a stone essential to the foundation of life's more responsible activities. From the secular viewpoint health is the most important factor of life. On the well-being of health, mental and physical, largely depend man's happiness and success. The aim of the study, investigation and application of the medical sciences and arts is the prevention, the alleviation or cure of disease; prevention, logically, having the first place. In a word, the ultimate goal of medicine is "mens sana in corpore sano," a goal which involves not only the welfare of the individual, but also that of the nation; for is it not on the mental and physical health of its integral parts, its citizens, that the solidarity of the country itself depends? Again, it is held that medicine presents problems, the solution of which is more difficult than those of any other field of science; and, as has been written, to strive altruistically towards its goal is "the highest form of human service." Therefore, in the light of responsibilities, is it conceivable that sound education is less necessary in the foundation of the medical activity than in that of any other? Rather, above all others, does not the domain of medicine demand education that shall "lead out, develop and train all the human powers and faculties in coordination to a definite end?"

But, the course of the medical student has been traced somewhat as follows: He is trained in elementary schools where the classes are too big to educate properly; many in a class are unfit, therefore, standards have to be lowered to the average ability of students who should not be in the class at all; the young brain is filled, during the emotional period of life, with undigested and unrelated knowledge; then entering the high school the youth spends four years in doing what readily could be done in much less time, and here unprepares himself for college by extra-scholastic



distractions and in pursuing the course of least resistance; and, whereas throughout this preliminary period the student may have accumulated a considerable mass of factual material, he hasn't the least idea of what the rudiments of the various sciences mean in relation to the entire body of science or in cultural progress; in a word, he has no knowledge whatever of the principle of integration. But, with his fifteen units of high-school credits as his credentials, he presents himself to the college registrar and is admitted to the pre-medical course. Here, as a rule, he spends a brief two-year period, in which, besides a certain number of required subjects, he has entire freedom in the choice of electives to make up the total number of hours, with, as one writer remarks, "the emphasis being on the hours and not on the subject-matter." On entering the medical school the student experiences a considerable wrench. His previous incoordinated training had not sufficiently taught him to anticipate the work of the medical curriculum. Now, for practically two years, he is occupied with the medical fundamentals, these being studied largely in a dissociated manner, as concerns not only the clinical superstructure, but also each other. So, at the beginning of the third year there is another wrench, this perhaps even more marked than the former. During this year the student's time is occupied mostly with the study and application of numerous phases of the clinical. Commonly his life is over-crowded; he rushes from course to course, tries to cover the subject-matter of all, but with the inevitable result that none is well assimilated. He has little or no time to think, or to practise what he has been taught, hence necessarily the striking characteristic of the product is the superficial. The fourth year is soon passed and the student now presented for graduation. A general test at this point, the test that alone is the true criterion by which he correctly may be judged, must only too frequently reveal the fact that his powers and faculties have not adequately been "led out, developed and trained," and that his knowledge of medicine is indefinite, fragmentary, incoordinated. A teacher of much experience in these times frequently must have felt regret while witnessing some naturally good minds go on and out into the field of medical practice, there perhaps to do fairly well, but never to reach those heights of service to which they could have attained had they

been educated from the outset under the guidance of principles that are true.

Seemingly apropos at this point is the following quotation from the writings of one of America's ablest educators: "There is only one way to better the quality of education. . . . That is, to adopt a concept of the elementary school, of the high school, and of the college that shall offer courses of study founded on the principle that whatever variation of courses may be offered it shall always be understood that the fundamental things shall be thoroughly mastered."

If one may, with apologies to the author, attempt to paraphrase that evidently sound statement: There is only one way to better the quality of medical education, and that is, to adopt a comprehensive concept of it that shall offer courses of study founded on the principle that, whatever variation of courses may be offered, it shall always be understood that what is essential to the preparatory foundation and, in the medical school, the fundamentals and the main branches of the clinical shall thoroughly be mastered.

The main futures of the product of medical education are practice, teaching and investigation. The field of practice involves not only the alleviation and cure of disease, mental and physical, but also prevention and the uplifting of the regular practice of medicine in the mind of the public. Obviously the service of the practitioner necessitates most intimate contact with not only the body, but also the mind, and even the very soul of the patient; he is admitted to the sanctum sanctorum of the family; his functions and influence are of basic importance to the interests of the community. The sick person embodies the fundamental sciences of biophysics, biochemistry, biomechanics and the biopsychic, some one or more of which is in an abnormal state. Here then, the practitioner's duties impose the responsibility of knowledge of the science and skill in the art of diagnosis, and of treatment, be it the physical, the chemical, the mechanical or the psychic that is indicated. It is considerably due to a lack of this comprehensive viewpoint in the development and application of the sciences and arts of medicine that various irregular therapeutic practices have arisen, practices which present a serious problem both for the public and the profession.

Through investigation diseases are disappearing. As has been stated, the things that make people die are to a large extent avoidable, and public knowledge has and will cut down the death rate. So, knowledge of medical truth on the part of the public is a sine qua non for due progress in the prevention of disease. But, in order to ensure such knowledge the aid of the highly trained physician is needed, the physician that, by his learning, culture and altruism, will attract the respect and confidence of the people. And the same is equally true as concerns due regard for the regular practice of medicine.

Assuming, then, as warranted the criticisms of our country's education; assuming the depicted training of youth as even approximating the fact; assuming, further, what may not be denied, that in no activity of life is true education more necessary than in that of medicine, is it to be wondered at when a recent writer states: "One need not travel far nor search long for evidence that the product of the present-day medical school is being found wanting;" and is it not the duty of the medical profession to take an active interest in the general educational system of the land, to the end that its own ranks throughout shall be characterized by the professional man that is genuine, one who views prevention of disease as his first duty and the highest form of service, who, when entrusted with the care of the sick, is capable in the light of the various factors involved, and who in the community is an exemplar of the truly educated citizen. In the words of a distinguished educator: "Develop first the man, the citizen, then the professional. He alone is the professional man; anything else is a professional nobody."

At the Omaha meeting one of the delegates was overheard to say: "If I could only find a student who could describe that chair in good English!" Quoting one of the country's foremost educators: "Rarely can one find an American boy or girl, even among the graduates of the high school or college, who knows his own language as the English boy, trained in the somewhat narrow classical conception, knows the language. And rarely do we find an American youth who knows his science or language in the way a German boy is master of these subjects." It seems safe to state that all have noted this deficiency in a high number of students. Therefore, that a thorough course in English should be

required in the foundation of medical education, is to be admitted. Noteworthy on this point is the fact that abroad considerable stress is made on the classics; and do not reason and experience teach us that such study is basic for the correct understanding of many languages, including our own?

Despite the fact that the nomenclature in the medical curriculum is almost wholly Latin and Greek derived, both of these languages are not required premedical subjects, and, as a result, the medical student is retarded in his progress and lacks clarity in the understanding of his studies. While medical nomenclature remains as it is, does it not appear to be logical that at least the etymology of both Latin and Greek words should be a fundamental requirement in medical education? There are those who strongly maintain that these two languages should be required also from the cultural standpoint.

Further, as a stimulus to wider reference, as well as a factor of culture, should not the foundation firmly be laid in at least two of the modern languages, namely those that are sources of most information on scientific medical work? As an introduction to medicine, to arouse the student's interest, and to help mould his mind, should not the history of medicine, particularly the lives of the master investigators and clinicians, be required in preparation for the courses of the medical curriculum?

More and more it is becoming recognized that the future of the medical product, be this in practice, teaching or research, requires a sound knowledge of philosophy, especially of the related branches, logic, ethics and psychology. Logic is the science of exact reasoning. It is one thing to observe facts, but quite another thing to get the true meaning out of these facts; and, yet, in the absence of their true meaning, observed facts are of little scientific worth. As experience well teaches, different deductions may be made from one and the same group of facts, but, for the ensuring of deductions that are correct, logical reasoning is imperative. Obviously such reasoning requires exact knowledge of the true principles of logic, and this can be acquired only through proper and guided study. A careful scientific student has said that if one would be a true scientist he must go to school to the philosopher, for logic is nothing more or less than philosophy. If one question this statement, a positive conviction of its truth

would be compelled by actual experience in the philosophical classroom. In other words, "logic" without guided training in the science, a species commonly met, is very apt to lead into erroneous paths, which may prove to be dangerous. A frequent complaint of medical educators today, a complaint in truth well founded, is that the students "do not think—do not reason." Unfortunately this is not surprising, for, apart from the crowded curriculum, their previous education had not conduced to thinking, reasoning. Therefore, is it not evident that a thorough course in the science of logic is decidedly germane to the application, teaching and investigation of the medical sciences?

Ethics has been defined as the science of correct human conduct. A philosopher has said: "Man is what he is through his will." To repeat a definition quoted above: "The object of the will is good, and the will must be trained and disciplined to its achievement." Because of his profoundly important and peculiar relations with the individual, the family and society, may it be questioned that the product of medical education should have received a true training in this subject? Were the science of ethics generally required and properly taught, there would be more of altruism and less of egoism, more of truth and less of the destructive vagaries which today seem to prevail. In view of the progress already made in the science of psychology, normal and abnormal, the physician of the future, who is not abreast of this subject, will go, as in the past, far astray in the management of his patients. Psychology, here used in the comprehensive sense, promises to be a field of fundamental importance not only to the medical world, but also wherever the interests of man are involved

The premedical requirements of physics, chemistry and biology are, of course, taken for granted. As has been written, "the fundamental conceptions of matter and force have scarcely made themselves felt in medicine, hence the need of "master minds" in this regard. In the light of the manifestations of forces witnessed in our day, does it appear to be speculating far afield to say that the future of medicine may see laws of physics and chemistry applied in ways hitherto unthought of?

The tendency of the present is the earlier contact of the student with the patient, even during the first year. In principle this seems to be right, especially if not done at the sacrifice of the

essential foundation. Obviously, clinical signs and symptoms are but the manifestations of pathologic processes affecting structure or function, commonly both. But only too often do we see students endeavoring to interpret these manifestations (to paraphrase an expression) on an organism of whose anatomy and physiology they know little and of whose pathologic processes they know less. Daily experience in the present system proves the necessity of repeating the fundamentals in the light of their clinical application. Some hold that these sciences should be studied in the medical school only as applied. But, with the futures of the product of medical education before the mind, and in view of the present-day emphasis on the need of the scientific and investigative spirit, should the inestimable benefits of training in the fundamentals as pure sciences be sacrificed? "Heretical" surely, at this time, would be the suggestion to set back such studies into the period of the premedical; but, to say the least, this policy would serve the double purpose of, on the one hand, retaining the effects of these studies; and, on the other hand, leaving to the medical period proper the constant correlation of the fundamentals with the clinical.

What centuries ago was held as true, and in rather recent times has been revived and become a common theme in conventions, is the principle of correlation. Coleridge (1772-1834) "insisted upon the interrelation of all knowledge, and invented the term *esemplastic* to describe it." Dante wrote: "'All things have order between them,' and he declares that in this order lies the 'form' which makes the universe like to God and in which angels see the impress of His power. And the same thought guides his master, Thomas Aquinas." In 1919, Sir Clifford Allbutt, in the president's address before the British Medical Association, said: "As the individual is but a link in the chain, so the human chain is a strand in the web of all living things." In an article appearing this year, Kimball Young very ably discusses the "need of integration of attitudes among scientists." So, on this subject much has been written and said, but it would seem that, generally speaking, little has been done. For its achievement, at least three main factors are postulated, namely: institutional viewpoint, a supported coordinator and a cooperative personnel.

At Marquette, during the past seven or eight years we have

been endeavoring to apply the coordinating principle. A fulltime man was appointed to organize and direct a department of surgical laboratories. Beginning in a little way, gradually the plan has been developed, until now, while far from perfection in details, yet to some competent observers it has appeared as a progressive step. Its work has been termed fundamēto-clinical and is limited mainly to the junior year. The course includes the following: surgical anatomy, surgical pathology, the principles of surgery, the principles of operative surgery, and surgical diseases. *Surgical anatomy* is studied mainly by dissection, with its clinical application constantly emphasized, and emergent operations, such as every physician should be prepared to meet, are demonstrated and practised. The student is urged to orientate himself on the living subject. In *surgical pathology* the student learns and practises the technique of the freezing method, examines fresh and fixed tissue, and studies several of the principal pathological conditions. Here the work of the "principles of surgery" is supplemented, and the laboratory is conducted also in connection with the "principles of operative surgery." The study of the *principles of surgery* is begun with the repair of soft tissue and bone as a basis. From this are developed skin grafting and transplantation, bone transplantation, and the principles of fractures, to which dislocations are added. These are followed by a study of inflammation and the other diseases usually treated in text books under the caption of surgical principles. The *principles of operative surgery* are studied on the living animal (dog). In technique and discipline, the laboratory is conducted, as far as is practicable, like the operating room of the hospital. Each team consists of: operator, assistant, nurse, anesthetist, general nurse, and pathologist. The chief aim is practice in the administration of anesthetics, asepsis, incision, hemostasis and suturing. Stress is placed only on emergent operations. As stated above, the pathological laboratory is conducted in connection with this work. Besides what has been described, the plan of study includes: lectures, assigned literature, recitations, lantern demonstrations, charts and models. For the study of fractures and dislocations, a special model is used, and a recent addition is the beginning of an equipment with various fracture appliances. The students are supplied with the "outline of the treatment of fractures," the syllabus adopted at the Boston

conference, April, 1922. Emphasis is placed on the anatomy, physiology and pathology of fractures, with the object of stimulating the student to "reason" on the subject, endeavoring thereby to ensure in his later practice an intelligent management of his patient as regards massage, mobilization, appliances and whatever other factor may be involved. *Surgical diseases* are studied, according to regions, under a team of six surgeons, with emphasis placed on pathology and diagnosis. During the study of any subject the work of one or more of the other subjects may be discussed and the student questioned on it, and in this way correlation is maintained. The work of the surgical laboratories is supplemented clinically in the dispensary and the hospitals. Throughout the entire course the needs of the general practitioner are kept foremost in mind.

A word on our methods of teaching. Should not the usual method of studying anatomy be supplemented by a strictly supervised, required course on the living subject, a course for which the students themselves could supply ample material? As an example of the need of such a course, holding an upper extremity before students about to be graduated, how many of them would be able to orientate themselves on the various structures and explain the different functions? And, yet, such knowledge is necessary for the physician in his practice. Again, should not more of the physiology of the human being be studied as the logical supplement of the usual course in this subject; and should not stress be made on pathological physiology? Further, whereas the student has a fair opportunity to study "dead" pathology, there is a paucity of experience in "living" pathology, for which operative clinics could far more consistently be used than in demonstrating technique.

As concerns clinical teaching, as a rule, for training in physical diagnosis the student is directly introduced to the patient where, commonly indeed, he handles himself unintelligently and in a clumsy manner. Is it not logical to have a required course in physical diagnosis on the normal, the principle to be applied to medicine, surgery and the specialities? Should not such a course not only serve to teach the student by contrast—the normal with the abnormal, but also be an effective means of developing skill in the art of physical examination?? Here again abundant material



could be furnished by the students themselves. In a word, in both the fundamental and clinical courses, are we squarely facing the facts in the light of the end?

As has been written, never before in the history of our country has the responsibility on American medicine been greater, nor has there been such an opportunity for it. Shall the responsibility be met and the opportunity seized; or shall our country, with its preeminent position in the political and commercial world in its resources practically unlimited, stand behind other nations in this, the greatest of all human activities: the development and application of the sciences and arts of medicine for the wellbeing of mankind? The obvious answer: education guided by principles that are true.

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## TEACHING OF OBSTETRICS.

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The title of this paper would suggest a comprehensive discussion of the whole subject of obstetric teaching, a much larger field than my allotment of time would permit me to cover. My intention was to discuss only that part of obstetric teaching related to the work done in the dispensary and outdoor clinic. Because of a change by Dr. Zapffe in the suggested title of my paper, I shall take advantage of the opportunity to discuss first, for a few minutes, the time allotted to obstetric teaching in the present curriculum.

For the general practitioner, the practice of medicine may be divided roughly as follows:

Medicine, 50 per cent or more; obstetrics, probably 25 to 35 per cent, the remainder of his time being divided among minor surgery, minor and useless gynecology, life insurance examinations and a few other special cases. I have questioned a considerable number of general practitioners while considering this paper and the above figures seem borne out by their experience.

Unless these percentages are wide of the facts, it might be pertinent to inquire why, in all the curricula published by member schools of this Association, and in all those modern and model curricula recommended, from time to time, by various committees of this Association in their attempts to reach a reasonable distribution of the students' time, in an ideal medical course, obstetrics, which occupies at least 30 per cent. of the time of the general practitioner, and represents a still greater percentage of his professional care and anxiety, should be allowed 4 per cent. of the total time allotted for a medical course, while surgery, which occupies much less than 10 per cent. of a practitioner's time, is given from 15 to 18 per cent. of the hours allotted to the course?

In my opinion, this distribution cannot be defended from any standpoint. It cannot be defended on the basis of the average practitioner's division of his time. It cannot be defended when one remembers that, in every obstetrical case, two patients are to be considered, both of them important, one of them representing the most important class of a physician's clientele—the wives and mothers of the community. Let it be remembered that twenty-five thousand women die annually in this country in childbirth; that countless thousands of others suffer such damage as to render life thereafter a long-drawn weariness; and that thousands of children are sacrificed or so badly crippled in mind or body that they become burdens to their families or to the state. Moreover, when one pauses to consider the emergencies encountered in the practice of obstetrics, as compared with those met with in other branches of medicine, the present status seems still less defensible. Is there any greater surgical emergency than one meets in a serious postpartum hemorrhage? Or a bleeding placenta praevia centralis? Or a premature separation of a normally implanted placenta? What medical or surgical procedure requires better judgment than the ability to decide when the proper time has come for forceps, or the treatment of a prolapsed cord, or the best method to pursue in an eclampsia in a primiparous woman not in labor, or the handling of an undelivered case, after a long trial of labor, with an exhausted mother, an unengaged head, and a living child? Where else is greater tactfulness combined with force of character required that to successfully cope with a case of neurotic vomiting of an aggravated type? Is there any other time in a physician's life when he so urgently needs the confidence of his clientele as when he must explain the delivery of a dead child in a case which, apparently, was proceeding satisfactorily? Can any greater tragedy be imagined than the sudden death, in childbirth, of the mother of a family who, only a few days or even a few hours before, seemed in good health.

The professional crises which I have been enumerating occur in the practice of every practitioner. To our sorrow, we know also that many of these emergencies might be avoided if sufficiently intelligent care were exercised during the prenatal period, the labor, and the puerperium. Such can be secured only by the employment of well trained physicians. Well trained physicians

cannot be produced, so far as obstetrics is concerned, while the medical student is preparing for phases of practice which he, as a general practitioner, will seldom meet, and being made to hurry through instruction which he badly needs. At present, we are emphasizing branches of study for which the practitioner will find infrequent occasion, and we are slighting that branch which, in his practice, will consume much of his time, and, incidentally, provide a substantial portion of his income. Not only are we devoting too small a proportion of our time to the teaching of obstetrics, but we are suggesting another step in the wrong direction; i. e. placing all required obstetrics in the third year. Two years are few enough to devote to the teaching of this most important branch. In this connection, some opinions which I have chosen from among many expressed in the report of the Committee on Maternal Welfare of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at their meeting in September, 1924, are interesting. I give only a few:

"The replies to the weak points in the teaching in our medical schools left no doubt as to the conviction on the part of many, that the presentation of this subject (obstetrics) in the curriculum is too limited in its scope and too much subordinated to other branches."

"The greatest fault in the teaching of obstetrics today is the lack of sufficient clinical drill in practical delivery and follow-up of patients under first-class instructors."

"The ordinary student does not see enough obstetrics to impress proper procedures upon him."

"This situation will not improve until obstetrics assumes a more important place in our medical curriculum," etc., etc.

It may not be feasible for each student to do operative obstetrics, but, if time enough is allowed, we may emphasize and reiterate those operative procedures which the general practitioner must use.

To be specific: It is my opinion that didactic instruction in obstetrics in the third year should consist of at least three hours per week throughout the year. This might be made to cover a review of the anatomy and physiology concerned, with normal pregnancy, labor and the puerperium, together with such part of operative obstetrics as can properly be taught by didactic methods.

This will not be true, however, unless the teaching of the mechanism of labor, version, breath extraction, craniotomy, and other operative procedures be omitted entirely from these lectures. These operative manipulations, if they are to be taught with any degree of success, must be taught to small classes by the use of the manikin.

To teach manikin work in operative obstetrics, and to give each student an adequate knowledge of proper methods of diagnosis by a combined use of manikin and waiting patient; and in addition, such instruction in history writing as will enable him to fit the history of a given patient to her present physical condition and the obstetrical possibilities of her coming labor, takes much time. At the very least, thirty hours of the student's time is required for this work. In addition, during the last half of the year, the third year student should be required to attend the clinical lectures given to the fourth year class.

The above outline would require about 135 hours in the third year, and would not include time for the few labor cases the third year student should be required to see but not deliver. In the fourth year there should be one clinical lecture each week throughout the year. This clinic should not consist of operative deliveries, though a few cases operated on before the class might stimulate interest, but should embrace the presentation of all the clinical work of the hospital in such a manner that the manikin and didactic work which has preceded it may be emphasized and visualized. During the fourth year, there should be group work in physical examination in the wards and dispensary. The manikin work of the third year should be reviewed and elaborated, and as many cases as are required should be delivered. Whenever possible, groups of students should see operative deliveries. In the usual large clinic each student, during the course, might see several such deliveries.

The greatest possible use—always without detriment to the patient, should be made of unusual cases. It is our own practice, in addition to the above, to require short theses on hemorrhage, on toxemias of pregnancy, on infection, on contracted pelvis, or any other of the important conditions discussed in the clinics. After two or three attempts at such writing, the student usually begins to show ability to express himself intelligently, to arrange his facts

in an orderly manner, and to concentrate on and emphasize important matters, in contradistinction to minor and unimportant things, which is very gratifying and which well repays a instructor for the extra labor involved in reading and correcting these theses. Time spent in delivery of cases and in theses writing is in addition to the regularly scheduled work. It is my opinion that to devote less than 15 per cent. of the time of the last two years, ( $2\frac{1}{2}$  per cent of the total teaching time) to absteric teaching is to make a monumental mistake in the allotment of time to this most important subject.

I wish, now, for a few minutes, to discuss the use of an outdoor clinic as an aid to obstetric teaching. In using the term "aid," I am not really expressing my actual estimate, for, I really feel that such a clinic should be considered an essential feature of the course. I think it will be admitted, in spite of the halo that is beginning to surround the head of the fulltime teacher in his university hospital atmosphere, that the chief function of the average medical school is, and for a long time will be, the training of men who must, of necessity, see and treat patients either in their offices or in the homes of their patients. If this be true, it follows that the training which will most satisfactorily qualify a physician for this practice is that which most closely approximates the conditions he will meet in practice. It is, of course, quite true that not all medical instruction can be carried on in homes, though I have heard it suggested at a recent meeting of this association by a most distinguished surgeon, that a partial return to this method might be of great benefit. Conditions are not parallel in the teaching of all branches of medicine. The teaching, for instance, in surgery and in gynecology is largely for the purpose of diagnosis, not treatment. Amputations, thyroidectomies, herniotomies, appendectomies, hysterectomies, or even operations of much less importance, are not expected of the general practitioner. He is expected to confine himself, unless after special postgraduate training, to only minor surgery; and he is not expected to do anything more than make a diagnosis in gynecology. In obstetrics, he must not only make diagnoses, but he must actively treat his cases, and this treatment frequently requires the exhibition of skill and judgment of the highest degree.

There is no great lack of similarity as to the bed on which a

patient is examined, whether in the hospital or in a home, in a case of pneumonia or of appendicitis; and no difficulty is encountered in preparing the chest or abdomen which is to be examined. Kitchen table and hospital accident room table are sufficiently alike so that a fracture may be reduced and immobilized as easily and readily on the one as on the other. Even simple laboratory tests may be done as satisfactorily in the home as in the hospital, if the physician is willing to provide himself with the means. Most of the commoner methods of diagnosis and treatment, in medical and surgical cases may be taught in the hospital and college and practiced in the home without detriment to the patient. This, however, is not so true of obstetrics. For example, take the description in any standard textbook of obstetrics of the preparation of a woman for delivery; or watch the preparation as it is done in any good hospital. When a student delivers a woman in the hospital, he delivers her under the watchful eye of a supervisor, after she has been carefully scrubbed and draped, on a carefully draped bed, and himself hooded, masked, scrubbed, gowned and gloved, also under supervision. He is working in a nearly fool-proof environment. He has beside him at all times somebody to take charge of the situation in case of an emergency. No real responsibility rests on him. He has no social relation to his patient as a patient. She is a case, a laboratory experiment, a problem, or a task. Not to break his technic, and to see that his case is properly recorded and reported so that his credits may be assured, are often the matters of greatest concern to him. While waiting for the patient to be delivered, before the time comes to prepare her, the student goes and comes according to the instruction or advice of some supervisor. How different is the situation in the conduct of the outside case! Such supervision as is possible is, at least, relatively remote. The case is apt to be one that the student has seen in the dispensary, and has been in contact with during her pregnancy. He must have personally investigated her history, her environment, and her physical condition and has taken part in her prenatal care. He is called to see her in her home when she goes into labor just as if he were her family physician, which, for the moment, he really is. He has other work to do while she is in her preliminary stages, just as, in after life, there will be other cases which he must not

neglect. He must estimate the character and efficiency of the "pains" in order that his patient may not be delivered in his absence. He must note any unusual or untoward circumstances; and, so far as he is allowed or required, must be prepared to meet them. He must see that as good an environment as he can prepare is provided. He it is who is responsible for unfavorable conditions or symptoms which he does not recognize or report. In other words, he bears toward such a patient almost the same relation that he must sustain in later life to his own patients.

In order that he may make correct daily reports on his case, he must secure first hand knowledge of the conditions present during the puerperium. Whether she is properly nursed, whether the baby is able to take the breast or gains or loses in weight, the condition of the breasts, constipation, temperature, the healing of a torn perineum, are all matters of his immediate concern. He does not get his information from a chart made out by the nurse or the interne. Even in those clinics so favored that plenty of financial help makes a thorough supervision possible, thereby reducing somewhat the responsibility of the student, he is still the direct and responsible agent of his superior. Because of its remoteness from the center of teaching activity, the case introduces him to a new relation to society, which relation is to continue as long as he practices medicine.

In addition to his relation to a particular patient, there is another angle to the situation equally helpful. He is constantly presented in the clinical lectures to the contrast between cases intelligently supervised and delivered and those neglected and unskillfully treated cases which are so steadily referred to our hospitals. On the one hand, he sees his own cases which have been carefully watched during the prenatal period, and carefully examined to exclude all possible complications in labor, come up to their confinement free from toxemia or any other trouble, and go through delivery and puerperium without difficulty; or he sees cases which, on account of careful prenatal study, have been hospitalized and skillfully treated through a difficult labor to the advantage of both mother and child. On the other hand, he sees patients with toxemias, with infections, with hemorrhages, or with contracted pelves brought to the hospital in all stages of neglect or badly damaged by unskillful treatment. He soon learns that the



ignorance and indifference which allows a man to neglect a woman prenatally will prompt him to attempt a delivery for which he is not qualified; thereby adding additional damage, by operative inefficiency, to that caused by neglect. Such contrast must, at least, be stimulating to the student, and no where in his medical course is this contrast between good and bad practice so evident.

We have heard it contended in these meetings that one hospital case well supervised is worth three dispensary or outdoor cases. This is true so far as lending itself to the teaching of diagnostic methods or therapeutics principles is concerned; but one outdoor case is worth three, or even ten, hospital cases in teaching the medical student sociology in a practical way, and in inculcating and deepening his sense of responsibility toward society, without which a physician becomes a mere ambulatory prescription pad.

There is still another aspect of the matter which, while it does not bear so directly on the teaching of the medical student, does directly concern the university authorities. If the function of a university is to help lift the social body a little nearer to that level of culture or consciousness where men "begin to think and care," then in no department of university work can the benefits of a direct relation to a portion of the community be better shown than in the department of obstetrics through its outdoor work.

The obstetric clinic at the University of Maryland is conducted from the University Hospital, situated in one of the most congested districts of a large city. The only money at our disposal is about seven thousand dollars granted by the city of Baltimore, the University of Maryland furnishing supervision, dispensary space, heat and light. Our dispensary reports approximately six thousand visits each year. We deliver annually from 800 to 900 women in their homes, besides confining about 300 in the hospital, many of the latter being seen in the dispensary and cared for in their homes, until, for one reason or another, they are considered proper subjects for hospitalization; the remainder consisting of those emergency cases common to most lying-in hospitals. On account of our limited income, we cannot give much publicity to the work, nor use propaganda such as is frequently and wisely employed in this sort of service to the community. Our social serv-

ice is, for the same reason, reduced to a minimum. The work of the clinic is its only advertisement. In spite of this, the clinic has been overwhelmed with work. We take them as they come; some early, some late.

For the sake of securing early registration, we pretend to be responsible only for those cases registered in the dispensary. In reality, we refuse no case which needs immediate care. The population of the neighborhood consists of Negroes, very poor native whites, Lithuanians, Polish and Russian Jews and Italians. Until within recent years, it had been a fixed belief of mine that intelligent co-operation in the supervision of pregnant women could be obtained only from those in a higher social class. We now find that such is not the case. Relatively few of these poor people fail to give intelligent co-operation.

The percentage of dispensary patients who must be watched, in order to insure report at the right time, is not appreciably larger than among private patients as the following examples may indicate: From Jan. 1, 1922, to Dec. 31, 1924, a period of three years, there were delivered in our clinic 3,156 women, 2,501 of them in their homes. Six cases of eclampsia, five of them quite mild, occurred. During the same period, there were referred to the hospital by physicians not connected with the clinic, 29 cases of eclampsia from a clientele, presumably, of a much higher social class than our dispensary cases. The contrast is quite evident. During this same period there occurred among these 3,156 cases, 67 abortions, only a little more than 2 per cent. The mortality (maternal) for the whole clinic was about 0.3 per cent., which considering the class of cases with which we are dealing and the fact that this mortality occurs almost entirely among the registered cases, cannot be considered excessive.

A further example might be illuminating; about four years ago, we established a babies' feeding clinic just across the street from the hospital, to serve, of course, the same clientele. It is already being visited at the rate of 20,000 visits yearly. These examples will show, I think, that the appreciation of preventive medicine is not confined to any social class. It is impossible to estimate the benefits arising from this contact of the university with the community. One can easily imagine this knowledge of preventive medicine gained by the clientele of such a clinic,

particularly, if there were money enough to secure proper social service in conjunction with it, spreading until the population of a whole city or state were benefited. Why rob a student of the benefit of contact with a work that is to be of so great help to him and through him to his patients in after life? Why deprive a community of so great a benefit by the abolition of this method of teaching?

A wave of preventive medicine legislation, stimulated by Federal action and relating, in a great measure, to the care of the childbearing woman and her offspring during the childbearing period, is sweeping over the country. Whatever may be our individual opinions concerning governmental paternalism, we are not going to be able to stop it. Women are rapidly learning that neglect and indifferent medical service has been their portion. This knowledge is being taken to them in various ways—to their clubs, social and political—by public health nurses to the most remote farm house as well as to the city tenement. It is my confident prediction that the greatest advance in preventive medicine in the next decade will relate to the care of the childbearing woman and that this advance will be greater in this direction than in any other fifty years of medical progress. Good obstetrics will be demanded of our medical graduates. Let the medical school anticipate this movement, or, at least, keep up with it, by placing the study of obstetrics where it belongs, next to medicine, the most important branch taught in a medical school.

#### DISCUSSION

**DR. E. P. LYON**, University of Minnesota, Minneapolis: We have experience at Minnesota with home work in obstetrics but not with such teaching of medicine itself. Has any one experienced that? I mean sending medical students out to treat medical patients in their homes?

**DR WILLIAM KEILLER**, University of Texas, Galveston: I am an old Edinburgh student. As an Edinburgh student, I got a very large part of my experience in chemical medicine in exactly the kind of condition that Dr. Lyon asks about. I attended first as a student, during my third and fourth years, a dispensary where we had quite a large number of patients come to the dispensary and at the end of the dispensary hour the patients who had left their names for home attendance were distributed among the more advanced students. Later on I was one of the physicians in charge of that dispensary.

It was a very wonderful experience. I had to go to these cases; I had to examine the patients and I had to endeavor to make a diagnosis and to write prescriptions for them. I remember how I carried in my pocket half a dozen little pages from the end of a handbook of medicine, with typical prescriptions, and how I copied a prescription out of it after I had made my diagnosis, and that is the way I learned how to write prescriptions. Whenever I was in trouble over a case, I had a man available to help me out, and I believe it was a very excellent method; it was very closely along the lines that Doctor Lyon has just outlined, in teaching a man to depend upon himself and make a careful examination; make his diagnosis, and think out his treatment. It is the best of all ways that I know, to foster the research spirit in the ordinary student. Every clinical case is a research problem. I think it is an exceedingly valuable method of teaching advanced students in the clinical years. Maybe it is hard on the patient.

DR. RAY LYMAN WILBUR, Stanford University, California: This is really a very important topic. For a long time we have been measuring our medical education in our institutions by the number of beds that they had and the number of full time workers, the number of laboratories, and the number of microscopes. Before long we are going to go at it more along this line and we are going to turn out real practitioners.

Years ago I learned more, from one experience than I did from the lectures given during my medical course. I was standing on the corner with some other medical students when a man stepped out of a buggy and walked up to us and said, "Do any of you students know the difference between chloroform and ether?" We told him we did, and he said, "Have any of you ever given anesthetics?"

I said, "I have given them to animals."

He said, "Get right into my buggy and come along. I have a case in which I want you to give some chloroform."

I got in with him and we rode out to a forlorn flat. He went into the kitchen and fixed up the table and brought in a gasping child with empyema. In the meantime I had gotten ready to give an anesthetic without much in the way of supplies. I saw the whole operation and the relief of the child, and I can say with confidence that I learned a great deal out of that experience.

I have seen medical students graduate from medical schools such as those located in this city, who had never had any real clinical responsibility until they got on the outside. In some way we have to give the experience to them.

DR. WILLIAM KEILLER: I want to say also that I got most of my obstetrical experience by the home attendance of dispensary patients. I was in my third year at Medical School; I put on a frock coat and a silk hat, and I got all the obstetrical experience I

wanted. (Laughter). I wore a beard at the time and that helped out. (Laughter). I just had all sorts of cases, and as many as I could attend.

DR J. M. H. ROWLAND: We were talking about preventive medicine this morning. It was emphasized twice this morning that the Department of Obstetrics was an ideal place to try out your best preventive medicine. You start in, usually, with a perfectly well patient and you go ahead and practice preventive medicine. More than that, you have talked all day about the humanizing element and sociology. Where does the medical student get quite so close to where the people live as in an outdoor obstetrical case? The medical student finds nowhere else in his course an equal stimulus to the development of responsibility and good citizenship.

## TEACHING OF PHYSIOTHERAPY

W. H. MACCRACKEN

Dean Detroit College of Medicine and Surgery

In this day of the overcrowded curriculum of the medical school, and the overburdened student of medicine, one should pause and take thought before suggesting any change that tends even in the slightest degree to increase the load which must be borne, lest his suggestion prove the straw that brings about the collapse of the medical camel. Nevertheless, a situation exists which must be met with as little delay as possible, and in the opinion of the writer of this paper can be adequately handled only through the medical schools.

The medical profession is afflicted for its sins (chiefly of omission) by the continued and in certain ways successful existence of a variety of cults, the members of which profess to treat and cure all the ills of mortal flesh.

For years, efforts have been made to eliminate these irregular and unscientific practitioners, but generally to no avail. As legislative attack after attack has been made upon them, they have been rendered able to pose as martyrs in the public eye, and it is a well recognized fact that martyrdom properly capitalized and advertised is a tremendous asset in the hands of certain people.

Of course, the most successful of the cultists are the osteopaths and chiropractors, and in considering their cases one is moved to wonder if they must not possess some fundamental merit which seems to justify their existence. A little careful thought forces the conclusion that such merit does exist and that it lies in the fact that invariably the cultist does something for or at least to, each patient who seeks him. I have talked with many persons who have abandoned their physicians and turned to these so-called healers, and the tale is always the same. "My doctors did not seem to do anything for me so I went to the osteopath."

One has, of course, no brief for the chiropractor, who is a

charlatan, pure and simple, existing merely because osteopathic standards outgrew his capacity and ambition, but one is bound to admit that the osteopath, working with tools which the medical man scorned, or was too lazy to use and so threw away to be picked up and utilized by whomsoever would, has accomplished and does accomplish things, which sometimes lies beyond the power of his drug bound rival, the average internist. "Nothing but massage," says the medical man. Surely; but massage developed in a high degree, and skillfully applied to meet the needs of the patient. One cannot help wondering how many of his professional brethren know a great deal about this massage or would be able skillfully to apply it were they called upon so to do. Through our own neglect we have presented our cultists friends with one of the most fundamental and useful types of physiotherapy. Hence the osteopath and his illegitimate offspring, the chiropractor. But the matter does not stop there. Certain states do not recognize the cults by their specific names, but lump them, and license them as "Drugless Healers," the general impression seeming to be that having been described by this emasculatory title, they have thereby been rendered harmless. If they cannot administer drugs, what mischief is there left for them to pursue?

Last winter, I was in California where the chiropractor flourishes under exceptionally favorable climatic conditions, and scanning the list of chiropractors and schools of chiropractic in the Los Angeles telephone directory, I was greatly impressed by the fact that in almost every case where the chiropractor was prosperous enough to have his picture inserted, there, just below the picture, was a legend announcing his use of the X-ray in diagnosis and treatment. It is submitted that if there be any drug more potent for harm than is the X-ray in unskilled and inexperienced hands, it has escaped the knowledge of most physicians, yet since the X-ray can, by no stretch of the imagination, be considered a drug, it, of course, becomes available to the drugless healer. The high frequency current and the actinic ray are also quite at his disposal and are exploited to the limit if one there be.

The manager of a large factory manufacturing electrotherapeutic apparatus recently told me that over 60 per cent of

this output is sold outside the medical profession. What does all this mean? Are we to reserve to our internists the privilege of prescribing drugs and recommending hygienic measures to their patients, leaving the vast and as yet comparatively unworked field of physical therapeutics at the disposal of whomever seeks to reap its harvests?

Is there danger of the development of additional cults? The fact that courses in electrotherapeutics, carrying certificates, are already offered by manufacturing concerns, merits attention. Certificates grow into diplomas and diplomas are at least suggestive of degrees. Another question arises to trouble us. Are the regular practitioners of medicine, who are pushing the undeniably spectacular physiotherapeutic methods, as a rule the very best type of the medical profession.

Observation must answer that in many cases they are not. Many men unable to make the grade in general practice, find their waiting rooms well filled when they turn to electrotherapy or actinotherapy. The lesson is plain. It is the same story. Obvious, however unskilled, service appeals to the patient and wins his approval, and he turns to the man who will provide such service, again and yet again.

Within the last few days propaganda has been presented in Detroit to the effect that if factory workers are frequently exposed to actinic rays their possible output will be very greatly increased and their value to their employers correspondingly enhanced. In this case, it is seriously proposed that what has been considered a therapeutic agent be taken out of the hands of the medical profession to be utilized by laymen for the purpose of whipping human endeavor beyond normal physiological limits. What, think you will the harvest be? How are these conditions best to be met, as met they must be? Obviously not by futile legal efforts to deprive the unfit of the equipment, which they have improperly possessed and which they so brazenly flaunt in the face of the medical profession.

The situation demands the training of every physician, so that what in the possession of the unskilled amounts to a menace shall in the doctor's hands lose its novelty, cease to be spectacular, and become as commonplace and withal as generally useful as any other healing procedure which he uses as a matter of course.



To my mind all the signs point in the direction of the establishment of routine training in the principles, application, value and limitations, with special emphasis on the last, of what are at present admittedly useful and practicable physic therapeutic measures. It is desired at this point to emphasize the fact that generally speaking the establishment of another department or specialty so-called in the medical school is by no means contemplated. The medical college curriculum is already so overburdened with specialties that it wobbles, so Heaven forbid that more be added. Without denying the value of physiotherapeutic procedures to the surgeon, the orthopedist, proctologist, dermatologist and other specialties too numerous for consideration, these procedures will ultimately prove to be the trustworthy tools of the internists, of the common or garden type of physician, who will find a wider field for their application than will his specialist brother.

Bearing this in mind, it would seem that an appropriate starting place in the medical school for this work in order that it may reach every student might perhaps be in connection or association with the department of pharmacology and therapeutics.

What is to be offered in the way of instruction and who is to do the teaching? In the first place, it is obvious that the students should be brought quite clearly to understand the physics of each piece of apparatus with which he is called on to deal. Oftentimes in the laboratories of physiology or pharmacology may be found a man who is entirely capable of this task. Lacking such a person in the medical faculty, the physics department of the university may be called upon to render the necessary aid. In the Detroit College of Medicine and Surgery we have a man who had worked in electrical engineering and the teaching of physics before he took up medicine. Associated with this, or closely following, should be a series of experiments and demonstrations, devised with a view to showing the physiologic phenomena which may be expected to accompany or follow the application of the particular physic therapeutic agent under consideration.

These experiments would deal with temperature variations, changes in blood pressure, pulse rate and character, excretory

activity, modifications of hydrogen ion content of the blood, and various other phenomena, which will readily suggest themselves. In connection with these experiments a careful review of the topics of electrolysis and ionization will be appropriate

There will be no lack of material. The problem will be to choose from the wealth at hand what can be most profitably used in the all too few hours available. Much of the experimental work can be done with volunteer students as subjects, but a great part will involve the use of mammals in critical experiments.

As soon as the students are reasonably familiar with some of the simpler therapeutic methods, the introduction of patients from the ambulatory clinics becomes allowable. These patients should be studied with all possible care. No case without a well taken history and a careful physical and laboratory diagnosis should be considered teaching material, and when an appropriate method of treatment has for definite reasons been selected, an accurate record of practically everything recordable must be kept, with laboratory examinations of the patient at such intervals as may be determined.

In passing, it may be said that physiotherapeutics often lends itself to accurate observation better than does drug therapy. A grave danger at this stage lies in the possibility of encountering apparent therapeutic miracles, which seem constantly to occur and are bound to impress the student unduly, and to create in his mind the idea that he is dealing with an agent of general curative properties, which will help any patient no matter what may ail him. Cold water must be carefully poured over excess enthusiasms, and the students feet must be securely planted on the ground. After a little, he will pass the miracle stage and will see physiotherapy as just what it is, an extremely valuable weapon for him to use with careful judgment in his combat with disease and suffering.

Following his use of physiotherapeusis on ambulant cases, the student should in his fourth and fifth years, be given an opportunity to witness its use and to use it himself in the wards of the hospital. Whence shall come his supervision in this work in the majority of hospitals?? Whom will he encounter better trained than he himself is in the principle and practice of these therapeutic methods?

At present, these questions are hard to answer. It is to be supposed that time will take care of this as it does most other queries with which we vex our souls. We are all familiar with the sad spectacle of the teacher who finds himself confronted with a class who know more of the fundamentals of the subject than he himself and one supposes that for awhile self styled physiotherapeutists will undertake the guidance of the developing doctors till obliged to relinquish the effort for very shame. The bedside use of physiotherapeusis will still more definitely establish in the mind of the student its applications, and its limitations so that when he is graduated he will have the proper perspective with regard to it and will escape the temptation to become on the one hand an over enthusiastic exploiter, and on the other a physiotherapeutic nihilist. All in all, he may be expected to be rather a better doctor, and to serve his public with better equipment and greater skill. If the study of physiotherapeusis has done this for him and his it would seem to have been worth while. In offering this paper, I have no notion of claiming that the methods suggested are the best attainable. After careful study they have seemed to lend themselves to the situation in Detroit.

It may very well be that a large part of the work offered should be optional, but certainly a definite amount, depending on conditions should be required. It is entirely likely that in some schools, especially those of large attendance, a separate department will best care for the problem. It is doubtful that any two schools will adopt and carry out the same plan and it is questionable if they should.

The fact remains,—physiotherapeutics is here, knocking on the doors of the medical schools, and demanding no small place in the community of courses, which we will call the curriculum. Those schools which have as yet failed to provide such a place will find themselves compelled to take action in the near future or else will behold the spectacle of some of the ablest of their would be students going astray after alluring therapeutic gods.

#### DISCUSSION

DR NORMAN E. TITUS, New York: Dr. MacCracken's paper which brings forth many truths about the present day situation re-

garding physiotherapy is certainly well worth while. Physiotherapy has indeed been taken up by too many medically inclined people, and due to much unethical promotion by these individuals, medical practitioners have preferred to disregard these methods of treatment. The patients of today have been educated to understand medical treatments better than in years gone by, and they certainly appreciate treatment better than in years gone by, and they certainly appreciate treatment that does something for them immediately. As Dr. MacCracken says, if patients cannot get treatments they want from their own doctor, they will go where they can get something done that holds out some better promise than a prescription does.

Since this attitude of the patient is increasing, it is our duty as physicians to give them every possible form of treatment that is available for them. Consequently, with the realization of this situation, more and more medical faculties are considering the ethical teaching of physiotherapy, in the field of general therapeutics. Manufacturers of electromedical apparatus have been giving courses in physiotherapy to supply the demand for knowledge in this field but also to increase the market for their products. Unfortunately these courses in general, have not been restricted to graduates in medicine.

Last year Columbia University started the serious consideration of having courses in physiotherapy, and this month will see the beginning of undergraduate teaching, in this field. It was felt that the undergraduates should be instructed in the theoretical side of the subject rather than the practical applications of the different modalities. The reason for this attitude is that, these potential internes should first become trained physicians and surgeons without being led away in any manner from the fundamentals of their profession, by learning too much of a new subject that still has to establish its definite place in the field of therapeutics. Moreover, should these internes have a working knowledge of physiotherapy, when they are on duty in their hospitals, the responsibility of administering such treatments might be placed upon their inexperienced shoulders, with disastrous results that would lead to the discrediting of such treatments by the rest of the hospital staff.

The course at the College of Physicians and Surgeons, of Columbia University, is offered this year as an optional course, in the Specialties Quarter of the fourth year. It will be but one lecture a week with one trip to Beekman Street Hospital, which is a very active, Industrial Hospital, where the department of physiotherapy is quite complete and has proven its worth.

The postgraduate course at Columbia University will consist of six weeks of intensive practical work at Beekman Street Hospital, during which time there will be a set series of lectures covering the entire subject of physiotherapy. This course will start on April 1st,

and continue until the end of the college year. Due to the personal contact that is required in such work, the course will be limited to ten or a dozen members and of course these will only be duly graduated physicians.

A situation which as yet cannot be met satisfactorily is worth mentioning. Many physicians and surgeons have a slight interest in using physiotherapy in their private practices, but are unable or do not care to study the subject themselves. They therefore employ a physiotherapy technician and rely on his or her judgment as to what is the correct procedure in the field of physiotherapy, with which to treat their patients. Such a way of using physiotherapy is very detrimental to physiotherapy as a legitimate aid, and is also unfair to the patient. The doctor himself cannot form a rational opinion of the subject from observations in his office, and too frequently he is a man of such good standing in his own field that the opinions he expresses concerning the effects of physiotherapy, have more weight in the general consideration of the subject than they should have. I do not wish it believed that I decry the employment of physiotherapy technicians. They are a real necessity in physiotherapy, just as they are in a pathological or a roentgen ray laboratory. The mechanical administration of the different modalities included in physiotherapy take up too much time for the doctor to actually do each one himself. Therefore he requires the aid of a well-trained technician. At present there are more so-called technicians available than there is demand for, but this should not discourage universities and medical schools from beginning the real instruction and training of physiotherapy technicians. In Australia the government requires at least two years of university training before they will license anyone to give massage. There is no reason why the teaching of physiotherapy technicians cannot be taken up with at least the same amount of required study.

Dr. MacCracken's paper so thoroughly covered the subject that I feel it might be interesting to bring to the attention of you gentlemen, one specific example of the teaching of physiotherapy as decided upon by Columbia University.

## EDUCATION.

A. LAWRENCE LOWELL,  
President, Harvard University

It is a great pleasure to welcome here this large and representative body of men who are engaged in striving to accelerate a rapidly moving profession.

George Eliot says somewhere that the arguments on the subject of education are apt to take the form of similes; that sometimes people compare the mind of the child to a field which must be plowed and harrowed before the seed will germinate; at other times they compare it to a stomach in which food is digested, but in that case the suggestion of harrowing is inappropriate. There is a reason why we should use similes in speaking of education, because thereby a discussion can be kept up interminably which has little to do with the actual fact. Nevertheless I propose to compare education to a crab, because it casts its shell every year and grows a new one. Now in medical education, we are constantly constructing shells which are very valuable for the defense of standards at the time, but become cramping at a later stage.

In order to exclude a bad type of medical college, we have been in the habit of insisting on certain provisions for admission, which have done excellent work in driving out of the business proprietary schools; but having forced that shell to exclude the enemy, it is liable to become cramping afterward.

The other day I was present at a meeting of the Visiting Committee of our Board of Overseers with a number of professors of our schools, where the professors complained that the students were delivered to them by the colleges ill trained for the study of medicine. They did not know their chemistry, zoology, or physics as they ought to know them; but it struck me, as I listened, that the fault was really that of the medical profession itself, for the colleges were giving what the medical profession had asked for. It asked for a college credit in inorganic and organic chemistry, in physics and biology. It did not ask for any knowledge of

these subjects but for credits, and it got students with the credits but not with the knowledge.

That is what I mean by outgrowing the shell. For reasons which it is unnecessary now to consider, all American education has been conducted on the basis of credits; that is, there has been an assumption that the true measure of education is the processes through which the student has gone. In other words, we measure the amount of water in a bucket by the amount that has been poured into it, which is excellent if the bucket does not leak; but the human mind does leak. It leaks enormously, and in an incalculable way; that is, you cannot tell how much will have leaked out of one student's mind as compared with that of another student. In other words, we have been in the habit in America of measuring the process instead of the result, and therein I think a great change is coming over all education.

Errors are always in the fourth dimension; that is, in those things which are not discussed, but where people really differ and are quite unconscious that they differ. In other words, it is the things which we do not much discuss wherein we chiefly differ, and the changes that take place from time to time in human affairs are mainly changes in the fourth dimension; that is, a new fundamental conception arises, different from that which has been hitherto assumed, and the discussion, until the new idea dispossesses the old, is mainly upon details in the application of theories which are imperfect. All fundamental theories are imperfect, and reasoning from them means the errors, in the approximate truth contained in the assumption.

Now, the world advances by moving from one approximation to another. In short, progress is (to use another simile) like sailing a boat, which cannot sail in the eye of the wind but must sail first on one tack and then on the other, and when you change from the port tack to the starboard everybody lifts up their hands and cries that you are going in the wrong direction. We are going to windward all the time but by a series of approximations, and what people generally discuss is not the tack on which we are sailing but how we should trim our sails to make the most progress, perhaps not on the tack on which we are actually sailing.

I think a great change is taking place in education in America—and I see it coming in many directions—It consists in attempt-

ing to measure the result instead of the process. In measuring the process we have assumed the course is an end in itself—I will not say the end of education, but the natural unit in education. We have told the youth proposing to enter our medical schools, that he must take courses in inorganic and organic chemistry, in physics, and in biology. Whether these have any connection with one another in his mind, whether he appreciates what their bearing is upon medicine, we have not inquired. Indeed, the tendency has rather been for the student to take these courses at the wrong time, because he naturally takes his inorganic chemistry in his freshman year, and then goes through college and into the medical school after he has forgotten almost all about chemistry, unless indeed he has devoted his whole time to science.

I have said that the change which I think is taking place in all education today is measuring the result instead of the process, and by this I mean that insofar as we have been in the habit in all our education of assuming the course as the unit, we have been on the wrong track. There is only one true unit in education and that is the student himself. He is the unit because he is the end. He is the unit because he is the only thing whose perfection is important. The course is nothing but a means to that end, and should be judged only so far as it contributes thereto; the real end being the perfect equipment of the man when he leaves.

To use another simile (because the advantage of these similes is that they are inaccurate and misleading) : Suppose one were to employ a number of men to construct the columns of a building: that they were to put up their wooden frameworks and pour concrete into them; but that when the concrete is torn away those columns should have no relation to one another or to the building. Each man might say that his column was perfect, as good as it could be made. But surely that is not the question. The question is whether it serves its purpose in the building as a whole.

A more conscientious, more hard working, more public-spirited set of men than professors I never knew, but the tendency is for each of them to build his own column as perfectly as he can build it, without much regard to the condition of the building as a whole. Now, I believe there is only one way of correcting that tendency and that is to test the unit, the real unit, the student, when he gets through. In other words, using again the simile, to



examine the building as a whole and see whether it is so built that it is fit for its purpose and will endure. We are trying here that experiment both in the college and in the medical school, an experiment which I hope will yield something that is worth while; but it is an experiment, and should be treated as such.

In the college, as perhaps some of you know, we have had for a number of years a general examination for graduation on the subject in which the student has done his chief work—concentrated, as we call it, “major” as it is called in most places. That general examination is not a review because it covers things which are not covered in any course; it measures the command of the subject. We have in the college tutors to help the student to learn for himself what is not covered by his courses. Their business is to review courses, but to supply the connective tissue and to give a grasp of the subject as a whole, for the student is examined on the subject as a whole. In other words, we have tried to put the course where it belongs as merely a means to an end—mark you, the end being the student and what he has become.

We believe that the same principle applies in medicine, and is perhaps almost more essential in medicine than in most other pursuits because medicine is moving so rapidly that it is as much as a man can do to keep up with his own particular part of the subject. Moreover, in medicine the different subjects that every student must command are not so obviously related to each other that he can see the connection unless it is pointed out to him. Hence it is important not only to give him all these different facets, but to make him understand that at the end of his course it is his business to correlate them and understand their bearing on medicine as a whole. We all know how common it is for a man to begin with anatomy then fill his mind with something else and forget his anatomy. It was said of a celebrated German professor that he had learned anatomy three times and forgotten it twice, and was now teaching it on the third knowledge. The student learns it only once and forgets it an equal number of times. That is the result of treating the course as an end in itself.

By a general examination for graduation from the medical school we have tried to correct this defect, and so far with encouragement—I will not say with success, because success is a thing to be determined only after a great length of time. We

shall know how far we have really succeeded when the men we are teaching have finished their careers and their names are engraved upon stone. In the meanwhile we believe that throughout education, from the primary school to the highest degree of the university, the point on which we should keep our minds is the total result upon the student when he has finished and not the process which he is going through. I believe that this not only gives the student an aim which is intelligible to him—at any rate intelligible in a professional school—but that it also keeps the professor's mind on the fact that the value of what he is teaching is to be measured ultimately by its contribution to the whole, and is not an end in itself.

How far such a change of aim in education will go, one does not know. It is much more in accordance with European precedent than it is with our own, and anyone who has forced upon him by experience a belief that the curse of American education is the counting of credits for courses, the fixing one's mind upon that and measuring everything thereby, must believe that the departure is a wise one. If practicable we should also do better to examine our students on entrance to the medical school, upon some of the fundamental subjects that are needed—chemistry, physics and biology—than to require the passing of courses, for a smaller knowledge actually in hand at the moment is better than credits in an insolvent bank.

## THE HONORS COURSE.

E. P. LYON,

Dean University of Minnesota Medical School

This paper is concerned with the superior student. We all know that the American school, until recently, has not been concerned with the superior student. It is not yet hurting itself with concern for him. Rather the American school, including the American medical school, while it is proud of its superior students, gives its chief attention to the poorer students. It drives its horses as a team and the pace is adjusted to the slower animals.

I have great regard for the slower animals. Most of them are going to be good and useful members of the stable. But I want to find some way of cutting out from the team the swift runners, and of giving them a race worthy of their pedigree.

Dean Seashore of Iowa has written a good deal on this question and his papers should be known to every one here. I have been greatly influenced both by him and also by Mr. Flexner, whose book—just out—I had the pleasure of reading in proof.

We have not had difficulty in establishing a certain degree of emulation among the students pursuing the established curriculum. There is enough advantage from high marks in choice of sections, electives and internships to serve as a stimulus; and most of the students work satisfactorily at the required tasks. The difficulty comes when one attempts to get them out of the beaten path.

Our partial elective system has helped to some extent. Students tend to select according to interest, but the interest in most cases is not the broad one of mastering a subject or developing initiative, but rather interest in getting more training and experience of the same kind as that provided in the regular curriculum. Most of the sophomores choose such courses as topographical anatomy and immunity. Most of the juniors look for more sectional clinics and for animal surgery—all good, but elementary

and routine in character. Some few get into problems and conference courses where they learn to dip into the literature and to work by themselves. But the number is too small, and they are not always the best men. It is a fact—a lamentable fact—that most students prefer a routine type of education. They would object to a more liberal system, requiring initiative and originality. Somebody has got to take away the nursing bottle by main force if they are ever to attain power of individual development. Meanwhile not being ready to throw everybody on his own responsibility we try to make responsibility attractive to as many as possible.

Our best ally at Minnesota is the graduate school. Since the medical student gets his bachelor degree at the end of the sophomore medical year, he is eligible thereafter to register in the graduate school and work for an advanced degree. Quite a few students halt their medical work long enough to annex an M. S. degree and a few get the Ph. D. We are quite liberal in permitting these students to deviate from the usual order of the curriculum. They must select a major subject, which is practically always one of the preclinical sciences. As a minor they select some other science, and the minor requirement is usually fulfilled by courses that count toward the medical degree. We are liberal in permitting the transfer of credits from the graduate school to the medical school. The quarter system with full credit for the summer quarter helps out. A considerable number of student assistantships and fellowships is a factor of importance. All in all we find a fair number of excellent men delaying medical graduation two, three or four quarters, producing an acceptable thesis and getting a master's degree. Of course those who get the Ph. D. delay longer, but we permit reasonable dove-tailing between medical work and graduate work on the same theory of combined courses represented by the B. S.-M. B. six year course.

I am well satisfied with this scheme, but to get his medical degree such a student must pile up in the registrar's office credits and marks for the regular work of the standard curriculum. He is spoon-fed most of the time and only picks his food and his manner and time of eating it to a limited extent.

In the graduate school the student must stand a comprehensive oral and written examination in his major subject, but in the medi-

cal school we still work under the deplorable system of course examinations. The student accumulates his marks as a runner might pass milestones. And the marks that are accumulated concern him no more than the milestones that are passed concern the runner. Up and on to the next! And when you have jumped so many hurdles you get a parchment medal.

I cannot bring the faculty to authorize big, comprehensive, departmental, final examinations; nor yet a final oral covering all subjects for the M. B. degree. Theoretically the licensure examination serves the purpose of a comprehensive test. Really it is a series of disjointed subject examinations. In my opinion our American professors do not take their examination functions as seriously as they do their teaching functions. I would not have us reach the practice of the Swedish and Norwegian schools, where the professor for two months or so of each year does nothing but examine. But I think the scholarship tone of the whole student body would be improved if students knew they had to retain a working knowledge of the whole medical course until the end. But, of course, even an adequate examination system would not free us from the deadening influence of the required curriculum on the initiative and originality of the better intelligences.

The English honors course has attracted me. As you know the student at Oxford or Cambridge can be content to work for a "Pass degree." But if he has stuff and ambition he tries for an "Honor degree." In the first case he attends the "Pass School;" in the second case he registers in one of the "Honor Schools." The word school in this connection means a distinct set of university examinations, a distinct course of lectures, and more or less, a distinct faculty.

The "Pass School" has its own examinations and lectures. The "Pass School" is described as "a varied and well conceived (if not exacting) program of studies for those who, although averse to the exertions required in the Honor Schools—may nevertheless be inoculated with some tincture of the liberal arts. I think that description will apply well to 75 per cent. of our medical students.

"Honor Schools are vastly superior, in method, standard, and subject matter.—Each has its lectures, its faculty, its system of examination, and its board of examiners.—The final honor ex-

amination in each school ordinarily consists of a number (eight to twelve) of three hour written papers, given morning and afternoon on consecutive days.— The papers usually contain about twice as many questions as the student is expected to attempt.— He is ordinarily advised to write a full hour on his best question.— The system is administered with an eye to its purpose—to bring out and develop originality of thought and power of expression.” These quotations are from a book entitled “Oxford of Today,” acquaintance with which I owe to Mr. Flexner. This book states that about two-thirds of Oxford students work for honors.

Each Oxford student is assigned to some tutor or Fellow. “The tutor directs the student’s work, advises him to attend certain lectures, and to read certain books. Once or twice weekly the student spends an hour or more in conference with the tutor; at which time he usually reads an essay or essays embodying the results of his reading since the last conference. The essay is followed by the tutor’s comments and criticism, and an informal discussion.— There are no ‘required courses’ as such, and ‘credits’ and ‘hours’ are unheard of. Once matriculated, the undergraduate’s intellectual obligation to the university is measured only by his own ambition.”

As I understand it, the ambitious medical student at Oxford or Cambridge usually takes the “Honor School” in physiology, but the examination includes also biochemistry, histology, embryology and human anatomy. At Cambridge, according to a footnote in Mr. Flexner’s book, about a dozen of the most promising students are detained a year or two longer than the rest for special work in physiology. He does not tell how they are detained, and I wish I could get the formula; for I believe with him that if the best students would spend another year or so in the medical sciences, it would be a good thing for science, for the students, and for the practice of medicine.

The further stimulation of the better students is accomplished in England by the requirements for the M. D. degree. As you all know the ordinary practitioner over there is not a “Doctor.” The degree is not essential to licensure, and most men do not get it. It is a university honor hedged about with special regulations and only to be obtained by special examinations.

A year ago I attempted to draw up regulations under which selected students could be freed from the required curriculum and permitted to pursue medical studies, under an advisor, in accordance with their own desires and powers. I attempted to formulate an elastic system which would give scope to initiative and individuality. At the same time I tried to keep in mind the essential elements in a practitioner's education and to maintain conformity with the licensure laws. The faculty,—somewhat doubtingly, be it confessed,—adopted these regulations, and they were published in our bulletin last spring. They are as follows:

“A superior student, with the endorsement of the Committee on Honors Students, may petition the Administrative Board to readjust his curriculum. Such petition shall set forth the educational record and plans of such student, and shall name a major department in which the student desires to do intensive work, and some faculty member who is willing to act as adviser for such student.

“Students whose petitions are approved shall be known as “Honors Students” and may pursue medical studies in such order and manner as they may determine, subject to the approval of their respective advisers. Each year a program of work, approved by the adviser, shall be made out and filed with the Committee on Honors Students.

“Each department shall determine the minimum of practical work which honors students must perform before they may qualify for examination in such department.

“To qualify for the M. B. degree honors students must fulfill the legal time requirements, and must pass general written and oral examinations in the several departments of the medical school. The examinations in anatomy and physiologic chemistry (including physical chemistry) may be taken after not less than three-quarters registration in the medical school; those in physiology and bacteriology after five quarters; those in public health, pathology and pharmacology, after six quarters, and those in clinical departments after ten quarters attendance. The examination in the major department shall be taken after not less than twelve quarters attendance.

“Satisfactory completion of the examination in any department shall entitle an honors student to credit on the registrar's books

for a number of hours equivalent to those assigned to such department in the regular curriculum.

“An honors student, with the approval of his adviser, shall have the option of fulfilling the requirements of any department except the major department by registering for, and passing examinations in, the required courses of said department.

“As a result of the general work, the various examinations, and the research of an honors student and by vote of the Administrative Board on recommendation of the Committee on Honors Students, the M. B. degree may be granted with any of the usual distinctions.

“At any time during his course of study, by vote of the Administrative Board, on recommendation of the Committee on Honors Students, an honors student may be required to return to the regular curriculum.”

It is too early to say whether this plan will accomplish the ends. I had in view or how many students will avail themselves of it. Two students so far have indicated their intention of attaining the M. B. degree under these regulations. Both desire to major in physiology. I am afraid there will be few students bold enough to cut loose from course instruction. I do not know how the clinical men are going to react to the request for an irregular passage across their domains. I do not know what they will do when these students go up to them for examination. I will only claim that I have devised a jack by which a good student can get his wagon out of the grooved rails. I hope he will hitch it to a star; and I think in case his star is but a meteor, that there are sufficient brakes and guide posts so that he will not end up in a mud hole. That is all I can say concerning our experiment at the present time.

I shall close with a few remarks and a proposal, perhaps revolutionary, in regard to the M. D. degree. As you all know in this country this degree is a purely professional title. It stands for technical proficiency but not for scholarship. At Minnesota and some other schools the degree is used to attest a year of internship in addition to the four years of the traditional medical course. But the intern year is a year of technical practice. It is a further excursion into the realm of extensity and not at all a boring into the



hard rock of intensity. The M. D. does not stand with the Ph. D. or D. Sc. as indicative of mastery of any field of knowledge.

If this Association and the American Medical Association would work together, in less than ten years the M. B. degree could be made the practitioner degree, (as it is legally in every state), and the M. D., backed up by proper requirements and examinations, could be made the real distinction and mark of scholarship and power it ought to be.

## THE HANDLING OF THE SUPERIOR STUDENT.

DAVID L. EDSALL

Dean Harvard Medical School

I have had very much the same general idea in view that Dr. Lyon has been speaking of, namely, the idea that the tendency of education in this country is to neglect the superior student. Whereas the bulk of mediocre and poor students is so large that it offsets to a considerable extent the value of the superior student, we nevertheless must admit that the most precious material of all is the superior student and that while we must do justice to the mediocre and the inferior, we must not by doing justice to them do injustice to the most important material of all.

The course in medicine in recent years has been such that it is much more difficult for the superior student to show independence than it was years ago. The conditions some years back I think are quite well shown by what one of the most distinguished men in medicine in this country—medicine in the general sense—who happens to be a member of this faculty and a graduate of this medical school, said to me some years ago, and I believe tells his students occasionally. He said that at the latter part of his medical course he saw two distinguished looking men sitting together at a meeting and he asked some one who they were. When told he said that he recognized them as professors whose courses he had passed with distinction but he had never seen them before. (Laughter). That was possible years ago when the course was largely composed of a series of lectures. That cannot be done in recent years because everything has become so increasingly prescribed for the men and especially because so much laboratory and clinical practical work has to be definitely gone through by each man.

The first thing that was necessary, it seemed to all of us here, in order to give some opportunity for the superior student as well as more feasible conditions for even the poorer student was the

reduction of the amount of required time in the schedule so as to give the man an opportunity to be himself part of the time. The faculty, therefore, about three years ago, changed the schedule. They did a surgical operation without anesthesia, that is they took about 25 to 30 per cent. of the set hours out of the course throughout, giving that time to the student to occupy himself with it, rather than being told what he was to do.

I would in the first place like to take one moment to say that I have been asked by a number of my friends from elsewhere what has been the effect of this upon the mediocre and the poor man, with a good deal of worry lest those men suffer from it. In point of fact, I think we all felt here that it was doubtful how that group of men, particularly the poorer men, would react, and we felt that perhaps all the students, accustomed to American conditions of education, with a lot of free time thrown on their hands, might simply waste the time. I have looked into that with some care, as have several of the departments. I might epitomize that by saying that so far as our observations are concerned, and so far as the tests of outside bodies are concerned, I think the students have rather improved throughout than otherwise. In other words, I think even the poorer students have had a good deal of time to get over the exhaustion that was produced before under the previous system. They do sometimes take exercise in their spare time now and they even read general literature occasionally, and a few things of that sort, but not enough to interfere with their successfully doing what we consider necessary for the medical degree.

We appointed at that time advisers to the students, in order that they might not wander too much, and each student has an adviser who is supposed to spend a noteworthy amount of his time with the students. Students often prefer to go to other people rather than to their advisers. Sometimes, if the adviser suits them, they go to him, but this provision for a definite assigned adviser is not, in my belief, likely to be very successful. However, the other things that have been done have been more of a success.

In order to offer some guidance to the student in using his free time, a series of voluntary courses were developed by the faculty. I would point out that these are not elective courses. It is stated in the pamphlet which is given to the student that:

“The following opportunities for work are offered in the belief that upperclassmen will welcome a chance to keep in touch with the most recent developments in the fundamental sciences: that an interest in certain fundamental subjects will have been aroused by their clinical work: or that they may feel the desire for additional training on some point. Students are not required nor even asked to take these courses: it is entirely a voluntary matter, and no credit will be given.”

That is the point we wished to emphasize, that the individual is doing something on his own volition and without any idea of getting any credit out of it at all; it was something by which he was going to develop his own interests and capacities.

Some of these courses have been simple reviews and simple conferences of the ordinary type and simple clinical courses. They are offered not only to the men in the third and fourth year, but to the men in the second year. I think it is rather interesting to note that the simple reviews have about disappeared; the students want something better than that.

Other courses are advanced study, lectures and demonstrations, which represent the same types of studies as those comprised in the course, only somewhat more advanced. Others are advanced study or discussion of things not comprised in the course but things that are illuminating to the comprehension of medicine. Among such things in the present pamphlet I would note, for example, one course that is being offered by Dr. Redfield, “Reading on Respiration and the Respiratory Function of the Blood and Organs of Circulation;” that is a systematic course on reading and on the methods of reading in a penetrative way, and discussions on that.

Another course has been offered by Dr. Henderson on “The History of the Biological Sciences.” (There is another course, an elective, on “The History of Medicine).” Another course, by Professor Wilson, is on “Bio-Mathematics,” and intended to give a comprehension to both clinicians, laboratory workers and students of the meaning of statistical methods in judging the experiences they have, whether they are clinical experiences or in the laboratory.

Dr. Wilbur emphasized the fact yesterday that most medical men are very weak in their mathematical conceptions. It is often

obvious how little sound mathematical methods enter into the conclusions from even experimental results and especially in clinical studies.

Another course is offered on "Bio-Physics" and another on "Food and Nutrition," taken up from the standpoint of large groups of people, including a discussion of modern problems of food production and utilization, famine conditions and the relation of food and nutrition to public health.

Those are simply an illustration of about thirty voluntary courses offered, which all told cover subjects which will appeal to the mentality of a variety of students.

In addition we have of course always offered opportunity to the student to do anything he desired in the way of research in his spare time if he was qualified to undertake it. For ten or fifteen years they were gradually getting increasingly cramped and unable to do this, but there has been a very large accession to this in the last three years, since the routine hours have been reduced.

In addition to that we had in the school five small research fellowships which were given in such a way they could be used with medical students as well as graduates; that is, they could do some research work and be paid for it. A very large proportion of our students are working their way through, and it seemed to be better for the man to be spending some of his spare time in research work than to have him doing something that was of no developmental value. There are ten men this year who are working on these paid fellowships, doing some research work. They are able to get in as much as ten hours a week of research, and at least seven of them, out of the ten, are doing very creditable things and learning something about the careful, scholarly study of some problem, either clinical or in the medical sciences.

Further the Examination Committee has acted quite recently with the purpose of divesting the student's mind of the idea that if he did special work along some line it might interfere with the thing that is precious to a good many students, that is, honors at the end. Students may now obtain honors either by the general standing that they obtain or by special, advanced, scholarly work in some one line. The latter honors are of the same general character as the honors that are given on the basis of general work.

We have for about ten years now also been encouraging the men just finishing their third year to anticipate in summer a part of the course work of the following year; that began with small numbers, and it has increased so that in the past two or three years, of the 125 men in the class each year, there have been over 100 who have done some work in the summer. This is with the definite purpose of freeing some of the time during the coming winter in order that they may do during that time something that they are particularly interested in. They take all the way from one month to three months during the summer and thereby gain so much extra time for voluntary or elective work. Any of the students may do this.

Beyond that, we have had for the past three years the provision in the fourth year (our schedule being built here in such a way that when a man has finished his third year he has, so to speak, obtained a general minimum in most clinical lines), that men who have shown that they have ability to profit by this, may in individual cases up to 15 per cent of the class be permitted to elect the whole fourth year in one line. We absolutely decline to allow them to elect the so-called specialties of practice in this way, but let them elect the year in a medical science or in general medicine or general surgery, provided they have anticipated in summer enough ward clerk work in medicine and surgery to meet the minimum legal requirements in these subjects. Also if the individual student wishes to get something from some individual e'sewhere, we prefer him to do it and give him credit for it just as is done so much in some of the foreign universities, particularly in Germany. A considerable number of the men do that now, particularly in the summer—they especially get some of their ward clerk work elsewhere, but some have gone elsewhere in this country for one of the medical sciences, and at present we have two or three men who have broken into their course and have gone abroad to do advanced work in some line, coming back again into the medical school to get through a year or so later than the students they began with, but with much broader training and horizon.

In addition to that I got a grant from the General Education Board two years ago to try out experimentally the tutorial method which Dr. Lyon mentioned. I spent four or five months, two

years ago, in Great Britain particularly for the purpose of studying the Honors Schools in Oxford and Cambridge, and the tutorial method, as well as some other points in medical education. One thing which impressed me very much indeed was that in every medical school I visited, some students stood out a great deal in their general mental poise and their attack upon subjects and their whole attitude toward the work, quite differently from the rest of the students. Whenever I inquired into them, I found they were always men who had been through some of the great universities, and in a great majority of the cases they were men who had gone to Oxford or Cambridge. It seemed that there was one thing which might readily explain this, and that was the influence of the kind of training that they had had with tutors in those two institutions.

Any of you who are interested will find a very good study of the tutorial method by Professor Ralph Barton Perry of Harvard University, in a report recently made to the Association of University Professors. Professor Perry has a definition in that which is excellent; he says:

“The tutorial method of instruction is designed to achieve an educational result that may be summarized briefly as follows: the substitution of the mastery of a subject for the accumulation of credits in separate courses; intellectual initiative and independence on the part of the student; such close and informal contact between teacher and student as will, on the one hand, bring into play the personal influence of the teacher, and, on the other hand, both discover and meet the individual needs of the student.”

Having the money for that purpose, two tutors were appointed two years ago, one of them in physiology and the other in medicine. One is really guiding the men in the medical sciences and the other in the clinical branches. Next year I anticipate that we shall have tutors in each of these and one in surgery. I hope another year we may have a tutor in pathology.

They have their time free excepting that they keep some slight contact with the regular course, but otherwise very little routine. Their duty is to take this superior group of men, not a large number, and give them, in their general thought, in their reading, in conferences, guidance in attempting to bring out their individuality and initiative, having close personal relations with them, de-

veloping them, giving them the viewpoint of studying the thought of the subject rather than the mere facts of the subject; and placing each man for special work in accordance with his particular aptitude, in the individual department in which he will do best. Let me add, this is not in the least intended to guide men into medical sciences or scientific work; it is to guide them into what they are best fitted for.

In Great Britain this method is used in Oxford and Cambridge in connection with that course which men take there preparatory to taking medicine, that is the Honors School of Physiology, (which includes bio-chemistry, and they usually get their anatomy there also). The men there seemed to me to get in that time a degree of comprehension and poise in the subject that is quite unusual in students of that age in this country. It seemed to me also that since it is not used at any further stage in the medical course in Great Britain, that I could actually see these results falling away from many of these men during their clinical training in Great Britain. Now, if it is of any use at all, (and it seems to me likely to be of a great deal of use) the time in medicine to develop the best there is in most of them, is more in the clinical departments than in any other. I don't think it has ever been anywhere used throughout the whole course and I am particularly anxious to see that it is done in the clinical branches.

I have already taken too much time, but if I may have about two minutes longer, I should like to read you just a few comments that the tutors have sent me as part of their reports, in order to indicate to those unfamiliar with the method, more of the manner of attack on the individual student. These are from the reports that Dr. Redfield sent me in regard to some of the men of whom he had charge last year.

One man he mentions as having so much independence that he has gone at his work with regularity and practically needed no attention of any kind.

The next man is rather interesting: "He volunteered for tutorial work and wanted to study the factors controlling cell growth. This was obviously too large a subject, but I tried to let him find this out for himself by suggesting general reading on it. This course proved to be a mistake, as his temperament led him naturally to rather scattered superficial intellectual activity, and he



never got down to business. In the spring he connected himself with Dr. Bremer, and did some work in experimental embryology. This will be an excellent course for him to follow, if he can be kept at it. Unlike most students he needs the discipline of working at a very definite problem, rather than to be encouraged to use his imagination on general problems."

Further on is a man who was chosen for the work because he had had only a mediocre record in college. He was one of a group chosen to test out the method with this type of man. This man is reported to have "proved to be capable of keen intellectual interest. Wrote an exceptional thesis on the development of Claude Bernard as illustrated by his 'Works.' Had once planned to be a chemist, but in college had found the chemists 'dull.' Physiology, he says, is the first subject to give him real stimulation, and he fears it may wean him away from medicine."

Another man is interesting. He was "selected because of exceptionally high record in a prominent western college. Had attempted minor zoological investigation there. Proved to have a broad shallow habit of mind, leading him toward irrelevance—a fact which put him at some disadvantage in the tutorial course, in which he obtained a grade of B. This is an interesting instance of the failure of the conventional method to create an ability to correlate and eliminate in a mind of considerable capacity.

"During our course he became interested in the effect of proteins on the vapor pressure of solutions and commenced experiments on this subject. This is a problem requiring strict physico-chemical analysis well suited to discipline his mind in those qualities in which it is weakest." That rather abstract subject was considered to be particularly suitable for that sort of fellow who just could not get down to precision.

And another one: This man was "selected because he had come to the school after a year in a New York bank—a history which suggested that he was looking for a career of some intellectual interest. His grades at Yale had been B's and C's. In our course it appeared that he suffered from too strong a consciousness of deficient training in chemistry and an underestimate of his general mental abilities. Although in our discussions and in his questions he frequently showed keen intelligence, his general comprehension of the subject seemed poor, and he himself

felt completely 'at sea.' It was a considerable surprise to both of us when at the end the whole matter seemed to straighten itself out in his mind, and he wrote a final examination paper which was graded fifth highest in the entire class.

"This case is the most encouraging one in my experience with the tutorial system. I believe he has a fine mind, and I hope this experience may have given him the confidence necessary to enable him to use it. I am waiting to see how he progresses during the present year before encouraging him to take up any special work."

I have also, but I won't take time to read them, a series of letters which Dr. Bock, who is the tutor in medicine, got as a consequence of his work with his men. They had been through the work with him and had gone into hospitals, and a year later had written him what the effect of it had been upon them. Some of those are quite interesting in pointing out, after a little thought and experience, precisely the sorts of things which we rather hoped the students would get from the method.

#### DISCUSSION ON PAPERS OF DRs LYON AND EDSALL

DR FRAZIER, St. Bartholomew's Hospital, London: I would like just first of all to thank the Association very much for allowing me to be here and to hear what you have to say upon this subject which is of great interest to us, and I have listened to these two communications with great interest. In connection with several points mentioned by Dr. Edsall, I think I could perhaps enlarge somewhat upon them.

I experienced the tutorial system at Cambridge before going into the medical school, and in the last year or two I have seen the other side of it as a teacher of medicine at St. Bartholomew's Hospital in London. I have seen these different grades of students come up to the medical school and pass through it, and I can emphasize very strongly what Dr. Edsall has said about the Oxford and Cambridge student—when he comes out from this school, he is of quite a different caliber from the others who have not been through that rather wide and open tutorial system of education.

Perhaps I might just add a word of warning at this stage from my own experience with these men. The tutor I had when I was at Cambridge is now a master of Christ's and some of you may know him. The way in which he used to tutor us was to invite us on Sunday afternoon to what he called his "squash." On Sunday afternoon at the "squash" at the master's house, we met scientists and all manner of people from all over the world. We were never given an

exercise, never asked to write a paper; we just met all these people at the master's house on Sunday evening—and I, personally, can say that that was the finest tutorial system that I could possibly have been brought up on.

The warning I would like to give is that when you appoint tutors, these tutors have got to talk about the world and all that sort of thing; not give them a definite exercise or ask hem to write an advance essay on a subject.

I am very much interested in what Dr. Edsall said about the subsequent careers of these men after they come out from medical school. He said they cease to stand out above their fellows because they do not get the tutorial system during the medical school training, and I am inclined to agree with him. However, that is corrected when that type of man who has been through his Oxford or Cambridge training comes to be a house doctor or an intern; then he gets the freedom that he wants at that stage of his career. There was no freedom for him in the two or three years of his clinical training; he had too much to get done up to that time to pass his examinations.

That brings me to a point that Dr. Lyon has brought up. We spend months out of the year examining the men. The man goes through the examinations themselves; then a little later he takes the M. B. examination, and then those who want to take the M. R. C. P. can do so. From my brief experience with education in this country, I do think that you would gain from a little more lenient examination system than you are admitted to have, but if I may advise you anyway do not overexamine your students.

DR. J. J. R. MACLEOD, University of Toronto, Toronto: I should like to call to the attention of this meeting a system in the University of Toronto by which in part we succeed in encouraging the ambitious student. The student of this type enters the arts curriculum in an Honors Course. If he intends to proceed to medicine, that course is one entitled biology and medicine. During the first two years of it he takes the ordinary arts curriculum for Honor students proceeding to a science degree, and in the third and fourth years devotes his time to the medical sciences, particularly anatomy, physiology and biochemistry. There are as a rule about twenty students in each year of the course so that there is a total enrollment of about eighty. At the end of the course, after they have received the B. A. degrees with first, second or third class honors in physiology and biochemistry, the best students are encouraged to take another year, in which they will proceed for the M. A. degree in these subjects. During this year we pay them research scholarships of \$800 each. As a rule about one-fourth to one-sixth of the class take one of these scholarships. They then proceed to the medical course with a better training in the scientific subjects, particularly with some research

experience, which makes them, as a rule, conspicuously better students in the clinic than those who have come through the regular medical mill.

I think we all feel that the method is not entirely a successful one, but at the same time we believe that it is one pointing in the right direction and one which, with a little more development, may prove successful in giving opportunity to the good man who is anxious to do a little more than the average medical student. Even the graduates (B.A.) who do not take the extra (M.A.) year usually prove to be better students in the later years of the medical course.

DR. BAZETT, University of Pennsylvania, Philadelphia: May I just bring out one point which I think Dr. Frazier will agree with me is very important. It seems to me, from having worked in the tutorial system, there is one outstanding thing which is essential for success, and that is ambition. The reason that the boy goes through Cambridge or Oxford and gives up an extra voluntary year or even two is because he knows he will have a better chance to get on the staff of a good hospital. Unless you in that way recognize an Honors Course, so that a man has to say, "I must take an Honors Course or I can not really reach what I want to do," then they will not do it and they will take the easiest course and you will not get the best men in the kind of training that you want to give them. An essential factor in an Honors Course, I think, is to encourage the good student to give up an extra year, so that he may attain a more complete, scientific foundation.

## FULL TIME:

### THE LETTER OR THE SPIRIT?

FREDERICK T. VAN BEUREN, JR.

Associate Dean Columbia University College of Physicians  
and Surgeons

There are at this time a number of medical schools in the United States whose clinical departments are to a greater or less extent organized and operated on the principle of so-called "full time." I say "so-called" because the definition of the term full time differs so much in different schools that the principle itself has not always been recognized as the same on account of its many different applications.

At one school, for example, where the clinical departments were said to be on a full time basis two years ago, the professor of surgery was free to take charge of as many private patients as he cared to in the University Hospital (collecting his fees himself), and could, in addition, visit private patients anywhere outside the hospital, providing they were of such eminence as to justify this rather unusual liberty for a full time professor. Contrast this with the situation at another school where the professor of surgery was not permitted at that time to examine or care for any patient outside the hospital and could charge no private patient a fee—much less collect it for himself. Yet both these departments were called "full time." It is true that one of them laughed a little at the other's strictness, and that the other rather despised the one's laxity, but they were both equally full time to the outside view: just as one may be a Davis democrat or a Bryan democrat and still satisfy the party's nominal claim without subscribing to every plank in its platform.

The principle of full time, as I understand it, is very simple. It demands from every incumbent the thorough, efficient and earnest performance of the duties of his office, whether research, teaching, care of the sick or mere administration. It lays this down as a condition, *sine qua non*. It does not, of course, specify how the

condition is to be effected. That is merely a matter of method where choice is still permissible. This principle, I think, is now pretty generally accepted. The method of its application however in all its details has not yet been—may never be—completely agreed on. Discussion along this line is still open, and because the principle of full time has been perhaps somewhat confused with the method of its application, such discussion may even be profitable. It might even serve to point out—what I believe to be true—that the principle itself has been a little lost sight of in partisan adherence to the details of this or that plan of organization adopted with a view to securing the desired effect.

It is always possible to differentiate the spirit from the letter of any plan of organization and to discriminate between them. And it appears that there still exists some difference of opinion regarding the relative value of the letter and the spirit in the administration of a plan. This is a difficult question and, for the man who prefers the letter to the spirit, I confess I have no convincing answer. But a statement may here be ventured as regards any plan of full time organization. The spirit of it must first be discovered or created and then fostered, a process painfully suggestive of evolution. The letter of it, on the other hand, can at once be enforced by suitable restrictions and regulations with the delightful rapidity of mere legislation. On the face of it, the latter is easier to accomplish: A man walks into the hospital or school at 9 a. m.—or at 8, if you please—and signs his name in the time book. At 4 or 5 p. m. he signs again and walks out. He has “confined his work to the school and the hospital,” He is, therefore, “a full time” man. He has complied with the letter of the law. Just what and how much he has done during the eight hour shift is between him and God. That, of course, is where the spirit counts, and it would appear that a very honest and well-intentioned man is needed for full time because between 9 and 5 he is his own boss. After a certain period, to be sure, he is called on to exhibit some evidence of his industry. This generally takes the form of a publication which is expected to show originality. In that case, it would appear that the full time man ought to be intelligent as well as honest and ought to have some originality of thought. If, during his labors, he has been so fortunate as to hit on some discovery or to formulate some method whose practi-

cal application promises or proves to be of value to the community or to the world, he may be crowned with fame. A purse may even be added to the crown. But, if he has not been so fortunate, he is expected to work just as hard and to be content with the reward of virtue. Therefore, the full time man ought to be conscientious to a high degree; for it is justifiable to say that most of us work for a reward of some sort rather than for the mere joy of working.

There are, it must be admitted, certain classes of men or, perhaps better, individuals among certain classes who do not comply with this generalization: tramps, poets, painters, real investigators, true physicians and born teachers are exempted. They apparently think more of the pleasure they find in their own occupation than of the pecuniary rewards which might enable them to escape from it for a time. They may have to bank its proceeds against a rainy day or to keep the wolf at a decent distance from the domicile. But some of them actually forget to close the windows on the rain and shut the door against the wolf: they get so interested in what they are doing. It seems evident, then, that a full time man ought to be deeply interested in his work.

Conscientiousness is a good thing but it cannot permanently or continuously take the place of a living interest. Independence must be considered also. Pressures are brought to bear on all of us at times. Hidden influences, subtle temptations, promised preferments, threatened condemnation, pressures invisible, intangible, impalpable, so light that they would not tip a chemists balance, so delicate that they would not register on a string galvanometer, but weighty to the mind that apprehends them. It requires courage to withstand such pressures. It is very clear, then, that a full time man ought to be, within reason, independent.

These are some of the qualities that real leaders have: qualities that one must find in a full time leader if he is to fulfill the spirit of the law. Of course, he ought to be well educated in general and well trained along the lines of his special endeavors. It were well if he had an agreeable disposition for the sake of his colleagues; initiative and administrative ability for the sake of his department; a striking personality for the sake of the public and a cheerful and courageous spirit for his own sake to meet those disappointments which are the constant fate of all idealists. The

real full time man, is an idealist. He is honest, he is intelligent, he has originality of thought and independence of judgment, he is conscientious and above all he is interested in his work. Now these are qualities which are born in a man—not made to order. He may be chosen as a full time man because of them, but he cannot be made to have them simply because he has been chosen. Moreover they are qualities which develop rather under the tutelage of tradition and example than by precept and prohibition. Real full time men are born not made. Am I filling in the outlines of a dream, you ask? On the contrary, I am describing men whom I know; whom I have worked with in all departments, fundamental and clinical. Not all of them have every one of these mental qualities in full measure, but each has enough of them to make him noteworthy.

Some of these men are bodily cripples but, spiritually, they are masters all. Their courage, their devotion, their constancy, their spirit of service is a guiding influence, an uplifting power, felt at once but not perhaps fully realized till years after they have gone to their last reward of rest and a good conscience. "A spirit goes out of all men who have meant good work," says Stevenson, "even though they died before they had time to sign it." A spirit indeed goes out from them. Think of Paré, of Hunter, of Jenner, of Lister, of Pasteur. Is it Pasteur's preservation of silk and wine for those who can afford them that has more benefited the world, or is it his love of truth, his devotion to science, his spirit of sacrifice, thrilling our imagination and scourging our sloth? A spirit indeed goes out of such men. And running down the years it lights a torch here and there in the hands of those worthy to bear them. Think of Halsted, of Osler, of Delafield, of Prudden, of Richardson, of Warren, of Mitchell, of Leidy, of Huntington and a score of others. Were these the kind of men who must sign a book or punch a time clock, or who cannot be allowed to collect their own fees or to decide what they ought to and ought not to do? Or are their intellectual descendants, the full time teachers of today, less to be trusted?

Would you say that this type of man ought to be restricted either in his work or in his recreation? Yet consider the restrictions that were planted around him like a fence under the polite fiction that they were for his protection.



In order to continue to exist he must acquire the ability to protect himself. Too much restriction, too much protection, too much standardization, do not make for the development of character, intelligence or initiative. If these exist in any individual why not give them a chance to grow. Why set up class distinction of full time and part time in which should be the truest of democracies where we are all together engaged in the pursuit of knowledge, the diffusion of knowledge and the application of knowledge? Do you recall Solon's reply to the critical questioner of the value of his codification of the laws of Athens? "Are these the best laws that you can make?" asked the heckler. "No," replied the sage, with a patient smile, "but they are the best laws that the Athenians will keep." There is a wisdom and humanity in that reply which challenges attention and deserves remembrance.

High ideals are admirable things and necessary for real progress, but they can only be realized in dreams or in that delightful form of exaggerated literary freedom known as poetic license. The magnificent Leonardo said, "the greatest misfortune is when theory outstrips performance." But the greatest living exponent of full time restrictions told me one day, with apparent satisfaction, that—when he was a school teacher—he had absolutely ignored the rules imposed on him by his official superiors. I submit that I admired him for his insubordination. He was and is an admirable man not because he broke the rules but because he kept something better unbroken, the spirit of good teaching. But is any man properly above the law? Would it not, in his case, have been better had the rules been adapted to his superior intelligence and initiative? And would it not be better and more practicable to formulate any necessary restrictions regarding full time in medical schools in such manner as to allow a broad interpretation that would cover the cases of other men of unusual character and intelligence and initiative? After all, the best you can get out of any man is his own best not some one else's.

Cannot freedom be had without license among men of character and intelligence? Does distrust breed loyalty? Does prohibition rouse enthusiasm? Does initiative gain value under restrictions? Why not rid the full time policy of any shadow of distrust, of all irritating prohibitions and of all hampering restrictions? Why not introduce into it all the freedom and confidence that we reasonably can?

These were some of the questions that came up for consideration in our experience with one plan of full time clinical service at the College of Physicians and Surgeons. Let us be quite honest: Full time is a good thing in principle. But let us be sensible, too; It is admittedly possible to have too much of a good thing in practice. A question arose for judgment. Was it not time to redraw the letter of the full time plan so that it might more nearly match its true spirit of full service?

The problem of university full time has theoretically a very simple solution: find the right man; put him in the right place; give him all the freedom of thought and action that is possible under the university statutes. To translate that theory into practice is not always so simple.

Our former full time plan with its specific restrictions for men in the clinical departments was in theory intended to offer freedom and afford opportunity. But it grew into something very much like involuntary self-denial as we practiced it. Now we have altered the details of the plan without in any sense altering the principle of full time it is intended to apply. There is a statute, No. 65, of Columbia university for the government of all officers of instruction in every department of the university, clinical or otherwise. One cannot but admire its flexibility and breadth. It deserves a more frequent quotation than it has had and a wider recognition than it can secure in a university report: "No officer of instruction," it reads, "shall be employed in any occupation which interferes with the thorough, efficient, and earnest performance of the duties of his office." This is our decalogue. This is the only prohibition to which we now subscribe. All our departments are now on this same university basis. "The quality of mercy is not strained." Nor can the quality of service be constrained. Full service is not always given in full time. Full time is merely a means to an end. Full service is the end it aims at. It cannot be forced by regulations. It is born of a tradition; fostered by example and nourished by loyalty to the spirit rather than to the letter of the law.

If we must have precepts and admonitions, let them be exhortations rather than prohibitions: Let us write above the entrance to our laboratories, wards and class rooms, "Thou shalt love thy work with all thy heart and with thy soul and with all thy mind," "Thou shalt trust thy colleagues as thyself."

## COOPERATIVE EDUCATION IN MEDICINE

NEWTON EVANS,  
President College of Medical Evangelists

In our medical school we are this year engaged in trying an experiment on our first-year students. I want to point out some of the things which have led us to the making of this experiment.

One of these has been the financial problem of the medical student himself. We find that some of our students actually do damage to their health by their effort to support themselves while in the medical school. Some of them do this by working at night; some of them have injured their health by becoming donors for blood transfusion at too frequent intervals. From a financial standpoint, many of the students are deeply in debt when they finish their medical course, which is not desirable.

Another fact which has made us feel that something ought to be done is that medical students, especially in their first two years, are liable to take too little interest in medicine. They are satisfied to go to their classes when required to pass their examinations and to make their grades, and then to forget about their medicine and to spend their time in some way to amuse themselves.

Another thing which influenced us was the strong criticism which has been evident in medical education circles for the past few years of the impracticability of the training which is now given to medical students. This was emphasized by a statement (I think it was made by President Pritchett of the Carnegie Foundation) that the entire present medical course should be junked and that a new medical curriculum should be made, from the ground up.

Four or five years ago the so-called "co-operative education plan," which is now in use and has been for about twenty years in the University of Cincinnati Engineering College, was brought to our attention and it occurred to us that this plan might be applied effectively in the medical course.

I will read a few sentences from a report of the Carnegie Foundation, dated 1918, on the subject of "Engineering Educa-

tion," which describes very briefly the essential points of the co-operative plan of education.

"The mechanism of the scheme is very simple. The students are divided into two groups, one of which is assigned to work in industrial plants while the other goes to school. At the end of each bi-weekly period the two groups change places, so that the shops and the school are always full-manned. In the shops the students work as regular workmen for pay, but the nature of their work and the length of time each stays on any particular job are subject to approval by the university. The emphasis of the school work is on theory and principles, but these are well interrelated with the shop work by 'co-ordinators,' who visit each student during each shop period and then meet the several groups during the university periods in special 'co-ordination' classes for this purpose.

The curriculum is completed in five years of 11 months each, so that each student received twenty-seven months of university instruction. Since the regular four-year curriculum in other schools requires about thirty-six months of actual instruction, it would seem at first glance that the Cincinnati curriculum could not give as full a training in fundamentals as is given elsewhere. This inference, however, is wholly unwarranted, because in the twenty-seven months of industrial work the student gets a vast amount of practical knowledge which is given in other schools in information courses, and because the close co-ordination with practice makes the theory more intelligible and significant to the students. The graduates of Cincinnati have unquestionably as extensive a training in theory as have those of other first class schools. In addition, the Cincinnati graduates are able to command engineering positions at graduation without one—or two—year 'apprentice' courses, such as are required of men from other schools by a number of the large corporations.

Financially the co-operative plan is very economical both for the university and for the students. The university has access without expense to shops and shop equipment that are worth millions of dollars and are never allowed to deteriorate or become antiquated. Since only half the students are in school at any one time, the same school equipment is adequate for twice as many students as elsewhere. The result is that the total cost to the university per student per year at Cincinnati is about \$130. At no other school of equal grade is this cost less than \$250, and at the large endowed schools it runs as high as \$600 or even more. The money earned by the student during his shop periods, while not sufficient to pay all his expenses, is of great assistance, and makes possible an engineering education to many a worthy boy who could not otherwise afford it.

In addition to the obvious financial advantage, the co-operative plan has many educational advantages."

We felt that a plan of this kind might be applied in medical education and so we have undertaken this experiment. This year we admitted into the medical course a class of 90 students. These are divided into two groups of 45 each. One group of 45 spends the calendar month working in a hospital or sanatorium; the other group spends the month in school, and at the end of the month they exchange places. What kind of work are these students who are working in the hospital doing? Of the 45 pairs who are working in the hospital, 17 are working as orderlies or as general nurses in the wards; five are working as pharmacists' assistants; five pairs are working in hydrotherapy treatment rooms; six are working as technicians in clinical laboratories; three are working in the pathology and bacteriology laboratories; others are working as X-ray technicians; some are working in receiving offices, some on the ambulance, some as medical office assistants.

We find that there is ample opportunity for the placing of these students in a territory within a small radius in Southern California. We have placed the 45 pairs of students this year easily and we have no reason to think that we cannot find opportunity for four times that many as the plan is applied to the later years of the medical course.

The crux of the plan as to making it a success from an educational standpoint is the work of the so-called co-ordinators. The work which these students are doing in these hospitals must be used as a means of teaching them medicine, and in order to do this there must be teachers who are medical men, who are spending their time actually visiting these boys in the hospital and in holding classes with these students on those subjects with which they have come in contact during their month in school.

As one of the means of stimulating them to take advantage of the educational opportunities in the hospitals where they work, we have them write essays, themes on some subject or item with which they have come in contact, some experience which they have had, some patient whom they have met. These themes are corrected and are quite largely read by the students to a group of their classmates during the so-called "co-ordination classes" while they are in the school during their month of school work.

What are the results of this work, as we are enabled to see them from this short experience of the few months which have

passed of this present school year? From the student's viewpoint, the plan is a decided success. All of our students in this freshmen class feel that they have an opportunity to learn something which they could not otherwise learn and to advance rapidly in their medical knowledge, and they feel that from a financial standpoint they are receiving a decided advantage. We have been able to find jobs for them at such wages that they receive grossly from \$65.00 to \$90.00 per month. This enables them to save from \$35.00 to \$50.00 per month net above their living expenses during their month of work, which amount covers their living expenses during the month when they are in school; so that practically under this plan a student is enabled to earn enough money to meet his living expenses and the only money which he needs from outside forces is sufficient to cover his tuition fees and the expense of his books. The students appreciate this financial opportunity.

Many comments have been made by those who have observed the work of the students, physicians who have come in contact with them, and all of the comments which have been made have been favorable. Those who have seen the work of the students are impressed that these boys are having an opportunity and experience which is of a practical educational nature.

A recent incident was rather amusing to us. It occurred at one of the surgical clinics at the Los Angeles General hospital. The senior class was being quizzed by the teacher as to the subject of spinal anesthesia. It appeared that members of the class knew very little about spinal anesthesia. There was present a young man who was looked upon as a young physician and in some way the teacher passed the question to him, and he gave the other students some rather definite information about spinal anesthesia. After the class was dismissed, one of the senior students spoke to the young man and said, "Doctor, I should like to make your acquaintance: I am a senior at the College of Medical Evangelists." The young man replied, "I am a freshman at the College of Medical Evangelists, on the co-operative plan."

In my own mind, the advantages of this plan are considerable and definite. I believe that in this way it is possible for the student to receive a medical education which is more effective than is possible under our old plan. The experiences which the student has in the hospital, in contact with patients serve, we might

say, as pegs in his mental storeroom on which he is enabled to hang the things which he learns in school in a way that he can use them more effectively afterward.

We might use another illustration. I believe that the practical experience, the every day contacts which he has in the hospital and with the physicians serve as a mordant to fix in his mind the things which he is being taught in the medical school as they cannot be fixed in any other way.

Another useful, perhaps incidental good effect, is the opportunity which it gives a student for effective vocational choice, which he cannot receive in so strong a way in the ordinary medical course. He comes in contact with all sorts of medical work. The medical man, of course, has already chosen his profession, but there are many different divisions of medical work. He may be an internist, he may be a general practitioner, he may be a surgeon, he may be a specialist, he may be a teacher, a research worker, or what not. The ordinary medical student does not, as I see it, have sufficient opportunity under the usual curriculum to know what he wants to do as well as he should have opportunity to know it, and I believe that this plan of bringing the student into contact with practical medical work in various lines gives him that opportunity.

To us from a faculty standpoint, one of the most useful effects of this is the means which it gives us of judging the adaptability of each student for the practice of medicine. It is very easy for a student to go through his first, second, or perhaps his third year and pass his examinations acceptably and still not find out that he is not adapted to medicine; but it is very easy for us to see that a man who fails to make himself useful in the hospital where he is working is not going to make a success in the practice of medicine.

This may seem to be an outlandish experiment in medical education, but to me it is very plain that it has a decidedly humanizing influence in the education of the medical student.

#### DISCUSSION

DR. GEORGE M. KOBER, Georgetown University School of Medicine, Washington, D. C.: I should like to ask Dr. Evans how a school is in a position to comply with the requirements of the State Board of Examiner of California, which I believe requires a curriculum of

over 4400 hours unless indeed the requirement has been modified in recent years? I know that California ranked above all other states in the number of hours required for a complete medical curriculum.

**DR. NEWTON EVANS:** The State law requires 128 weeks of instruction in the medical school. Our curriculum is 5 years in length instead of 4, and the work is so arranged that there will be actually 128 weeks of instruction.

**DR. LOUIS B. WILSON,** Mayo Foundation, Rochester, Minnesota: I have been very much interested in this plan which Dr. Evans has presented to us. I have had an opportunity to study it on the engineering side as applied to my only son who graduated three years ago from Harvard which has practically the same plan in engineering. The thing which seemed to me the most interesting result of Harvard's modification of the Cincinnati plan was the breadth of view which was developed in the young man by his contact with engineers outside of the university.

I should like to ask Dr. Evans if he contemplates carrying on his plan through the entire course, if he contemplates placing his students in their clinical years in contact with clinicians who are not on the staff of the Medical School and if perhaps he contemplates placing them with general practitioners, with whom they might get experience in seeing patients in their homes.

In our graduate work we find that one of the weaknesses of men, even after their work with us of four or five years, is that at no time during their college, their medical school or their graduate work have they had sufficient opportunity to take care of patients in their homes. The thought is suggested by Dr. Evans' interesting experiment that it might be possible by some such plan as he proposes to give students of medicine apprenticeships for a time, with competent general practitioners, under whose tutelage and supervision they would get an opportunity to take care of patients outside of hospitals, as they will have to take care of most of their patients through the rest of their lives if they are to be general practitioners.

**DR. NEWTON EVANS:** The work, as I said, is an experiment, and we are feeling our way. Personally, it is my hope that we may be able to carry the plan through the entire five years' course, but our Board has not yet given us authority to that extent. It is simply an experiment. In answer to Dr. Wilson's second question as to whether we are including in the types of experience which the students are getting any experience in the offices and the practices of general practitioners, it is our plan to give at least some of the students this type of experience; in fact, one pair of students is now working in a physician's office, and I believe it is just as valuable and perhaps more valuable from many standpoints than to have the entire time spent in actual hospital experience.



## ORGANIZATION AND ADMINISTRATION OF THE HOSPITAL MEDICAL SCHOOL.

THOMAS ORDWAY,  
Dean Albany Medical College

Two years ago I presented a paper entitled "Four Years in Medicine—The Hospital-Medical School," an account of an experiment in medical education in Albany, indicating certain progress made in the development of this plan.

Our secretary suggested that I give a further account of the organization and administration of the school and hospital. As I did not feel that my opinions were sufficiently crystallized, I merely consented—in order to learn from your combined experiences—to present certain subjects as topics for intimate round table discussion.

What are the objectives of such medical schools and hospitals? It seems to me that their objectives are identical and include

(1) The best care of each patient, with courtesy and consideration for relatives and friends.

(2) Suitable education of internes, medical students, and nurses.

(3) Fostering the spirit of research, so that this public service (to the community) may be accomplished in the most far reaching manner.

In order to accomplish these objectives most satisfactorily, it is necessary to have such construction of the hospital-medical school plant that there is direct physical relationship, so that the laboratories of the school may serve the hospital needs and the teachers and students go freely from wards and rooms of the hospital to the laboratories, and vice versa. The service units of the hospital should be so centralized that there is the best service and at the minimum cost.

The organization of the hospital-medical school should provide such a relationship of boards of trustees, executive committees, administrative board, medical board, various committees and

school and hospital administrative officers that there should never be any "conflict" in the objectives of school and hospital. The trustees should realize that in such a plant with its varied workers the methods of the highest type of business efficiency are necessary to secure good results—not only strict business accounting, purchasing and service, but supplementary compensation and diversional opportunities for employees.

The following method has gradually been evolved by the Albany Medical College and Albany Hospital: The personnel of the executive committee is practically identical, the dean of the medical college is chairman of the medical board of the hospital, the professors of the medical college are chiefs of the respective services in the hospital and dispensaries; joint meetings of the medical board and the executive committee of the hospital are held and weekly meetings of the dean or other representatives of the medical board with hospital superintendent and executive committee of the hospital are planned.

Some medical educators believe that the dean of the school should administer the hospital, with the aid of suitable associates—physicians, hotel men, or business men. It seems important, however, that the dean do some teaching and research, thus keeping in closer touch with the students and faculty. This method renders it essential to select for dean and superintendent men who have similar ideals, education and training, and the personal qualities of working closely together for the objectives above mentioned.

It is a common custom, and I believe most satisfactory, for medical schools to have numerous committees—for admission of students, preparation of curriculum, supervision of shop, etc.

I believe the hospitals could profit by similar committees. Such groups, preferably small—usually three members—both in advisory capacity and with power are very important as they serve as a check and can give more detailed and balanced consideration to many hospital problems.

The budget plan has been of great help in school administration. When first introduced, however, it is important that the department heads understand that the common political idea of spending the entire budget—often precipitously during the last few weeks of the year—for fear of reduction the next year if

there is any surplus, must not prevail. We have simply shown that only a certain amount of money was available, that salaries could be raised only by strict economy in budget, that a surplus would aid such salary increases or allow funds for unexpected expenses.

In hospitals it seems to be less common to have budgets for various departments and fewer committees aid. It is fully as important for this to be done in hospital administration and necessary to devise plans for inter-departmental co-operation, and supplementary compensation to improve the service. In hospitals and schools we cannot talk about profit sharing—for there are no profits but always deficits. These could be minimized, however, if for every employee there was a stimulus for better work.

In many industries this has long been recognized and different forms of profit sharing and diversional opportunities serve as an incentive and stabilizing influence.

Among such inducements in one of our local industries are

(1) Extra, supplementary, compensation for the heads of various departments. The participant is notified in a letter each year what percentage of the yearly salary is thus donated—usually from 5 to 25 per cent.

The underlying principle of the plan is that each participant is a member of a group which is working to improve the company's business and its relations with its customers and the public, to increase its volume of gross profits, to keep down expenses, to use the investments in plant, equipment, merchandise and receivables to better advantage, and thereby increase the return from a given investment and turn it over more rapidly. All of these elements are present in the problems of any responsible executive and it is the hope of the Board of Directors and of the officers that each participant will share in this responsibility and put forth his very best efforts to do a more efficient job and thereby share in the increased remuneration which will inevitably result.

(2) A bonus of 5 per cent of his earnings for the past year is given as a prize or honorarium to every worker, skilled or unskilled, after five years of service.

(3) Pensions to all employees after twenty years of service and after age of 70 years.

(4) Disability relief for service under 20 years.

(5) Rewards for suggestions for improvements—varying from \$5 to \$10 up to \$50 to \$1,000. Such rewards being subject to the recommendation of a “suggestion committee” composed of a master mechanic, representative of research laboratory and a representative layman.

In summarizing I would invite discussion and suggestions on the following points :

- (1) The objectives of the hospital-medical school.
- (2) The method of organization and administration best to accomplish these objectives.
- (3) The value of small committees, advisory or with power.
- (4) The importance of departmental budgets and interdepartmental co-operation.
- (5) Supplementary compensation as an incentive and stabilizing influence, particularly for certain classes of employees.

## THE CURRICULUM.

FREDERICK C. ZAPFFE,

Secretary Association of American Medical Colleges

The reason for the preparation of these charts was an observation I made while inspecting medical schools with regard to the number of hours that are given to the various subjects in the curriculum and also by reason of the fact that the medical curriculum has been the favorite battleground and point of attack by all those who have very little to do with it.

It is quite interesting to note in connection with the papers read yesterday morning, that nearly all of the schools are giving considerable time to the subjects of hygiene, sanitation and preventive medicine and quite a number of them have worked out some very excellent courses in those subjects.

On the basis of a 4,000 hour schedule there is a minimum of 120 hours and a maximum of 160 hours in hygiene and sanitation, and it was quite satisfying and gratifying in looking over these figures, all of which are furnished by the colleges themselves and are not computed from catalogs or lecture schedules, to note that the colleges are taking advantage of these hours.

It was rather interesting to see that the Association standard was being followed comparatively closely by 35 of the 66 colleges that are included in this group; in other words, more than 50 per cent were living up to the curriculum laid down two years ago by the Curriculum Committee. Only four colleges fell below the minimum of 3,600 hours, and one of these colleges fell as far below as 3,159 hours. That college is Yale, which falls far below in the scheduled number of hours in all of the different courses except obstetrics and gynecology. There are eighteen colleges which are above the 4,400 hour limit and one of these is as high as 6,932 hours. That college is Meharry Medical College of Nashville, Tennessee.

The excessive hours in that particular case come almost en-

tirely in the so-called clinical subjects, medicine, surgery and obstetrics and gynecology. In obstetrics and gynecology, for instance, the maximum on a 4,000 hour schedule is 200 hours. Meharry runs over 800—816 hours. That would seem to be rather bad, but it really is not. I visited that school about two weeks ago and found that they are putting in a terrific lot of time in out-patient obstetric work. Their students are sent out into the city of Nashville among the colored people to do obstetric work, and they have tried to add up all these hours that the boys spend in that work and it makes that awful total of 816 hours. They have a station in the city in which the boys live for a period of two weeks and take care of everything that comes along during that time. Furthermore, they are on call for another month in addition to that, to take care of obstetric work if the demand for service is too great for the students who are living in the center. So that it is not as bad as it would seem.

One thing I have noticed in getting the number of hours on different subjects was this: That I could invariably pick out the most dominant or most influential man on the faculty, the fellow who just simply could not be repressed and who demanded a certain number of hours and got them. However, the number of hours does not always signify that that is the best course being given. In a few instances, however, the exceedingly large number of hours really means that the best work in the school is being done in that particular department.

As for the individual subjects, in anatomy seventeen of the sixty-six colleges are within the requirements, six are below, and forty-three are above. The minimum number of hours on a 4,000 hour schedule would be 560 and the lowest number of hours is 374, and yet that happens to be not the worst school in the Association by any means; in fact, it is one of the best schools, where the course is laid out in a way that makes it necessary for the students to work exceedingly hard to get their anatomy, and they get it. The highest number of hours in anatomy, according to the 4,000-hour schedule, would be 740. There is one college that gives 1,185, and when I tell you that that is the University of Texas, where Dr. Keiller holds forth, you will not be surprised at the 1,185 hours, and I think one may safely say, without offending the doctor, that he is the dominant member of the faculty as

well as the one, perhaps, who gives the best work in the curriculum.

In pharmacology eleven colleges are within the Association standard, eleven below and forty-four above. The lowest number of hours is 72. The minimum, under the 4,000-hour schedule, would be 160. The highest number of hours in pharmacology is 399; the maximum on a 4,000-hour schedule would be 200. In that particular case the number of hours has already been corrected since a recent inspection which has been made of the school, when it was found that the dean of the College of Pharmacy, who was also teaching in the medical school, had been taking unto himself 399 hours.

In physiology ten colleges are within the Association standard, one below and fifty-six above. The lowest number of hours is 154; the highest is 704. In the case of some of those schools, some biochemistry is being taught in the department of physiology and in some there is also some hygiene being taught in that connection, so that it is not fair to assume that fifty-six schools that are above the standard are so very much out of the way, although the highest, 704, is in Meharry, I found that that was being done there entirely because those chaps seemed to be very slow in grasping the physiology problems and they give them a lot of work. They are putting in the time to very good advantage.

In chemistry twenty-two schools are within the Association standard, one below and forty-three above. The highest allotment in chemistry, on a 4,000-hour schedule, should be 180, and the highest on this chart is 454, for which there seems to be no particular explanation, except that the chemist refuses to back down and so far has succeeded in keeping that large number of hours. Whether he is teaching biochemistry or physiological chemistry, does not appear.

Pathology does better than any of the other subjects. Twenty-six schools are within the standards, two are below and 38 above. The highest is 912 hours, which is 400 hours more than the maximum on a 4,000-hour schedule.

In medicine 21 schools are within the standard; 29 above; six below. The highest number of hours in this case is given by Indiana, 1,489 hours. Inasmuch as Dr. Emerson is in charge of this

work, it is safe to say that the time is being put in to best advantage.

In surgery fifteen schools are within the standard; 37 above and four below. The minimum in surgery should be 520 hours, and the minimum number here is 428. The maximum should be 700 hours, and the maximum is 1,440, which is at Meharry.

In gynecology and obstetrics only five schools are within the standard, 50 are above and one below. The highest is Meharry, and I have already explained the reasons for that.

The curriculum also provides for an election up to 20 per cent of the total number of hours. There are not very many figures in this column. Only a very few schools, not over half a dozen, have prescribed in their catalogs, or according to the reports they made, a definite number of elective hours. In a few instances, the electives are included in the final or clinical year, and when you come to study these charts closely you will find the explanations which will help you to study the figures and know what they mean.

But, on the whole, the result is not bad. After all, the colleges are doing very well, even though only 35 seem to be within the standard. As a matter of fact, there are not over two or three colleges that are decidedly outside of the standard, and even there as in the case of Meharry, there seems to be good and sufficient excuse for the larger number of hours. A careful study of the charts will give much information and I am sure will help the deans in the better preparation of their curriculum, according to Association standards.



SCHEDULE OF STUDY OF ASSOCIATION MEMBERSHIP, 1924-1925

Asn. Am. Med. Coll.	Anat.	Phys.	Pharm.	Chem.	Path. & Hyg. & Sanit.	Med.	Surg.	Gyn. & Obst.	Electives	Total
4000 Hours Min.---	560	180	160	140	400	800	520	160	----	----
Max.---	740	240	200	180	520	1060	700	200	----	----
Alabama -----	432	270	72	144	432	72	36	----	----	1458
Stanford University---	778 <sup>1</sup>	275	242	176	445	954	636	224	200	4051
California -----	660 <sup>1</sup>	224	160	224	408	880	608	200	496	4004
Colorado -----	880	302	192	230	912 <sup>2</sup>	751	540	208	----	4111
Yale -----	480	180	225	180	435	693	573	303	----	3159
Georgetown -----	814	264	220	240 <sup>2a</sup>	574	1162	770	260	----	4480
George Washington---	806	240	202	240	464	120	1144	312	----	3813
Howard -----	774	225	180	225	580	30	1062	570	----	4396
Emory -----	864	360	399	300	511	30	835	240	----	4811
Georgia -----	794	240	130	264	560	300	964	768	----	4289
Loyola -----	900	324	120	216	360	120	1104	360	----	4170
Illinois -----	704	256	240	180	464	54	834	264	----	3748
Northwestern -----	736	288	244	232	400	32	1232	262	----	4074
Rush (Chicago)-----	748	324	115	230	544 <sup>3</sup>	900	700	300	200 <sup>5</sup>	4291
Indiana -----	678	270	198	162	525	138	1489	260	----	4454
Iowa -----	941	306	216	272 <sup>6</sup>	561	68	884	342	----	4805
Kansas -----	684	324	306	216	532	36	1109	216	----	3981
Louisville -----	792	264	220	198	572	154	1166	242	----	4400
Tulane -----	814	264	149	196	538	66	1098	781	----	4090
Johns Hopkins-----	374	275	99	165	484	22	1141	745	462	3980
Maryland -----	926	288	228	288	464	64	700	250	----	4596
Boston -----	744	320	240	248	611 <sup>7</sup>	----	1009	909	----	4304

1 — Does not include embryology.  
 2 — Includes some public health and hygiene and 230 hrs. of clinical pathology.  
 2a — Includes 50 hrs. sanitary chemistry and 40 hrs. toxicology.  
 3 — Pathology and immunology only; no bacteriology.  
 4 — Includes bacteriology; elective in any department.  
 5 — Elective in any department.  
 6 — Includes 102 hrs. of physical chemistry.  
 7 — Includes public health and hygiene.

## SCHEDULE OF STUDY OF ASSOCIATION MEMBERSHIP 1924-1925—Continued.

	Assn. Am. Med. Coll.	Anat. Phys.	Pharm. Chem.	Path. & Hyg. & Sanit.	Med.	Surg.	Gyn. & Obst.	Electives	Total
Harvard	480 144 <sup>9</sup>	232	104	232	964 <sup>8</sup> 1108	741 <sup>8</sup> 597	256	----	3888
Tufts	752	300 325	244	384	820	718	212	----	4087
Detroit	460	336	360	216	1222 <sup>10</sup>	428 <sup>10</sup>	248 <sup>10</sup>	----	4194
Michigan	583	256	208	200	528	428	376	----	3416
Minnesota	704	440 <sup>11</sup>	187	---	860 <sup>12</sup>	508 <sup>12</sup>	222 <sup>12</sup>	Yes	3506
Mississippi	909	330	255	264	68	---	---	---	2224
Missouri	867	306	221	187	85	51	---	85	2278
St. Louis	874	228	240	208	1084	713	278	---	4335
Washington	630	267	132	272	1086	732	220	---	3956
Creighton	688	256	192	192	941	889	203	---	3969
Nebraska	780	285	187	238	714	548	211	---	3626
Albany	784	330	168	255	1452	828	168 <sup>12a</sup>	---	4874
Buffalo	749	330	275	214	938	727	258	---	4151
Columbia	900	270	135	240	1083	876	240	---	4419
Cornell	732	318	114	239	940	796	271	---	4329
Long Island	880	448	192	182	1118	775	523	---	4760
Syracuse	844	290	210	320	1237	783	190	---	4594
University & Bellevue	701	292	170	292	1163	622	271	128 <sup>13</sup>	4343
North Carolina	700	200	235	162	20	20	---	---	1947
Wake Forest	1024	324	172	162	---	---	---	---	2258
North Dakota	953	300	150	184	50	17	---	---	2142
Cincinnati	710	256	210	168	914	639	162	---	3475
Ohio	982	298	198	207	782	728	135	272 <sup>14</sup>	4200

<sup>8</sup> --1705 hrs. are required in medicine and surgery combined.

<sup>9</sup> --Elective course in 4th year.

<sup>10</sup> --Does not include conference clinics and bedside work.

<sup>11</sup> --Include biochemistry.

<sup>12</sup> --Does not include time for elective student interships. A additional electives are scattered throughout the various departments.

<sup>12a</sup> --Does not include 10 days intramural maternity work, 4 hours prenatal outpatient clinic, and 2 periods in outpatient gynecology.

<sup>13</sup> --Required military science.

<sup>14</sup> --Dispensary.

SCHEDULE OF STUDY OF ASSOCIATION MEMBERSHIP 1924-1925—Continued.

Assn. Am. Med. Coll.	Anat.	Phys.	Pharm.	Chem.	Path. & Hyg. & Sanit.	Med.	Surg.	Gyn. & Obst.	Electives	Total
Western Reserve	968	320	288	224	47615	1184	1000	332	---	5072
Oklahoma	792	240	192	224	830	64	756	344	---	4906
Hahnemann	850	154	294	59517	533	60	663	316	---	4574
Jefferson	931	248	279	454	661	66	802	291	---	4783
Pennsylvania	791	357	243	256	722	34	723	305	---	4699
Pittsburgh	770	277	165	209	521	103	725	202	---	4309
Woman's of Penn.	454	274	106	245	560	169	732	521	---	4115
Philippines	814	320	274	204	572	162	784	285	---	4454
South Carolina	772	282	210	180	415	56	850	179	---	3796
South Dakota	1098	351	189	252	39618	---	---	---	108	2430
Meharry	668	704	312	320	752	64	1440	816	44819	6932
Tennessee	759	319	242	198	429	99	1127	381	---	4412
Vanderbilt	810	312	105	180	578	60	650	302	---	3415
Baylor	902	276	281	188	522	111	93320	276	---	4211
Texas	1185	315	255	225	615	60	1099	475	---	5074
Vermont	736	288	224	192	464	64	1043	266	---	4144
Med. Coll. Va.	880	280	384	288	57621	---	1184	328	---	4728
Virginia	912	272	242	306	480	60	896	18123	100	4247
West Virginia	881	336	252	180	502	36	162	54	---	2439
Marquette	708	306	144	300	474	54	800	270	---	3716
Wisconsin	704	240	208	160	44423	---	---	---	---	2035
McGill	900	360	150	300	440	90	880	300	---	4270

15 —Pathology and Immunology.

16 —Bacteriology and Hygiene.

17 —Includes work which really belongs to physiology.

18 —Only general pathology; no immunology required—but is offered as an elective.

19 —Applied psychology; professional efficiency; medical history; history writing; dispensary.

20 —Does not include time for clinico-pathologic conference or clinical clerkships.

21 —Includes preventive medicine.

22 —Includes gynecology.

23 —Obstetrics only.

24 —Elective in obstetrics.

25 —Includes Hygiene.

## Dean of University of Indiana School of Medicine

TOTAL HOURS		MEDICINE	
Association Standard		Association Standard	21
Between 3600-4400	35	Below	6
Below 3600	4	Above	29
Above 4400	18	Lowest (hrs.)	528
Highest Total	6932	Highest (hrs.)	1489
Lowest Total	3159	Over	
Between 4400-4500	4	1-10 per cent	17
4500-4600	3	10-20 per cent	7
4700-4800	4	20-30 per cent	2
4800-4900	3	30-40 per cent	3
4900-5000	1		
5000-6000	2		
6000-7000	1		
		PHARMACOLOGY	
		Association Standard	11
		Below	11
		Above	44
		Lowest (hrs.)	72
		Highest (hrs.)	399
		Over	
		1-10 per cent	9
		10-20 per cent	7
		20-30 per cent	7
		30-40 per cent	9
		40-50 per cent	2
		Over 50 per cent	10
		PHYSIOLOGY	
		Association Standard	10
		Below	1
		Above	56
		Lowest (hrs.)	154
		Highest (hrs.)	704
		Over	
		1-10 per cent	7
		10-20 per cent	16
		20-30 per cent	10
		30-40 per cent	14
		40-50 per cent	4
		Over 50 per cent	2
		ANATOMY	
Association Standard	17		
Below	6		
Above	43		
Lowest (hrs.)	374		
Highest (hrs.)	1185		
		HYGIENE-SANITATION	
		Association Standard	10
		Below	44
		Above	8
		None	4
		Lowest (hrs.)	22
		Highest (hrs.)	300
		PATHOLOGY	
Association Standard	26		
Below	2		
Above	38		
Lowest (hrs.)	304		
Highest (hrs.)	912		
		CHEMISTRY	
		Association Standard	22
		Below	1
		Above	43
		Lowest (hrs.)	154
		Highest (hrs.)	454
		Over	
		1-10 per cent	---
		10-20 per cent	---
		20-30 per cent	---
		30-40 per cent	---
		40-50 per cent	---
		Over 50 per cent	---

## GYNECOLOGY-OBSTETRICS

Association Standard-----	5
Below -----	1
Above -----	50
Lowest (hrs.)-----	135
Highest (hrs.)-----	816

## Over

1-10 per cent.-----	8
10-20 per cent.-----	5
20-30 per cent.-----	7
30-40 per cent.-----	9
40-50 per cent.-----	4
Over 50 per cent.-----	17

## SURGERY

Association Standard-----	15
Below -----	4
Above -----	37
Lowest (hrs.)-----	428
Highest (hrs.)-----	1440

## Over

1-10 per cent.-----	17
10-20 per cent.-----	10
20-30 per cent.-----	7
30-40 per cent.-----	1
40-50 per cent.-----	1
Over 50 per cent.-----	1

# IMPORTANCE OF PHYSICAL PLANT IN THE CORRELATION OF TEACHING IN MEDICINE.

## THE PLAN FOR PITTSBURGH.

RALEIGH R. HUGGINS,

Dean University of Pittsburgh School of Medicine

In presenting this subject, it may be of interest, particularly to those who are in a similar position insofar as the development of a plan for the teaching of medicine is concerned, to know something of the difficulties which have been encountered in our undertaking. If there are any ideas which may prove helpful to others under like conditions, I shall feel justified in this brief review.

Thirty-nine years ago a medical school was founded in Pittsburgh. It was not unlike many other medical schools at that time. It was owned and controlled by a group of medical men and without financial support other than its own tuition. It had been apparent for many years that such a school could not continue. In 1910 the school was purchased from its original owners by the University of Pittsburgh. The old medical school building was sold and a new one erected on the campus of the university. There is no hospital connected with it and our students receive the work in the junior and senior years in hospitals far removed and not under the control of the university. We have no selection in the matter of the men teaching in the clinical subjects, except as they happen to be associated with these various hospitals.

Our problem has been to secure hospital facilities that would give better correlation and closer affiliation in every way insofar as the clinical teaching is concerned. We had been notified by the Committee on Medical Licensure of the state of Pennsylvania that unless better hospital facilities were provided they would no longer recognize us as a class A medical school. This, of course, would not permit our graduates to practice medicine in Pennsyl-

vania. After spending a number of years in efforts to elicit financial aid in this direction, it became apparent that no individual was sufficiently interested to build a university hospital. It was agreed, however, by all concerned that a good medical school was needed, not only in the further development of the university, but in the community as well. A survey made by the Carnegie Foundation for the purpose of calculating the number and location of medical schools in the United States concluded that not only from the standpoint of population but also from a geographical one, Pittsburgh should have a first class medical school. Believing this to be true, a group of earnest, conscientious workers in medicine have continued to struggle amid discouraging conditions, always with the hope of better days.

Three years ago we concluded that there was little prospect of anyone being sufficiently interested to lead us out of the wilderness, and if we were to ever get out it would only be through hard work. A careful study was made of our own conditions and environment. Many of the newer institutions in the United States were visited and much thought was given as to what plan we should adopt under the circumstances. We were particularly anxious not to fail in making headway, and when we realize that a successful medical plant with proper equipment and hospital facilities cannot be secured without the expenditure of a large sum of money, the undertaking is no small affair. If it is to be accomplished the plan must be compatible with the environment and sufficiently sound to command the interest and confidence of at least a few of the leading citizens. We had been refused assistance by both the Rockefeller and Carnegie Foundations because of lack of initiative on the part of the citizens of our own community. I may say that the habit had been acquired of looking to other large schools in the east for much of our education in medicine.

Why should not Pittsburgh, one of the greatest cities in the United States, take a place in the line of action? Why should not she respond as has been her habit when called on to do the big things of the world, both in peace and times of stress? We believed she would, providing the right plan might be formulated and the leadership one that was not controlled by selfish motives. We endeavored to point out that a very important part of the

foundation of such a plan was a sense of responsibility on the part of the community, for without this, all is wasted effort. Gigantic undertakings cannot be done by a few individuals and it is not right that they should. If a people are not willing to combine their efforts on such important matters little of permanent value can be accomplished. With the firm belief that such a sense of responsibility existed, we determined to find out what means we had at our disposal for such a development. The lack of any endowment to our medical school seemed to indicate that the community did not appreciate the true value of medical education. They were not familiar with the fact that a good medical school has the most direct bearing on the success of a large city insofar as the standards of medicine are concerned, for without it there is lacking the proper inspiration for the best medical and surgical standards, and its absence is keenly felt in every large city where medical education has been discontinued.

Our aim has been to call attention to the value of medical education in the elevation of standards of hospital work. We found the public did not fully understand this phase of the subject but our experience has been that they readily grasp it when it is explained. We have never hesitated to make the statement that the best service is given in hospitals where teaching is done in the wards.

We decided that the building of a group of hospitals with laboratories for teaching and research, representing medicine, surgery, and the various specialties in affiliation, would make not only for permanency of effort, but would assist largely in the foundation of an institution which in its gradual development through the years, will serve the people in the solution of the problems of health and disease. About this time an affiliation was formed with the trustees of the Elizabeth Steele Magee Hospital which was then closed. This is a hospital of 200 beds endowed under the will of Christopher Magee. It is located but a short distance from our hospital group. The professional management of the hospital was placed in the hands of a committee of control which consisted of three members of the Board of Trustees of the Elizabeth Steele Magee Hospital and three members of the Board of Trustees of the university. It was opened as a woman's hospital and our teaching in obstetrics and gynecology is done there.



Its operation has been entirely satisfactory and successful. This success has really formed the cornerstone of our future development.

We were fortunate in securing a piece of property which contained about ten acres and adjoined the campus of the university. We at once began the study of a plan for its development. There were certain institutions in the city which had outgrown their buildings and equipment and it was plainly evident that it was only a question of time until they needed more room and better equipment. We had at least two special hospitals, the Children's and the Eye and Ear, of which this was immediately true. There were one or two large general hospitals also planning to build. With the belief that they must all seek new locations and knowing that there is nothing so necessary to the permanent success of a hospital as the stimulant of medical education, we began the task of educating the community along these lines. We have endeavored to demonstrate that medical teaching is necessary, first, to the general welfare of a community, and, second, that it is a vital part in the perpetuation of hospital work. A new children's hospital will be built as a unit according to the well developed scheme. It is a hospital of 200 beds and will cost \$1,500,000. The contract has been let and it will be the first unit to be erected. The ground opposite has been given to the eye and ear hospital where a similar structure will be erected in the near future. A general hospital and other special hospitals will soon follow.

The general hospital will have about 500 or 600 beds and of these no less than 200 will be devoted to the problems of industry. If to this number are added those necessary for tuberculosis, communicable diseases, and eventually mental diseases, from 300 to 400 additional beds will be included, making a total of from 1,500 to 1,600 beds. This wonderful collection for the study of health and disease, all assembled in intimate contact, was three years ago only a dream. It was pointed out at that time that it could be secured without additional outlay on the part of the citizens of the city, because each and every unit is needed in the future. It consists only in the proper assembling of things that are already here. What we needed was the appreciation of its value and the help and co-operation of a few of the leading citizens of our great community. This plan, if carried out with prop-

er ideas of expansion, can never be surpassed for such a wealth of material so closely assembled exists in few places in the world today. It is not only a great benefit to the people but it insures the perpetual success of all hospitals included. It will give expert supervision for all laboratory and research work, through co-operation, and a great opportunity for the development of applied medical research.

A new medical school will be built in connection with the general hospital and in close physical relation, for reasons that have grown out of the study of the problem by the members of our faculty. An experience for a number of years in the teaching of medicine where all of the fundamental branches are taught in a building located far from any of the hospitals may have given our faculty an exaggerated idea of the value of close relationship. It has certainly given us much time for thought and careful consideration of this phase of the subject, and the more the matter has been studied the greater is the consensus of opinion that the laboratories should be so placed that they are in immediate contact with the hospital wards. It is our belief that the proper physical relationship between the laboratory and the ward will eventually lessen the gap which seems to exist at the present time between the teaching in the fundamental subjects and that of the last two years or the clinical subjects. Our plan has been so arranged that all of the various laboratories are located so that the teaching, research and clinical work incident to the hospital needs are connected with the ward. This is true of pathology, bacteriology, chemistry, anatomy, pharmacology and physiology as well. By such an arrangement a patient with diabetes, for example, may be brought to a bed located adjacent to the chemist. He and the clinician are thus brought into intimate contact in the study of the patient. By this means the chemist becomes more intimately associated with the many problems attending the care of the sick. It is a stimulant to better research and better teaching. The same is equally true in the other subjects.

It is not unreasonable to suppose that with such an arrangement the students in the freshman and sophomore classes will soon begin to see a closer relationship between chemistry and physiology and the problems of disease. A long distance between the laboratory and hospital ward has produced an imaginary line

which is a handicap to progress, not only of research but to teaching as well. With this close association of research, teaching and daily application of laboratory problems in the study of disease, together with the immediate contact of the chemist, bacteriologist or physiologist with the patient, there comes a keener appreciation of the responsibility of all concerned. The pathologist or chemist, and this applies to the heads of all the fundamental departments, are stimulated to better attainment if they are in position to make careful first hand observation in the progress of certain diseases.

This also brings a closer relationship between the men in these departments and the clinician, because if the ward for the treatment of diabetics adjoins the laboratory, the patient will be immediately available to all interested. The chemist and his staff will have an equal share both in interest and responsibility with the clinician. In our present busy world, economy of time is a great factor and if the clinician is to continue his interest in laboratory problems this element is not to be lightly considered. If the laboratories are made an integral part of the hospital and if they are connected with the wards in the closest possible manner, not only will time be saved but there necessarily must be closer co-ordination among the entire staff. Eventually, such a method will lead to a change in the present attitude toward the work in the scientific subjects. The men in these departments will also have a better knowledge of the problems of the clinician if they are compelled to associate at the bedside. No matter from whence comes the stimulus for research much of its detail must be carried out in the laboratory and for this reason the successful clinician is at a handicap unless he works in the closest harmony with men engaged in laboratory work. The more successful he becomes the greater his need for economy of time and the assistance above referred to. On the other hand, the man absolutely confined to the laboratory and who spends a number of years without any contact with patients in the wards is not so well qualified in the problems of teaching as one upon whom such responsibility is thrown. With such a working policy some of the problems of clinical medicine and surgery may be gradually introduced during the first and second years without embarrassment, and with much help to the student.

There is an old adage that "necessity is the mother of invention." While our progress has been slow and at times the clouds dark, it is possible that the long delay may prove helpful in the end. With plenty of money and ample endowment it may be easy to erect and maintain a university hospital. If such a responsibility is assumed by the state such a plan is excellent. We had no assurance of help from either source so we were compelled to work along other lines. In the end it seems entirely logical that a community should co-operate in the closest possible way in such an important problem. There is no reason why such an arrangement should not be eminently successful. Such an undertaking, which consists in the bringing together of various groups of people, all of whom aim to give the best possible service in the care of the sick, can never fail if the function of such an organization is thoroughly understood, and every citizen should be so educated. A large community should assume this responsibility and when enlightened the most successful cooperation should exist among the boards of trustees of the different institutions and great benefit come to all concerned.

The ground selected for this development is located in the center of population and immediately adjacent to the university campus. It rises gradually from Fifth Avenue to an elevation of about 75 feet. The general hospital and laboratories are to be erected in the rear, at the height of the elevation. The special hospitals, the dispensary, and the general administration building are arranged in front on either side, leaving an open rectangular space in the center. The primary consideration in arrangement and architecture is function. Fortunately the location and elevation lend grandeur as well.

This development has grown out of the spirit of cooperation. We had to first have a plan that would appeal to the imagination and that could be presented from the standpoint of service to the community. It was constructed by the members of our faculty in so far as these principles are concerned and we had as our architect, fortunately, one who was willing and able to study our problems with an open mind.

The successful development of a medical and surgical clinic, together with all the specialties, is essentially constructive. An equal growth of the various institutions independent of each other

is in no way possible. No unit will ever lose its individuality but on the other hand it will become stronger and more permanent in its position.

One of the chief advantages is economy. It means co-operation which deals with two of the most important problems: Health and education. Each to be highly successful is dependent upon the other. Neither can succeed alone. The hospitals thus arranged may have the most expert medical service in every way. The university is saved great expense and large responsibility in the maintenance and management of its hospitals. The state cannot withhold liberal support from such an undertaking. The size and diversified interests must ever attract the attention of those concerned in the welfare of the sick and the successful growth of medical education.

## PROMOTION OF FRIENDLINESS BETWEEN FACULTY AND STUDENTS.

WALTER L. NILES,

Dean Cornell University Medical College

I would like to call your attention to the fact that the construction of the curriculum, the physical equipment of medical schools and hospitals, correlation, co-ordination, and so forth, are entirely futile unless we create a spirit of friendliness between the teachers and the students; in other words, an esprit de corps, that promotes good, thorough work is a fundamental necessity. I am sure that many of the teachers forget the fact that we are all students together; one group simply being older and helping to guide the other.

I imagine and suggest that the success of the tutorial system is largely based on the fact that the intimate contact between instructor and student tends to develop confidence and promote friendliness to a very satisfactory intellectual end.

The system of student advisers, which we are trying at Cornell at the present time, does not meet that requirement and I think will be continued only for a short time.

The late Andrew D. White, the first president of Cornell university, said that "The man whom I hate is the man whom I do not know." Some medical students hate some of the teachers, and it is usually because they do not know them. If any way can be arranged so that they can be brought together, and each can come to realize that the other is really an ordinary human being having common aims and ideals, the teaching of medicine will become much easier and far more satisfactory to the student.

I shall not enumerate ways in which this may be accomplished, but in the gradual evolution from the proprietary type of medical school, where the teacher was usually one busily engaged in practice, to the present type in which the teachers give at least a large part of their time to the medical school, it has become increas-

ingly easy for the student and the teacher to get together, and that is the end which we desire to promote.

Just as a sidelight to that, it seems to me that a very easy and satisfactory entering wedge for close relationship between student and teacher lies in the field of historical medicine, a branch unfortunately neglected in our medical schools and extremely important for the understanding of any of the sciences, particularly the fundamental ones. If the teachers will keep in mind the historical background and invite the students to think and read along such lines, they will not only encourage the historical method of approach but the students will be attracted to them and thus promote a spirit of friendliness and co-operation which is absolutely essential for the good teaching of medicine.

#### DISCUSSION

DR. GEORGE M. KOBER, Georgetown University School of Medicine, Washington, D. C.: I am glad that Doctor Niles has brought the subject before this body. His views exactly agree with the practice that Doctor Osler had in successful operation in connection with his teaching work at Johns Hopkins Medical School. Those who have read Osler's *Life* recall the hourly Saturday evening gatherings held in his library which enabled him to familiarize himself with the individuality of each student and in his charming way to offer timely and valuable suggestions as to how to solve certain intellectual and moral problems. It is easy to infer the extent of his beneficial influence, when we recall that Johns Hopkins Medical School has become known as the mother of medical teachers.

DR. WILBURT C. DAVISON, Johns Hopkins Medical School, Baltimore: I think the object that Doctor Niles outlined can be accomplished by a plan which we started two years ago in Baltimore. The first year class was told that if they would agree to meet a preceptor once a week in groups of seven, that a sufficient number of preceptors would be provided. That plan started in 1923, and half the class availed themselves of it. Seven men came to see one of the preceptors once a week, usually from five to six in the afternoon. At the first meeting, the students were usually taken to the library, shown the location of various books and journals and instructed in finding medical references by the use of indices. The later meetings consisted of the demonstration of ward cases, illustrating the importance of anatomy, such as poliomyelitis, neurological diseases, congenital abnormalities, etc., or discussions of medical history, education and similar subjects. At the end of one trimester the preceptor knew his seven students sufficiently well so that he could ad-

wise them intelligently. As a result of the personal bond established these students, during their later years in medical school, come to the preceptor for advice. The usual plan of merely designating certain instructors as student advisors is unsuccessful because meetings are not held at regular intervals for the first trimester and the student and his advisor never become sufficiently acquainted for the student to meet his advisor on a friendly basis. This past year, all of the students in the first year class availed themselves of the plan. At the present time those of us who are acting as preceptors know seven second-year and seven first-year students, and I think we have been able to stimulate interest in premedical work and also to promote friendliness between the faculty and students.



## AN INITIATORY COURSE FOR FRESHMEN MEDICAL STUDENTS.

STEPHEN RUSHMORE,

Dean Tufts College Medical School

If I seem to plagiarize very extensively from the papers which have been presented in the past two days, I trust you will believe me when I say that I did devote some time before yesterday morning to the consideration of what I want to talk about this afternoon, and this alleged plagiarizing may be due to the fact that we are all thinking along certain lines in spite of the fact that we have many disagreements.

Lord Acton in his essay on Nationality has said that under certain conditions of stress "men of speculative or imaginative genius have sought in the contemplation of an ideal society a remedy, or at least a consolation, for evils which they were practically unable to remove." Thus it was that Plato constructed his "Republic," Sir Thomas More his "Utopia," and Campanella "The City of the Sun." It is, perhaps, somewhat in the spirit of these poetic philosophers, to carry the comparison no further, that each one of us has constructed in his own mind his ideal medical school, and I would like to lay before you some of my thoughts about medical education, limiting the consideration, however, to some of the things that I would like to do with the student in his first year in medicine.

In the transition from preparatory school to college, disorientation occurs; at about the time that the formal and outward change takes place, there is an inward change; the boy becomes a man; he must stand on his own feet, he must think and act for himself. The initiatory courses for freshmen which are now given in many colleges and universities, varying considerably in their method and content according to the institution in which they are given, because they are now in the experimental stage, have as their main object the facilitation of this transition. They are a formal

recognition of the inadequacy of the orientation of the freshmen by the sophomores.

In the transition from the college to the professional school another break is involved, and here facilitation is needed because here again occurs a certain amount of disorientation.

What are we trying to do with the student in medicine? There are at least three things: First, give him information: second, give him method, and third, give him point of view. Is not point of view the most important thing that the teacher can give to the student? Perhaps we call it the spirit of the teacher, the spirit of fair-mindedness, the spirit of scholarship, the spirit of devotion to truth. Is not this the finest thing that the institution can give to its students.

And what is the college trying to do but take the boy or girl during the critical years of transition, when the being unfolds and opens out as it never will again, and give the individual opportunity to come in contact with some of the great things in the intellectual world; not merely with details, though these are necessary for exactitude of thought, but with something of the philosophy of science and the philosophy of literature and the philosophy of art and the philosophy of life. The same kind of thing is true in medicine. At the beginning of the course in medicine the student should be told by some one who knows—and this is the first difficulty—what medicine is all about, something about the philosophy of medicine, if I may use the expression. He ought to have pointed out to him at that time the end of his effort, the goal of his ambition, the object of his desire.

Now a word about the method by which this can be done for the student in medicine. In the first place, in the beginning of the medical course he should be given a brief review of the whole field of medicine or the science and art of healing. The approach should be historical and the subject should be taken up topically; for example, hospitals, nursing, social service, preventive medicine, public health, industrial medicine, specialism, research, general medicine. It is of great importance that this brief series of talks be closed by a rather detailed consideration of the function of the general practitioner in the social organism and the necessity for the spirit of research in every department of medicine.

The second element in the point of view is that the physician should regard his patients, not as cases, but as people who are sick. Therefore, at the beginning of the course the student should come in contact with patients. It is not necessary, it is not wise, that the student should spend much time here in contact with patients; but it is important that it be impressed upon him early and repeated often that this, the care of people who are sick, is the thing that he is trying to learn.

The third element in the point of view supplements the first and the second. What is this patient which the physician cares for and treats? The answer is: This patient is a person. I take that to be the alpha and omega of the art of medicine. Of course, there are twenty-two other letters between alpha and omega and they must not be forgotten. I know that the way of progress in medicine, in science, is to take a small field and study intensively everything that comes within the field of vision. As Goethe said, if a man would succeed, he must limit himself, but the restricted view which gives us each particular science has its dangers. We must not forget what it is that we do when we thus limit our vision. Progress in science is extensive as well as intensive, and in a strange country we depend on the telescope rather than on the microscope in shying out the land so that we do not wander in circles nor come back to the place from which we started.

I said that the restricted view has its dangers. We are aware of that at the present time and are becoming more acutely conscious of it, I think, all the time. One difficulty with our education is that it is based on a wrong philosophy. Medical education is but a part of general education. In a recent notable study of medical education, there is the statement; "Medical education is to be conceived as primarily the effort to train the student in the intellectual technique of the inductive sciences." The author has put his finger on exactly the point I have in mind, and it is his use of the term "primarily" that indicates the defect in that philosophy; because if I mistake not, it is the inadequacy of the concepts and methods of the inductive sciences that has been the burden of much of the philosophical writing in the past twenty years. Within the limits of the science, the concepts and methods are adequate; but it is important to remember that even in the case of the incomparable abstractions of mathematics that perhaps

that which has been left behind is more important to the individual, has greater value to the individual and to society than that which is taken away.

Personality is not to be understood nor explained in terms of physics, nor in terms of chemistry, nor in terms of zoology. Personality can be understood, if it is to be understood at all, only at its own level; it is to be interpreted only in terms of itself.

It is on that account that I would insist that the student in the medical school should undertake a formal study of personality in his first year. It may be thought that he would have time for little else than the things that I have been suggesting, but what I have in mind is not an exhaustive consideration which excludes the narrower conceptions of the fundamental sciences, but a presentation that will make clear to him early in his course what is the science and the art of medicine and what is its aims.

I remember hearing the distinguished president of a great university say that when he had been in the school of law for less than two weeks, he felt he belonged to the profession of law. I would like to have the student of medicine feel early in his course that he belongs to the profession of medicine.

I know it will be said, as it has already been said, that the considerations which I have indicated should be brought to the attention of the student at the end of the medical course, and not at the beginning, but the wise teacher recognizes that the critical time is the beginning. The opportunity which comes at the beginning may never come again.

MINUTES OF THE PROCEEDINGS OF THE THIRTY-FIFTH  
ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN  
MEDICAL COLLEGES, HELD IN BOSTON,  
MASSACHUSETTS, MARCH 5, 6 AND 7, 1925

FIRST DAY

MORNING SESSION

The thirty-fifth annual meeting of the Association of American Medical Colleges convened March 5, 1925, at 9:45 a. m. in the Thorndike Building, Boston City Hospital, Boston. Dr. Ray Lyman Wilbur, President of the Association, presiding.

PROGRAM

The first paper on the program, on "Medical Sociology and Environmental Medicine," was presented by Charles P. Emerson, Dean of the University of Indiana School of Medicine, and read by Dr. Myers, associate dean, owing to Dr. Emerson's inability to be present.

The next paper entitled "Bearing of Neuropsychiatry on Public Health Problem," was read by Dr. Albert M. Barrett, professor of neuropsychiatry, University of Michigan Medical School.

The next paper entitled "Education in Preventive Medicine in Regular Curriculum," was read by Dr. Haven Emerson, professor of public health administration, Columbia University College of Physicians and Surgeons.

The "Teaching of Preventive Medicine," was the title of a paper read by Samuel R. Haythorn, professor of pathology and bacteriology, University of Pittsburgh School of Medicine.

These four papers were discussed by Drs. W. S. Carter, David L. Edsall, George M. Kober, Hugh Cabot, McKim Marriott, E. Stanley Royerson, N. P. Colwell, Stuart Graves, Irving S. Cutter, Manfred Call, Charles R. Stockard and B. D. Myers.

Adjourned at 12:20 p. m.

AFTERNOON SESSION

The first paper of the afternoon session was the address of the president, Dr. Ray Lyman Wilbur, entitled "The Future Practitioner."

The next paper on "Correlation in the Curriculum," was read by Dr. Bernard F. McGrath, professor of principles of surgery, Marquette University School of Medicine.

No discussion.

"The Teaching of Obstetrics," was the title of a paper read by Dr. J. M. H. Rowland, dean of the University of Maryland School of Medicine.

This paper was discussed by Drs. E. P. Lyon, William Keiller, Ray Lyman Wilbur and J. M. H. Rowland.

The next paper was read by Dr. W. H. MacCracken, dean of the

Detroit College of Medicine and Surgery, on "The Teaching of Physiotherapeutic Measures."

The paper was discussed by Dr. Norman C. Titus.

At this juncture, Dr. A. S. Begg, dean of Boston University School of Medicine, Boston, Mass., chairman of the Committee on Education and Pedagogics, discussed briefly the report of the committee on Education and Pedagogics, a copy of which had previously been sent to each college.

Adjourned at 4:15 p. m.

## SECOND DAY

### MORNING SESSION

This session was devoted to practical demonstrations in medical teaching in the medical schools of Harvard University, Boston University and Tufts College Medical School. The delegates visited such classes as they desired, either in the laboratories or in the hospitals, and witnessed the conduct of the regularly scheduled classes, ward walks or clinics.

### AFTERNOON SESSION

The Association convened at 2 o'clock, in the Harvard Medical School, President Ray Lyman Wilbur presiding.

Dr. A. Lawrence Lowell, president of Harvard University, addressed the Association, speaking on the subject of "Medical Education in its Broader Aspects."

The next subject discussed was "The Honors Course," by Dean E. P. Lyon of the University of Minnesota Medical School.

Dr. David L. Edsall, dean Harvard Medical School, discussed "The Handling of the Superior Student."

These two topics were discussed by Drs. Frazier, J. J. R. Macleod and Bazett.

The next paper was read by Dr. Frederick T. Van Beuren, Jr., associate dean of Columbia University College of Physicians and Surgeons. It was entitled "Full Time; the Letter and the Spirit."

Dr. Newton Evans, president of the College of Medical Evangelists, discussed "Co-operative Education in Medicine."

This subject was discussed by Drs. G. M. Kober, Louis B. Wilson and Dr. Evans.

The next paper was presented by Dr. Fred C. Zapffe, the secretary of the Association, on "The Curriculum."

Dr. R. R. Huggins, dean of the University of Pittsburgh School of Medicine, followed with a paper on "The Importance of the Physical Plant in the Correlation of Teaching in Medicine"

The next paper was read by Dr. Thomas Ordway, dean of Albany Medical College, on "Administration of Hospital Medical School."

Dr. Walter L. Niles, dean of Cornell University Medical College, followed with a paper entitled "The Promotion of Friendliness Between Faculty and Students."

The paper was discussed by Drs. G. M. Kober and W. C. Davison.

Dr. Stephen Rushmore, dean of Tufts College Medical School, discussed the subject of "An Initiatory Course for Freshmen."

Adjourned at 5 p. m.

**THIRD DAY**  
**EXECUTIVE SESSION**

The business session of thirty-fifth annual meeting of the Association of American Medical Colleges was held in the Boston Medical Library, at 9 a. m., March 7, 1925, President Ray Lyman Wilbur presiding.

**ROLL CALL**

The roll call showed that the following colleges were represented:  
College of Medical Evangelists—Newton Evans.  
Stanford University School of Medicine—E. S. Dickson, Ray Lyman Wilbur.

University of California Medical School—L. S. Schmitt.  
McGill University Faculty of Medicine—C. F. Martin, J. C. Simpson.  
University of Toronto Faculty of Medicine—A. Primrose, E. S. Ryerson, J. J. R. Macleod.

University of Colorado School of Medicine—M. H. Rees.  
George Washington University Medical School—William C. Borden.  
Georgetown University Medical School—George M. Kober.  
Howard University School of Medicine—Edward H. Balloch.

University of Georgia Medical Department—E. R. Clark.  
Emory University School of Medicine—P. E. Linebach.  
Rush Medical College—E. E. Irons and D. B. Phemister.

Northwestern University Medical School—Irving S. Cutter.  
University of Illinois College of Medicine—Hugh A. McGuigan.  
Indiana University School of Medicine—B. D. Myers.

State University of Iowa College of Medicine—L. W. Dean and John T. McClintock.

University of Kansas School of Medicine—O. O. Stoland.  
University of Louisville Medical Department—Stuart Graves and J. W. Moore.

Tulane University of Louisiana School of Medicine—C. C. Bass.  
Johns Hopkins University Medical Department—L. H. Weed and W. C. Davison.

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—David L. Edsall and A. Lawrence Lowell.

Tufts College Medical School—Stephen Rushmore.  
Detroit College of Medicine and Surgery—W. H. MacCracken.  
University of Michigan Medical School—Hugh Cabot and A. M. Barrett.

University of Minnesota Medical School—E. P. Lyon.  
St. Louis University School of Medicine—H. W. Loeb, Don R. Joseph.  
University of Missouri School of Medicine—Guy L. Noyes.

Washington University School of Medicine—McKim Marriott.  
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. Dar-  
rath, F. T. Van Beuren, Jr.

Cornell University Medical College, Ithaca and New York—Walter L. Niles and C. R. Stockard.

Long Island College Hospital—Adam M. Miller and H. M. Smith.  
 Syracuse University College of Medicine—H. G. Weiskotten.  
 University of Buffalo Department of Medicine—C. Sumner Jones and  
 S. P. Capen.  
 Wake Forest College of Medicine—Thurman D. Kitchin.  
 University of North Dakota School of Medicine—H. E. French.  
 University of Cincinnati College of Medicine—A. C. Bachmeyer.  
 Western Reserve University School of Medicine—C. A. Hamann and  
 H. T. Karsner.  
 University of Oklahoma School of Medicine—Leroy Long.  
 Hahnemann Medical College—W. A. Pearson.  
 Jefferson Medical College—Ross V. Patterson.  
 University of Pennsylvania School of Medicine—William Pepper and  
 A. C. Abott.  
 University of Pittsburgh School of Medicine—R. R. Huggins and S. R.  
 Haythorn.  
 Woman's Medical College of Pennsylvania—Henry D. Jump.  
 Medical College of the State of South Carolina—Robert Wilson and  
 W. F. R. Phillips.  
 University of South Dakota College of Medicine—C. P. Lommen.  
 Baylor University College of Medicine—W. H. Moursund.  
 University of Texas Department of Medicine—William Keiller.  
 University of Utah School of Medicine—L. L. Daines.  
 Medical College of Virginia—Manfred Call.  
 University of Virginia Department of Medicine—James C. Flippen.  
 West Virginia University School of Medicine—J. N. Simpson and  
 Frank R. Trotter.  
 Marquette University School of Medicine—B. F. McGrath.  
 University of Wisconsin Medical School—Joseph G. Evans.

#### OTHERS PRESENT

The following delegates and visitors were also present:

N. P. Colwell, Council on Medical Education and Hospitals of the American Medical Association; J. S. Rodman and Everett S. Elwood, National Board of Medical Examiners; Harold Rypins, University of the State of New York; F. W. O'Connor and W. S. Carter, Rockefeller Foundation; L. B. Wilson, Mayo Foundation; Paul S. McKibben, University of Western Ontario; William D. Cutter, New York Postgraduate Medical School; B. C. H. Harvey, University of Chicago; William R. Morse, Union University Medical School, Chengtu, China; A. de Waart, Government Medical School, Batavia, Java; E. St. John Ward, American University of Beirut, Syria; W. R. Bloor, University of Rochester School of Medicine and Dentistry; W. C. Roppleye, New Haven Hospital; Haven Emerson and Norman C. Titus, Columbia University College of Physicians and Surgeons.

#### MINUTES OF PREVIOUS MEETING

The minutes of the 1924 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 185 to 208.

On motion, duly seconded, the minutes as printed were approved. The following report was read by the secretary, Dr. Zapffe:



## REPORT OF SECRETARY

The 1924 meeting of this Association, held in Omaha, was an epoch making one. The full import of the duties of the Association in the field of medical education was realized by all the delegates present. The representation at the meeting was greater than ever before, and being the first meeting held in the so-called West, this fact of itself was of significance. This Association must take its rightful place in the work, representing, as it does, the agencies that are most concerned with medical education and medical teaching, the medical schools.

## NEW MEMBERS

In addition to the membership of the Association, many colleges not in membership were represented, some of them situated in Canada. Since the 1924 meeting two Canadian schools have made application for membership, as well as four schools situated in the United States. The Faculties of Medicine of the University of Toronto and the University of Manitoba have made application, and the College of Medical Evangelists, Loma Linda and Los Angeles, the School of Medicine of the University of Oregon, the School of Medicine of the University of Utah, and Dartmouth Medical School. With the exception of Manitoba and Dartmouth, whose applications were received too late for action, these institutions have been duly inspected and reported on to the Executive Council.

## INSPECTIONS

Inspections of several colleges already in membership were also made: The schools visited were: University of California Medical Department; Stanford University School of Medicine; University of Kansas School of Medicine and Meharry Medical College. These inspections have also been reported on to the Executive Council.

All the colleges inspected have reported that these inspections have been productive of much good. The inspector was able in a number of instances in aiding the college to make needed changes and by pointing out defects to bring about an immediate correction. The colleges have shown great willingness to co-operate and make more effective the work this Association is trying to do to improve conditions, and the promise for future development is very gratifying. It cannot be gainsaid that more frequent inspections should be made, not only to give help, but to enhance the efforts that are being made to put medical education on the plane where everyone would like to see it. Each school has its own problems to solve, but with a little help from the outside, coming from an Association as great as is this one, the task is lightened considerably. This help is always appreciated, especially when given with the spirit of helpfulness, in the nature of constructive criticism rather than for the purpose of finding fault or to mete out punishment. From this point of view, inspections are welcomed. The inspector takes this opportunity to express his grateful appreciation of the many kindnesses shown him and the help given him in trying to do his job well.

The constitution provides for an inspection of every college in membership at least once in every five year period. In order to do this, more funds must be available. The present income is insufficient

to meet the demand. In nearly every instance, the colleges visited have expressed a willingness to pay more annual dues. The present \$50 due is not enough to defray all expenses of the work.

#### PROCEEDINGS

Every effort was made to secure the best possible distribution of the proceedings among the university and medical school teaching group. Letters were written to the university executives calling attention to a certain portion of the proceedings in which it was felt they would have a normal interest, and from the replies received it is quite evident that some university presidents keep informed at first hand on what this Association is trying to accomplish. A few rely on the dean of the medical school to keep them informed, and, I am sorry to say, that personal investigation has shown that this is not always a false prop. The dean failed to report and the president did not note the omission. However, in the main, the proceedings are fulfilling a function. Requests for back numbers are being received constantly, showing that they are being put to use. I have found many teachers—men who never attended a meeting of the Association—quite well informed as to the contents of the proceedings. This is a great satisfaction in many ways, not the least of which is the fact that they are "money well spent." They cost about \$1.10 a piece delivered.

#### PROTECTION OF MEDICAL RESEARCH

In 1924 the American Medical Association appointed a standing committee entitled the Committee on Protection of Medical Research, said committee to be under the direction of the Board of Trustees. This committee consists of the following: W. B. Cannon, chairman; Simon Flexner, George W. McCoy, William Ophüls, William Pepper and A. J. Carlson.

#### GRADUATE MEDICAL SCHOOLS

In 1924, the Council on Medical Education and Hospitals of the American Medical Association investigated thirty-five graduate medical schools and approved twenty-four of these as providing well organized and graded courses of instruction for physicians. This list includes medical schools offering courses for higher degrees and general practice courses; summer courses for physicians; summer courses in public health; special courses in surgery; special courses in special subjects; institutions offering special courses and internships in ophthalmology, otology, rhinology, laryngology, neurology, dermatology, diseases of metabolism, preclinical subjects, and one general postgraduate medical school.

The approval of these institutions and courses is based on: adequate admission requirements; records; essential supervision; curriculum; graded instruction; qualified teachers; well equipped laboratories; library and museum facilities; essential hospital and outpatient material; annual announcements and the granting of degrees or diploma-like certificates.

The list of approved graduate medical schools follows: Columbia University College of Physicians and Surgeons, New York; Cornell University Medical College, New York; Harvard Medical School, Boston; Johns Hopkins Medical School, Baltimore; Stanford Uni-

versity School of Medicine, San Francisco; State University of Iowa College of Medicine, Iowa City; Tulane University Graduate Medical School, New Orleans; University and Bellevue Hospital Medical College, New York; University of California Medical School, San Francisco; University of Chicago, Rush Medical College, Chicago; University of Illinois College of Medicine, Chicago; University of Michigan Medical School, Ann Arbor, Mich.; University of Minnesota Graduate School of Medicine, Minneapolis-Rochester; University of Pennsylvania Graduate School of Medicine, Philadelphia; Washington University School of Medicine, St. Louis; New York Post Graduate Medical School, New York; Herman Knapp Memorial Eye Hospital School of Ophthalmology, New York; Manhattan Eye, Ear and Throat Hospital School of Graduate Medical Instruction, New York; Massachusetts Charitable Eye and Ear Infirmary, Boston; Neurological Institute, New York; New York Eye and Ear Infirmary Graduate School of Ophthalmology and Otology, New York; New York Skin and Cancer Hospital, New York; Physiatrie Institute, Morristown, N. J.; and Trudeau School of Tuberculosis, Saranac Lake, N. Y.

This is a matter of considerable importance to this Association inasmuch as there is now before it an amendment to the constitution providing for the admission to membership of postgraduate schools, graduate divisions and graduate schools. In fact, one application to membership has already been received from a postgraduate school. It is hoped that the amendment referred to will pass because this Association should assume the full burden of fostering and developing medical instruction of every sort.

#### PROGRAM

You have taken part in the carrying out of the program for this meeting. It is the ardent hope of your secretary that it has met with your approval. It is not an easy task to arrange such a program, but with the help that has been received from the constituents, the task is made less difficult. The secretary wishes to direct attention at this time to the need for suggestions for the Round Table Conference. If topics are given, he will take it upon himself to find openers of the discussion. The one who suggests a topic need not feel that it is incumbent on him to open the discussion. He may do so if he wishes, or he may suggest some one to do so. The main thing is to have topics. None of the speakers needs to prepare manuscript, because no one should speak more than ten or fifteen minutes, thus making it possible to have a variety of topics on subjects of interest to the deans and other administrative officers of medical schools. Talks on keeping of records, holding of examinations, teaching schemes, etc., that cannot well be discussed in a set paper, are suitable for this part of the program.

#### AMENDMENTS

The work done by the Committee on Education and Pedagogics is deserving of special mention. The Committee has worked faithfully to prepare the amendments entrusted to it in such manner that little time will be lost in their consideration. Pursuant to permission given by the Executive Council, the Committee held an ad interim meeting

in Charlottesville last October and, as a result, was able to work out the amendments in their present form. Copies of the amendments were sent to each member college last December, thus giving ample time for consideration by each faculty and others interested.

#### MEMBERSHIP

The membership of the Association now numbers 67. There are also two honorary members, the Army and Navy Medical Schools. Four colleges have applied for membership and been inspected, which, if accepted, will increase the membership to 71 active members. Two colleges applied but were not inspected, the applications having been received too late for action. A conservative estimate would show that all of the acceptable schools in the United States are now either in membership or have an application pending. It is likely that several of the Canadian schools can qualify. However, an inspection alone can determine this fact positively. On the whole, it may be said that the Association is now representative of the best interests in medical education on this Continent.

Respectfully submitted,

(Signed) FRED C. ZAPFFE.

On motion, duly seconded, 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. H. G. Weiskotten and Thurman D. Kitchin.

#### REPORT OF EXECUTIVE COUNCIL

The report of the Executive Council was then called for and was submitted by the chairman of the Council, Dr. David L. Edsall.

A meeting of the Executive Council was held at the Boston Medical Library, March 4, to consider such items of business as were brought before it.

The secretary reported on the inspections made by him as part of the application for membership of the following colleges:

**COLLEGE OF MEDICAL EVANGELISTS**—This school was inspected by the secretary, and on the basis of his report and recommendation, the Executive Council recommends to the Association that the school be admitted to membership.

**SCHOOL OF MEDICINE UNIVERSITY OF OREGON**.—This school was inspected by the secretary, and on the basis of his report and recommendation, the Executive Council recommends to the Association that the school be admitted to membership.

**SCHOOL OF MEDICINE UNIVERSITY OF UTAH**.—This school was inspected by the secretary, and on the basis of his report and recommendation, the Executive Council recommends that the school be admitted to membership.

**FACULTY OF MEDICINE UNIVERSITY OF TORONTO**.—This school was inspected by the secretary, and on the basis of his report and recommendations, the Executive Council recommends to the Association that the school be admitted to membership.

INSPECTIONS OF COLLEGES IN MEMBERSHIP were also made as follows:

University of California Medical Department; Stanford University School of Medicine; School of Medicine University of Kansas and Meharry Medical College.

The Executive Council having received the reports on these inspections, the secretary was instructed to forward a copy of his report to the president of the University of California and the Chancellor of the University of Kansas in the belief that it would be a help to these gentlemen in their work. This is not intended to imply that these schools are not conforming to the requirements of the Association, nor that they are inferior schools; but, the Council feels that the findings of the inspector are such that they should be brought to the attention of the executives of these universities in a purely helpful spirit and not in carping criticism. Furthermore, it is possible that when further information is received from these institutions that some, if not all, of the criticisms made will be dissipated. At any rate, it is felt that any good that is to come out of an inspection should not be overlooked, and in that spirit the Executive Council wishes to emphasize the fact that this Association, and its officers, are at all times ready and willing to render all aid in their power to all the schools.

The MEHARRY MEDICAL COLLEGE asked for an inspection in order to be restored to full membership. The college is now an affiliated member. The inspection was made and on the basis of the report received and the recommendations, the Executive Council recommends that the college be restored to full membership.

The report of the Committee on Education and Pedagogics was also submitted to the Council and is concurred in. It is an admirable report and the committee should receive the thanks of the membership for its work.

Other matters of lesser import not requiring action by the Association were also submitted to the Council.

The Executive Council entertains the hope that more frequent inspections of the member colleges can be made because of the good that comes out of a carefully made inspection. It suggests that means be found to increase the income of the Association either by increasing the annual dues or by a grant from outside sources.

Respectfully submitted,

(Signed) RAY LYMAN WILEUR,  
IRVING S. CUTTER,  
WALTER L. NILES,  
FRED C. ZAPFFE.

On motion, duly accepted, the report was adopted as read and the recommendations made accepted.

## REPORT OF THE COMMITTEE ON EDUCATION AND PEDAGOGICS

This report was submitted at the afternoon session on Thursday by Dr. Begg, chairman of the committee. The printed report had been mailed to member colleges ninety days previously.

The Committee on Education and Pedagogics recommends that Section 7 of the By-laws be amended to read:

### SECTION 7.—REQUIREMENTS FOR ADMISSION.

Admission to medical schools and medical colleges in membership in this Association may be by:

- (1) Satisfactory completion of a minimum of collegiate instruction, as provided below in Subsection I; or by
- (2) Examination, as provided in Subsection II.

**SUBSECTION I.** The minimum of collegiate instruction required for entrance to medical schools and medical colleges in membership in this Association shall be 60 semester hours <sup>(1)</sup> of work, which shall include the subjects hereinafter specified, in institutions approved by accrediting agencies acceptable to the Executive Council of this Association. Exception may be made under this section in that any member may admit applicants who have fulfilled the requirement in American or foreign institutions not approved by such accrediting agencies, provided that all admissions so made shall be reported to the Executive Council and shall be published in the next Annual Report of said Council.

*All collegiate instruction given in satisfaction of this requirement must be based upon the same entrance requirements and must be of the same quality and standard of instruction as that required for a baccalaureate degree in the institution in which the candidate receives his preparation.*

The 60 semester hours of collegiate instruction, indicated above, shall include a minimum total number of semester hours in each of certain required subjects and the specified science subjects shall include a minimum number of semester hours of laboratory work as follows:

Required Subjects	Minimum total semester hours	Minimum semester hours of laboratory work
1. General Chemistry (a)-----	8	4*
Organic Chemistry (b)-----	4	0
2. Physics (c)-----	8	2*
3. Biology (d)-----	8	4*
4. English Literature and Composition -----	6	

(1) A semester hour is the credit value of sixteen weeks' 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 per week shall be necessary to be considered as the equivalent of one lecture or recitation period.

\*Included in minimum total semester hours.

Explanations as to content in each of these required college subjects together with suggestions as to desirable additional study in certain subjects are as follows:

(a) *General Chemistry*. Eight semester hours required, including 4 semester hours of laboratory work. In the interpretation of this rule, work in qualitative analysis may be included as part of general chemistry. <sup>(2)</sup>

(b) *Organic Chemistry*. A completed course of 4 semester hours required, consisting of didactic exercises, which should cover a discussion of the aliphatic, carbocyclic, and heterocyclic series. <sup>(3)</sup>

(c) *Physics*. Eight semester hours required, of which 2 semester hours shall consist of laboratory work. It is urged that this course to be preceded by a course in plane trigonometry <sup>(4)</sup>

(d) *Biology*. Eight semester hours required, of which at least 4 semester hours shall consist of laboratory work. This requirement may be satisfied by a course of 8 semester hours in either general biology or zoology, or by courses of 4 semester hours each in zoology and botany, but not by botany alone. Courses in physiology and hygiene, sanitation, entomology, bacteriology, histology and similar subjects covered in the medical curriculum shall not be accepted as part of the premedical college requirement in biology. <sup>(5)</sup>

Students who present at least 90 semester hours of college work may substitute for the above biologic requirements at least 8 semester hours in the psychological or sociologic sciences.

(e) *English Composition and Literature*. The usual introductory college course of 6 semester hours or its equivalent is required.

**SUBSECTION II.** Admission to medical schools and medical colleges in this Association may be granted to candidates on the basis of examinations as hereinafter provided. These examinations shall be conducted by such agencies as may be designated from time to time by the Executive Council of this Association.

(a) Candidates who have completed not less than 60 semester hours of collegiate instruction, but who have failed to complete the full requirements in not more than two of the required subjects may be admitted upon successfully passing examinations in these subjects as above provided.

<sup>(2)</sup> It is highly desirable that either the elements of physical chemistry be included in the course in general chemistry, or presented as a supplementary course in elementary physical chemistry.

<sup>(3)</sup> It is recommended that additional work be offered in organic chemistry and that this additional work include a fair proportion of laboratory work.

<sup>(4)</sup> In addition to the required course in general physics it is recommended that colleges provide an elective course suitable for students who desire more knowledge of physics than the general course affords and who expect to apply this knowledge to medicine and biology, rather than to engineering and physics.

<sup>(5)</sup> In all cases the premedical biological work should emphasize the great generalizations of biology—e. g., the cell doctrine, comparative anatomy and embryology, recapitulation of phylogeny in ontogeny, adaptation to environment, etc. Special attention is called to the value of an elective second year course in general physiology in which a study is made of the application of physics and chemistry to life processes.

A candidate to be examined under this section must give evidence of scholarship of high order.

(b) Candidates who have completed not less than 90 semester hours of collegiate instruction, but who lack credit in any or all of the required subjects, may be admitted upon successfully passing examinations in these subjects as above provided.

All candidates for the comprehensive examination must present evidence of having accomplished work of distinction in one or more fields of learning.

*The standards of instruction shall be as specified under Sub-section I.*

In addition to the suggested changes in Section 7, which required notice to the constituent members, the Committee on Education and Pedagogics makes the following recommendations:

- I. Change the present Section 8 to Section 9.
- II. As new Section 8 the following:  
Any medical school or medical college in membership in this Association may, with the consent of the Executive Council, substitute for the requirement laid down in Section 7 a six year combined collegiate and medical curriculum. The substitute plan shall provide the inclusion of the equivalent of at least sixty semester hours of subjects ordinarily given in the academic departments of standard American Colleges of Arts and Science, including the required subjects specified in Section 7. In addition, the plan shall include requirements equivalent to the curriculum set forth in Section 9. The medical school must submit to the Council of this Association the proposed six year curriculum giving the sequence of studies and the content and credit value of each course offered. Subsequent proposed changes in this six year course must likewise be submitted to the Executive Council for approval before they go into effect.
- III. That the present Section 9 be discontinued.
- IV. Section 10 to be changed to Section 11 and a new Section 10 adopted as follows:  
The Association through its Council and Committees is prepared upon request to act in an advisory capacity to institutions engaged in preparing students for entrance to medical schools and medical colleges.
- V. That the present Section 10 as changed to Section 11 be so altered that the rule apply in future to Sections 7 and 9 under the new numbering.

(Signed) A. S. BEGG, *Chairman*,  
B. D. MYERS,  
L. S. SCHMITT,  
G. CANBY ROBINSON.

DR. A. S. BEGG: These are offered as minimum requirements. Any school can add to the requirements laid down by this organization. Any institution that does not care to accept the substitution of sociology and psychology for the biological requirement is not bound to do so. Under our scheme of organization, this Section in the By-laws provides for minimum requirements.

Those of us who were at the Omaha meeting know that a great many schools have felt that this whole matter had become too rigid,



that every one was pulled through the same knot-hole in order to get into the Medical School, and it was felt that probably the Medical Schools might profit by having in their membership students who had done work in other fields than these that have been previously specified.

I should like to take the liberty of asking from one man an expression of opinion on this, because I think that he can state it much better than I can. I would like to ask Dr. Edsall to speak on that, if he will, because I think he has some notions about that which influenced this Committee at least very markedly in the formulation of that part of the suggestion.

DR DAVID L. EDSALL: I have had, in the first place, the very strong feeling, and a feeling that grows stronger, that in American education in general there has been an increasing tendency for years for a body of people to get together and regulate what everybody else must do—one of the most unfortunate things, I think, for the development of education that can happen. I think that has been far more marked in medicine than it has been in other lines of work.

There are certain things that are unquestionably essential for the student to understand. I think unquestionably he should at least have the elements of chemical and physical knowledge in the background. I have not one moment's doubt about the need of his having a biological conception; I have not one moment's doubt about a suitable psychological or sociological conception being likewise as important as the biological conception.

One of the gentlemen present (Dr. Stockard) said that at the present time he considers the biological courses to be superior to the psychological courses. At the time we began asking of colleges that they should provide certain kinds of training for students when they came into a medical school, it was impossible with most of the colleges in the country to get any of them to give any of these courses that were at all satisfactory to the training in medicine.

I do think we have to have some individuality in individual schools. Now we require two years of a college course. The major time is fixed now by our action, not by the action of educational institutions at large but by the action of this body. We are, I think, subject to very serious criticism for the rigidity with which we have fixed these. I think it would be much more dangerous to make flexibility in regard to chemistry or physics beyond the point that will come out in this report as it goes on, than it would be in biology, for the reason that the medical student, from the time he starts medicine, inadequately gets, particularly in anatomy, embryology, physiology and even in pharmacology and pathology and all the way along the line, such biological conceptions, certainly as those courses are given, as are essential to him, and there is nothing in the preceding courses that is absolutely essential to an understanding of these things.

Now, it is not my thought to belittle biology, but I think we all have to be willing to sacrifice something in order to get some flexibility, and I think the main thing is to make your minimum as low as you safely can make it and then hope that individual institutions will differ in their methods of doing these things.

I was very much impressed indeed with the statement made to me

by Sir Donald MacAlister, of the General Medical Council of Great Britain, in discussing this matter, and to note the essential difference in the viewpoint. In making their regulations, he said, "We make these regulations with the hope that the various institutions will go as far in departing from them as they possibly can without disobeying our regulations. We want them all to differ and we want them to make the requirements that we make of them as light as possible because the only advantage in making them is to have everybody differ just as far as he disagrees with them."

**DR A. S. BEGG:** I think the whole matter is summed up here: "Students who present at least 90 semester hours of college work may substitute for the above biological requirements at least 8 semester hours in the psychologic or sociologic sciences." While he presents over 60 hours, he must present biology under the present curriculum.

**DR STEPHEN RUSHMORE:** Mr. President, medicine is essentially biological in its foundations, and it seems to me if we detract from this elementary training by giving a standard which we regard as acceptable, the absence of any training in biology, we are going backward. If we look over the development of thought in the nineteenth century, it is clear that one of the most potent influences is the doctrine of evolution which had its origin not in biology, it is true, but in one of the other sciences, in history, the development of ecclesiastical history particularly; but its influence on every phase of thought has been through the science of biology, and that represents to the student, as I understand it, the best approach to this point of view.

Now, it is perfectly true that chemistry and physics are at the present time the sciences which seem to be contributing most to the development of medicine, but they are contributing that on a basis of biology, biological thought and biological point of view, and if we emphasize biology more in preliminary training, I think it is possible for us to save a great deal of time in the medical school, in the attention which we pay to anatomy and physiology in the later courses; that is to say, our students come to the medical school inadequately prepared and we have to waste time in the Department of Anatomy because they are not adequately prepared.

Personally, I would feel it would be a great mistake to go back and call an acceptable standard a preparation which has had no biological training.

**DR. B. D. MYERS:** I feel that the last speaker looked upon this as a rule. It is not a rule; it is an exception to the rule. There is on every hand the call to liberalize somewhat the rigidity of our entrance requirements. Now here is an exception to our rule. Our rule continues to be 8 semester hours of biology or zoology, or 8 semester hours made up half and half of biology or zoology plus botany. That is the rule. Now, to every administrative officer there come each year some few students who have had three or four years of collegiate work; have had chemistry and physics, but have not had biology. What we want is preparation for the study of medicine. Here is a mature man for whom it would be a great hardship

to be put back a year to make up a biological requirement. This merely applies to those men.

I do not believe that this will affect two dozen students in all of the schools of the United States during the year, but it makes it possible to let those two dozen well prepared fellows who have not had biology come in. It is a mere bagatelle in the way of liberalizing our requirement at the present time.

DR L. S. SCHMITT: I wonder if we appreciate the rules and regulations that beset the student of medicine on all sides. He not only has to conform with the minimum requirements that we set down here at this Association, but he also has to conform with the more strict requirements of the various universities and colleges; so that the average student today in the premedical courses is not alone beset on the one hand by the requirements of the premedical subjects, co-called, but also by the requirements for the academic aspect of education, and therefore he immediately on entering the college gets into a rut that he is utterly unable to get out of. Now, we cannot control, except by our personal influence on the various faculties, the academic requirements, but the Committee set forth with a very definite idea of liberalizing so far as we could the requirements from the medical school standpoint, and with this mission in mind, we endeavored to open up the door for the exceptional student so far as we safely could at the present time.

Some of us feel that we have not gone far enough as yet, but there are certain safeguards that we might set up at the present time.

DR W. F. R. PHILLIPS: Personally, I think that we ought to liberalize, but in liberalizing why should we prescribe? I see that we prescribe psychologic or sociologic sciences. Are they to be the ones picked out, or could we not with equal propriety recognize some of the other sciences? It seems to me that we might just simply strike out the words "psychologic" and "sociologic" and simply leave "8 semester hours of other sciences." That would allow mathematics or anything else to come in, and I think higher mathematics is just about as good preparation as I know of, in the study of medicine. That is my own personal opinion.

I am not satisfied that any courses of biology at the present time are worth a great deal because most of the courses in biology, so far as I have observed, are not standardized—one man takes eugenics, another one takes physiology, and another one takes something else, and from the point of view of an anatomist viewing those subjects, I do not think that my class as a whole has a sufficient grasp of any fundamental principles to enable me to pass them over and go immediately into the subject of human anatomy.

DR WM. DARRACH: I should like to say a word on this report. We have had a problem at Columbia which has opened my eyes a good deal as to the necessity of the requirements. The fixed requirement, as has been mentioned by this Association, plus the college requirement, at present make a two-year course certainly solid. We then outlined a three-year course, which we called a pre-medical course, dropping the two-year course out of any apparent

notice, and we found that for the students who had no high school chemistry and no high school modern language, even the three-year course was pretty full and unipliable and did not allow a wide preparation.

I would be very much in favor of not only this special point but the report as a whole because it does widen out the opportunities for the training of our men, and I think we must realize that we are not only insisting upon premedical training to enable men to take up the scientific aspect of their problem but we must also try to train those men for the work they are going to do later on, part of which will be scientific and undoubtedly the whole medical course must be founded on a scientific basis; but there are a great many other opportunities and duties which the physician must meet, which need another kind of preparation. That is, those men are essentially going to be dealing with human beings, with the problems of human lives, and any training which they can get which will help them meet the many-sided problems they are going to have to encounter later on is of tremendous value. Just as it is impossible to select our students when they come, as to which are going to be the research men later on, so it is impossible to try to force a single line of educational procedure along the lines, as it is laid down at present, to be followed out by all students, and this I think is a real opportunity to broaden out the possibilities of these men, to allow them more individual choice and more individuality in their own development, and therefore in spite of the fact that it does seem to tackle one of our fundamental necessities, biological ideas, I am strongly in favor of it going through, but I thoroughly approve of the suggestion that Dr. Phillips has made, namely, that in giving an alternate not to too strongly limit that alternate, and I would be very glad to see any qualifying adjectives removed from in front of that term "sciences."

DR. DAVID L. EDSALL: I think Dr. Rushmore's remarks might indicate that I had in view and perhaps others had in view the idea of keeping in physics and chemistry as against biology because at the moment, at the present time physics and chemistry seem interesting in the development of medicine. That had nothing to do with it at all, the main reason being that physics and chemistry have a character of matter to be taught in them that cannot be taught and is not taught in the medical school regarding which a great many fundamental facts and procedures are necessary in the understanding of the first step as they go along, whereas there is nothing qualitatively different in many ways in the character of work they get in a good biological course from the character of work they get in the medical course itself. The conceptions are much the same. The essence of what we are after, I think, is to give a man in his science training proper and adequate and broad scientific conceptions. We are trying to get in scientific conceptions which will serve as a basis for the work he is doing.

I think we have to keep in mind what I know is a fact, that highly intelligent men in the colleges are advising some of their most highly intelligent students not to go into medicine. That may not be very often, but I know it occurs occasionally, for the reason that they say that "The medical course has been so arranged that for

six years you are going through precisely what somebody else has told you to do, and you have too much mind to do that; you go on your own. Don't allow somebody else to put you through a machine for six years because when you come out you will be less intelligent than you are now." I know of such cases where men are being advised not to go into medical training or to go abroad for their training. That is something which I don't think we should allow to escape us.

DR CHAS R. STOCKARD: I think the last thing Dr. Edsall brought out there is the point of real importance. Here there has been an attempt made to "liberalize" education, so-called. If one is going to be educated, it means in the end he does have to know something. The only difference between education and no education is that. So that you do not liberalize education by changing your time of getting or requiring things but the only way to liberalize education is to let a man get it as he pleases.

The trouble with the requirement is the fact that no one can get his education as he pleases: he must get it in an ironbound, set fashion. The difference between Europe and America is that there is a little leeway there, so a man can take his course more or less backwards if he likes, or he can get his education any way he pleases; but when he gets through, he is educated. The way we are doing it, when the men get through, most of them are not educated because they are not allowed to get an education as they please.

I do not believe that we can change that by making any modifications in the entrance requirement: the only way you can do that is by doing something with the medical course which would liberalize it to such a degree that a man can decide when he is ready to take a certain part of his medical course or not. I believe it is better to leave chemistry and physics unmodified, but if we could get anything into the medical course itself which would make education liberal, that is where we should get it, and the thing we ought to be careful about is in taking any Englishman's word as to what they may mean in their requirement which they express as "liberal education." When you go to the "prep" colleges or other colleges in England, their examination system is so extremely rigid that it is perfectly impossible for any one to do as he likes. Yet every Englishman will say, "Well, you get your education by just wandering around; you need never study nor do anything," but if you are going to pass those examinations, you do have to do something, and they are very definite, without any doubt, as to how to go ahead.

DR. WILLIAM KEILLER: As one of those erratic Britishers, even if I am something of a hard-boiled Dean and a naturalized American citizen, I have read with a great deal of care Mr. Abraham Flexner's book. Now, I would like to throw a little sidelight on the way in which this wonderful method of just attending any lectures you wanted to works out. It is perfectly delightful, but they still call for attendance certificates in this way: Quite a large number of men in Edinburgh, when I was there, gave the servitor, shall I say, the equivalent of a dollar and the attendance cards were slipped in by the servitor and the men did not attend their courses, they didn't have attendance certificates or keep up with their work.

That is all very well for the good men; they keep up with their work anyhow, but the men that we want to guard the public against, that we want to save the public from, are the men who go to quiz masters—and I defy you to form any theorem, any examinations under any ordinary conditions, that can not be passed by a man taking a cram course from a quiz master.

Now gentlemen, we are seriously trying to see that the men who go to treat the public know something about what they are pretending to do, and they are liberalizing, and liberalizing with it. In Britain we have three professional examinations; men have to attend certain courses. They may have been exposed to these courses, but whether they have taken them or not is a different matter altogether. They have to attend them and then they can go to that examination. But the men in Germany very largely pass on the cram courses with their Privat Dozent, and the men in Scotland I know (as to the other I am only taking from hearsay) very largely pass these courses on their quiz courses; I know they do so in England, and those quiz courses are not worth a Continental.

DR. J. H. M. ROWLAND: I think that one of the important sections which relates to this is that on page four, speaking of the examination of candidates who have not been fully qualified: "A candidate to be examined under this section must give evidence of scholarship of high order." I think that is one of the most important parts of this attempt to liberalize because, as I understand it, the attempt to liberalize has been an attempt to help the superior student.

Superior students come with various disqualifications, certain absences of qualification for various kinds of courses. Personally, I don't see why all of the preparation to be removed should be in the study of biology. The colleges which send students to our school have had to be educated in this premedical course themselves. The medical college facilities have been educated to the point where they do not want inferior students. I think they can be trusted to take care of the liberalization. I think that whatever liberalization is done ought to be done in a more general way. I am not going to offer this as an amendment, but if I were going to offer an amendment it would be something like this: "Students who have completed at least 90 semester hours," (because I do not think we want to have any poor students or those who have completed 60 semester hours just barely trying to get through; I think we need to talk about the man who really has had 90 semester hours or 120), "or more, of collegiate work, may present 30 semester hours of collegiate work in lieu of 25 per cent of the course in any of the above prescribed courses." That is, it seems to me that 30 hours of collegiate work in any branch or branches would cover it, and it seems to me impossible for a man to go to school one whole year in a reasonable attempt to get a collegiate education who does not get through in 30 semester hours to substitute for at least 2 hours of any branch that we have prescribed.

We attempt to liberalize it and then again prescribe. I am not so sure that that is a liberalization. I am not so sure that that is what we are endeavoring to do. It seems to me that whatever we do in the matter of making this course flexible ought to make it

flexible but ought to make it generally flexible, and only, I want to insist again, for the high grade student.

Further discussion was made. Several amendments, amendments to the amendments and substitutes were offered, but were voted down.

The original report as presented was voted on and carried. The Chair declared that the amendments as presented by the Committee were duly adopted.

#### REPORT OF COMMITTEE ON SURVEY OF MEDICAL EDUCATION

This Committee consists of Dr. Hugh Cabot, Chairman; David L. Edsall, and Dr. Wm. Darrach.

DR. CABOT: Your Committee was charged with the business, at least as we understood it, of creating the machinery for a Commission on Survey and turning on the juice, so to speak, at which point we assume that the business of the Committee ends.

Obviously, the first problem for such a Committee was to search for an appropriate person to have the general oversight of this very searching investigation on the educational side of the study of medicine. There was very general agreement that if we could get Dr. Richard Pearce, we should have the best possible person, and we tried hard to get him. At one time we thought we had succeeded, but it appears that the other work of which he could not relieve himself made it impossible.

Then, after careful discussion and consideration, we came to the conclusion that Dr. Willard S. Rappelye was the next most appropriate person for this work, and further consideration of that name has not altered our view.

In regard to the personnel of the Commission, it seemed to us important that it should be very widely representative of people concerned largely in the business of education. As we understood the work to be done, it was examination of the educational aspects and not at all concerning itself with the details of the curriculum. So, in the tentative selection of a list of persons who might wisely compose such a Commission, we thought it important that such groups as the National Council on Education, the Association of American Universities, the Association of American University Presidents, the National Association of Medical Examining Boards, the American Medical Association, and, of course, this Association, should be represented, and the tentative list which was made up and which was sent to the executive officers of the schools here represented was selected upon that basis.

Obviously, nothing could be done in regard to turning on the juice, so to speak, until we were in position to say that we could finance the thing. Obviously, it is a piece of work which must go on over a period of years and could not be undertaken until there was reasonable assurance of financial support.

It seemed to us clear that such support should be sought from a variety of sources, for the same reason that the representation should be from a variety of sources, and we asked support from the American Medical Association; of course, from this Association,

whose child I believe this Commission should be, and from the great Foundations. We have at the present time assured financial support amounting to some \$80,000, and there is, I think, every reason to believe that further support will be forthcoming. It was our view that this work would probably cost, in its completion, including the publication of a report which would probably be on a pretty large scale, in the neighborhood of \$150,000, but I feel that we are quite safe in going ahead now and setting our agencies to work with the support which we now have assured, and that the balance of the funds can with certainty be obtained.

The precise make-up of that Commission ought, I think, not to be regarded as now complete, for two reasons. In the first place, I think that Dr. Rappelye ought to be given some opportunity of associating with himself some particular people whom he knows and whose wisdom he values—and no such opportunity has been given. Then, I think, that recent discussion, with which many of you are familiar, in the *Journal of the American Medical Association*, might make it very desirable to place Dr. Wm. A. Pusey on this Commission. He holds views which are widely held and which certainly deserve serious consideration. If they seem to be slightly radical and to depart somewhat from the standards which this Association has held, it appears to me likely that the responsibility which would pertain to having really to sit down and study this question in its various aspects might have tendencies in the direction of producing more conservatism. So that I think it would undoubtedly be wise to add further to the Commission as tentatively suggested. I believe it would be entirely safe to run the number up as far as fifteen. I am not sure that any such limit should be placed. I think what we want chiefly to be sure of is that we have wide representation of as many different views as can be sanely held and which ought to be widely discussed, but I think at the present time the Committee has come to the point where, with the exception of making certain additions to the group already suggested and being sure that we can obtain all of the people whom we have already considered, we are ready to step on the gas.

MISS LUCILE EAVES: Mr. Chairman, if I may have the privilege of the floor just a minute, I am not a member of the Association, but I am here to report some of the proceedings on behalf of a committee of the Association of University Professors, and I would like to just suggest that if the Chairman considered it suitable, that perhaps it would be possible for the Chairman to select a member of this Association who is also a member of the Association of University Professors, who could be on this Committee. This Association of University Professors has a Committee which deals with the Relation of Vocational to General Higher Education, and this Committee is endeavoring to keep in touch with all such general matters as have just been discussed by your Committee on Education, because the reports would be discussed in the various branches of the Association of University Professors if there were some representation from this Association as well as from those already mentioned.

PRESIDENT WILBUR: I would suggest that we might receive this report and ask the Committee to proceed with its operation.

A motion to this effect was made by Dr. Myers, seconded by Dr Begg and carried.



## REPORTS OF DELEGATES

The following reports of representatives from this Association delegated to other organizations were read:

### AMERICAN HOSPITAL ASSOCIATION

Your representative attended the meeting of the American Hospital Association held in Buffalo, October 5-9, 1924, for the purpose of conferring with Dr. Nathaniel W. Faxon, who had been appointed by the Hospital Association trustees to confer with the representative from this Association in the matter of selecting and time of appointment of interns.

This Association expressed itself definitely at the 1924 meeting as favoring an appointment to be made after March 15. Dr. Faxon agreed that this was not unreasonable—and so reported to his Association.

The report was received with greater kindness than was the preliminary report of the previous year. The discussion seemed to indicate a willingness to co-operate with this Association in this matter—more so than before this, but the hospitals are still concerned primarily with the need for securing interns and seem to regard every means to this end as being legitimate.

Action on the report was deferred until the next annual meeting.

(Signed) FRED C. ZAPFFE.

### AMERICAN CONFERENCE ON HOSPITAL SERVICE

Your representatives attended the annual meeting of the American Conference on Hospital Service held March 4, 1924, in Chicago at the office of the Conference, 22 East Ontario St.

The usual routine of business was transacted. Dr. Frank Billings was elected honorary president; Dr. S. S. Goldwater, New York, president. The vice president, Dr. Warner, and the treasurer, Dr. Mock, were re-elected.

The Methodist Episcopal Hospital Association was elected to institutional membership.

The report of the treasurer showed that the Conference has sufficient moneys on hand and subscribed to defray its expenses until 1926; but that at that time new financial arrangements would have to be made.

About 12 representatives were present. The session was a short one and no action was taken on anything that would interest any one outside of the immediate working personnel of the Conference.

(Signed) G. CANBY ROBINSON,

FRED C. ZAPFFE.

### FEDERATION OF STATE MEDICAL BOARDS

The outstanding action taken by the Federation at the annual meeting held in Chicago in 1924 was the adoption of the curriculum worked out by a committee of this Association and adopted at the 1923 meeting held in Ann Arbor, Michigan.

The committee of the Federation, consisting of the late Dr. B. D. Harison, chairman, and Dr. John K. Scudder, reported to the Federation as follows:

Your committee last year reported on the detail of the two year

literary-scientific, or sixty semester hour requirement as a classification for registration in accredited medical colleges. Also included in this detail was submitted a suggestive blank, all of which was laid on the table for action at this meeting. Your committee this year would recommend the substitution of the required schedule of hours in four calendar years from a minimal 3,600 to a maximal 4,400 hours distributed as from 900 to 1,100 hours per year, as adopted by the Association of American Medical Colleges at its meeting at Ann Arbor in 1923.

It has been the policy of this Committee to adhere as closely as possible to the standards established by the national bodies, and more particularly to the standards authorized by the Association of American Medical Colleges involving medical courses. College men devoting their entire professional activities to teaching and training men for graduation can more properly and exactly estimate the quality and quantity of work practical and possible in the four year course. It is, therefore, with no apology that the committee recommends that the schedule recently approved and indorsed by the Association of American Medical Colleges be adopted by the Federation.

(Signed) FRED C. ZAPFFE.

#### MEMORIALS

**DR. IRVING S. CUTTER:** Mr. President, I have in my hand a brief obituary on Dr. Theodore Hough, an honored member of this Association and a Past President, and a very faithful member of the Committee on Medical Education and Pedagogics, which has just reported. I move the adoption of this report and the publication of it in our proceedings; a copy to be sent to the widow.

The motion was duly seconded and carried.

#### DR. THEODORE HOUGH

It was with profound and astonished grief that we learned that Dr. Theodore Hough, professor of physiology and biochemistry, and dean of the University of Virginia Medical School, died suddenly on Sunday, November 30, 1924. He had not been in robust health for some months, and had been more easily fatigued than was his habit, but there had been no suspicion that he suffered from a threatening disorder.

Dr. Hough was born at Front Royal, Va., June 10, 1865. He was of an old quaker family from Philadelphia. His father, Dr. R. S. R. Hough had become a Methodist minister, but was also a physician. His mother was Miss Virginia Baer, of Baltimore.

He was educated at the Johns Hopkins University, receiving his bachelor's degree in 1886 and his degree of Doctor of Philosophy in 1893; specializing in biology under Newell Martin and William K. Brooks. While a graduate student he was for three years an instructor at the McDonough School near Baltimore. Upon graduating he went as instructor to the Massachusetts Institute of Technology, and was promoted to assistant professor in biology in 1895; remaining until 1903. He was made associate professor of biology and director of the school of science in Simmons College in 1903, and, in 1906, professor of biology. From 1893, when he went to Boston, until 1907, when he came to the University of Virginia, he held, in addition, the post of instructor in physiology and personal hygiene at the Boston Normal School of Gymnastics.

During his residence in Boston he was intimately associated with Professor W. T. Sedgwick, with whom he maintained a life-long friendship, and together they published "The Human Mechanism," which has run through several editions. He was also intimate with Professor R. P. Bigelow.

He came to the University of Virginia in 1907 as professor of physiology. At that time the reorganization of the medical school was in progress, and he constructed the University's first laboratory of physiology in the old dining halls at the north end of West Range. In addition to his course in physiology, Dr. Hough inaugurated a course in biochemistry when he came in 1907, which, in 1909, was made a special course with an instructor, and which he personally supervised until 1921. This course is now an important subdivision of his department, and is included in the title of the school.

In 1909, Dr. Hough married Miss Ella Guy Whitehead, a cousin of Dr. Richard Whitehead, at that time dean of the medical school. He and Dr. Whitehead were intimate friends. On the death of Dr. Whitehead in 1916, Dr. Hough was appointed dean, a position he continued to hold until his death. He assumed the responsibilities of the office with no little reluctance, as his interest and life work had been essentially those of a student and scholar rather than those of an administrator. At that time he was engaged upon a promising investigation of blood regeneration following experimental hemorrhage,—a research which did not progress further.

As dean of the school of medicine, Dr. Hough was called upon to attack large and perplexing problems. The reorganization of the school, begun by Dr. Whitehead, still presented difficult questions. Entrance requirements had been made much more rigid, and curriculum changes were making heavier demands upon both student body and instructorial staff. Always serious by nature and singularly thorough, Dean Hough attacked the problems thus presented and within a year or two became thoroughly conversant with both the local and the national aspect of medical education. From the first he maintained a stalwart optimistic opinion as to the eventual success which would attend the reorganization of the medical school and he has continuously given most searching forethought to the administrative changes required in order to bring the school to its present position. Each of his problems was attacked with a simple sincerity and wholehearted desire to arrive at the true facts of the case. He was unusually tenacious and painstaking in developing his facts and in setting them in their correct perspective. It was entirely distinctive of him that when he had thus formed his opinion as to a course of action, he relied habitually upon the strength of his case to win the sympathetic co-operation of his colleagues and never attempted to push a measure through solely by force of authority. In this way, he has continually built up a strong morale in the medical faculty.

Hardly had Dr. Hough been invested with his new duties when our nation entered the war, and the university became an army camp. Those who remained here during that period will recall, in a measure, the tangled and multiplied problems clamoring for solution in order merely to keep the school alive at all. Nevertheless, in addition to his other labors Dr. Hough found time to take an active

interest in Dr. Goodwin's work of organizing Base Hospital No. 41, and in aiding the clinical staff in organizing their medical examination service.

Following the armistice there occurred a sudden extraordinary increase in the number of medical students,—an increase which taxed the capacity of this school, as it did those of most of the other medical schools in the United States. The emergency was successfully met by making certain internal readjustments, rendered possible by an "emergency subscription fund," which Dean Hough raised.

One of his most conspicuous and widely recognized contributions to the general subject of medical education was his studies upon the proper location of a state supported medical school in Virginia. These investigations led him to oppose the removal of the university's medical school to Richmond and the strong and convincing presentation of his views on the subject were largely decisive in the outcome.

The last problems that engaged his attention related to internal administration. He was developing an equitable method of securing clinical teachers of high grade suited to the conditions and he placed the management of the University hospital on a sound business basis.

At almost the last meeting of the medical faculty, Dr. Hough presented a plan which he had worked over all summer, for a happy solution of the questions relating to the Bachelor of Science in Medicine.

The period of Dr. Hough's incumbency as Dean, was one of wholesome growth in the medical school. During his first year as Dean there were 113 medical students enrolled; today there are 213. During his deanship women were admitted to the medical school for the first time. The medical faculty has increased distinctly. Dean Hough succeeded in adding to the staff full time clinical teachers in orthopedics, pediatrics, and obstetrics and a highly trained hospital superintendent, and there were established growing departments in urology, dermatology and syphilology, gynecology, laboratory diagnosis and Public Health. Assistant professorships in biochemistry and in bacteriology and several lesser teaching positions were also added. The medical department therefore owes him a great debt of gratitude.

He was a man to honor and to love and we shall always cherish his memory and revere his character. All who were fortunate enough to know him soon came to appreciate his scholarship, his clear thinking and his invariable firm stand for principle and educational ideals.

DR. H. G. WEISKOTTEN: Mr. President, I have here an obituary on Dr. John L. Heffron in connection with which I desire the same action.

DR. NILES: I so move, Mr. President.

The motion was duly seconded and carried.

JOHN LORENZO HEFFRON  
1851-1925

John Lorenzo Heffron, son and grandson of a physician, was born in New Woodstock, a small town in central New York, November 29, 1851. His ancestors, coming originally from the north of Ireland and settling in New England from whence they moved westward,

were among the early settlers in Central New York. From these ancestors he inherited a remarkably sturdy and handsome physique and a tenacity of purpose which marked him for a leader.

He early determined upon a career in medicine, and, in spite of financial handicaps, was graduated from Madison College, now Colgate University, with his A.B. in 1873. After finishing his classical course his depleted finances made it necessary that he spend some time in providing the funds for his course in medicine. To this end he taught school for five years and did sufficient additional work in college to receive his Masters degree from Colgate in 1879. He entered the College of Physicians and Surgeons in 1878, where he completed his first year in medicine. The next year he transferred to Syracuse University College of Medicine, from which he was graduated with the degree of Doctor of Medicine in 1881. Soon after his graduation he was married and spent the following year in intensive study in Vienna and Heidelberg. Returning to Syracuse in 1882 he began the active practice of medicine, which ended with his death.

The thoroughness with which he prepared for his life work was characteristic of him always. He had an interest in all things medical which was unmeasured. For years he was the victim of a heart affection which necessitated a curtailment of activities which must have been extremely irksome to a man of his temperament. However, he did his daily work with his patients with undiminished zeal and brought to those hours which were devoted to enforced resting an activity and enthusiasm of mind which resulted in much constructive work. Only a week before his death he mailed to his friends the reprint of an article he had written during an enforced vacation, "Deaths and Disabilities from Heart Disease", which was published in the August, 1924, issue of the American Journal of Public Health. This was the last of a long list of valuable contributions he had made to medical and educational literature.

Becoming a member of the faculty of the Syracuse University College of Medicine in 1883 as Instructor in Histology, he was successively professor of Materia Medica and professor of Clinical Medicine, being made Dean of the College in 1907, which position he held until his resignation in 1922, at which time he was made Dean Emeritus. What Doctor Heffron meant to our College of Medicine it would be difficult to estimate adequately. The college with its faculty and students was his very life. The story of his influence for good upon the lives of hundreds of graduates of the college can never be told. He was a man who was greatly loved and whose advice was widely sought.

In spite of our sorrow at his passing, we feel that his death came as he would have wished. Back from a restful and uplifting summer, with his mind filled with the many plans he wished to carry out, he left his office at noon on September 27th after a busy morning to walk the two short blocks to the University Club where he was accustomed to lunch. Crossing one of the streets he was struck down by an automobile and rendered immediately unconscious. Taken to the University Hospital it was found that his skull was

fractured and he died twelve hours later without regaining consciousness.

#### AMENDMENTS

The following amendments presented by the Executive Council at the 1924 meeting for action at this meeting were read by the secretary.

ARTICLE III. Section 2 to read as follows:

Any graduate school in medicine, a part of a university, any graduate division of a university offering medical instruction, or any school offering courses in medicine to general practitioners but not leading to any degree, is eligible to graduate membership in the Association on conforming to such requirements as the Association may adopt.

ARTICLE III. Section 3 to read as the present Section 2.

ARTICLE III. Section 4 to read as the present Section 3, except for the insertion of the word "active" before "membership" in the first line.

ARTICLE III. Section 5 to read as the present Section 4.

ARTICLE V. Section 2 to be amended by substituting a comma in place of the word "and" between "honorary" and "associate" and the insertion of the words "and graduate" between the words "honorary members."

Dr. Niles moved that the amendments be adopted as read.

Dr. Cabot seconded the motion.

The motion carried.

#### REPORT OF NOMINATING COMMITTEE

The Nominating Committee, consisting of Drs. A. S. Begg, chairman; E. P. Lyon and Wm. Pepper, presented the following report for consideration:

*President*—HUGH CABOT.

*Vice-President*—DAVID L. EDSALL.

*Secretary-Treasurer*—FRED C. ZAPFFE.

*Executive Council*—WALTER L. NILES (2 years).

IRVING S. CUTTER (2 years).

C. F. MARTIN (1 year).

On motion the Secretary was authorized to cast the unanimous ballot of the delegates for the election to office of those named in the committee's report. This was done and the Chair declared the nominees duly elected to office.

#### PLACE OF NEXT MEETING

The Secretary announced that invitations for holding the next meeting had been received from Cleveland, Minneapolis and Charleston, S. C.

The matter was submitted to a vote. Dr. Begg and Dr. Myers were appointed tellers. The poll showed that Charleston received the highest number of votes cast.

DR. HUGH CABOT: It occurs to me that I personally, for instance (and I think there are others) am in some doubt in regard to the wisdom of the date on which these meetings have been held, and that it might affect the part of the country we went to if the date were changed. Personally, I am doubtful whether we do not get

rather too much medical education all in a bunch here by having these two meetings grouped. I find it very difficult, personally, to spare the amount of time that is necessary to attend both this meeting and the meeting of the American Medical Association, and I should prefer to take those doses separately.

For the purpose of bringing the matter up for discussion (I think it ought to be discussed before we vote for a place to go) I would move that the Association change its time of meeting to the month of November.

DR. WM. DARRACH: I would like to second that motion, and in doing so, urge as a reason for this change the fact that it would make it more easy for those of us who wish to have these problems discussed and also put into effect, if they were brought up in November rather than in the early spring. As it is now, there is hardly time to get anything but a little discussion, and no action until the fall, and by that time the proposition has become cold; a good deal of the details of it have been forgotten, and I think we would get a little more rapid progress if these meetings were held in November so that we could take back to our faculties the suggestions and recommendations and ideas that are brought out at these meetings.

PRESIDENT WILBUR: I assume the motion is for the Executive Council to select the date in November for the annual meeting. Does that interfere with anything in our constitution?

SECRETARY ZAPFFE: No, sir.

DR. W. F. R. PHILLIPS: The Southern Medical Association, quite a large organization, always meets in November, and possibly in selecting that you might have conflict which many of the Southern men representing some of the schools would find objectionable, and it is a condition that we have tried to avoid. On that account October might possibly be a better time for the Committee to consider.

PRESIDENT WILBUR: Are there any other comments.

DR. WALTER L. NILES: Mr. President, I feel heartily in accord with this suggestion, which I have for some time felt would be to the advantage of the Association and the medical colleges in the Association. I see no reason why the meeting should not be held soon after the opening of the medical schools; that is, after we have gotten together and under way, and found out what our problems are. I would suggest the amendment of October.

DR. HUGH CABOT: I would be perfectly willing to accept the change.

PRESIDENT WILBUR: Late October or November, in accordance with the call of the Council. Those in favor say "aye;" opposed "no." The motion is carried.

#### VOTE OF THANKS

At this juncture Dr. Rowland moved "that the Association of American Medical Colleges express its grateful appreciation of the hospitality of the Boston City Hospital and the member colleges of Boston.

The motion was seconded and passed unanimously.

There being no further business to come before the meeting, a motion to adjourn was entertained, seconded and passed.

(Signed) RAY LYMAN WILBUR, *President.*

FRED C. ZAPFFE, *Secretary.*

MINUTES OF THE ORGANIZATION MEETING OF THE  
EXECUTIVE COUNCIL

A meeting of the Executive Council was held in the Boston medical library at 11:30 a. m., March 7, 1925, with the following members of the Council present: Dr. Ray Lyman Wilbur, Dr. Hugh Cabot, Dr. Walter L. Niles, Dr. Irving S. Cutter and Dr. Fred C. Zapffe. The vice-president of the Association, Dr. David L. Edsall, was also present.

The meeting was called to order by the Secretary of the Association, Dr. Zapffe.

On motion of Dr. Wilbur, duly seconded, Dr. Walter L. Niles was elected chairman of the Executive Council for the ensuing year.

On motion, duly seconded, delegates to other organizations were appointed as follows:

Council on Medical Education and Hospitals of the American Medical Association: Dr. Ray Lyman Wilbur.

Federation of State Medical Boards: Dr. Fred C. Zapffe.

American Conference on Hospital Service: Dr. Fred C. Zapffe.

American Hospital Association: Dr. Fred C. Zapffe.

On motion, duly seconded, it was voted to hold the next meeting of the Association October 26, 27 and 28, 1925.

The following Committee on Education and Pedagogics was appointed. Dr. Alexander S. Begg, Boston University, chairman; Dr. S. P. Capen, University of Buffalo; Dr. G. Canby Robinson, Vanderbilt University, Dr. Burton D. Myers, Indiana University, and Dr. L. S. Schmitt, University of California.

The following Committee on Medical Research was appointed: Dr. Lewis H. Weed, chairman, Johns Hopkins University; Dr. Cecil Drinker, Harvard University, and Dr. Don R. Joseph, St. Louis University.

On motion of Dr. Wilbur, duly seconded, it was voted not to appoint a Committee on Equipment this year.

On motion, duly seconded, Dr. Cutter and Dr. Zapffe were delegated to recodify the constitution and by-laws and report at the next meeting.

On motion, duly seconded, the secretary was voted an honorarium for the ensuing year of \$2,000.

(Signed) WALTER L. NILES, *Chairman.*

FRED C. ZAPFFE, *Secretary.*



## OFFICERS AND COMMITTEES FOR 1925-1926

*President:* HUGH CABOT, Ann Arbor, Michigan.

*Vice-President:* DAVID L. EDSALL, Boston.

*Secretary-Treasurer:* FRED C. ZAPFFE, 3431 Lexington St., Chicago.

## EXECUTIVE COUNCIL

WALTER L. NILES, Chairman, New York.

CHARLES P. EMERSON, Indianapolis.

IRVING S. CUTTER, Omaha.

CHAS. F. MARTIN, Montreal.

RAY LYMAN WILBUR, Stanford University, California.

HUGH CABOT, Ann Arbor, Michigan.

FRED C. ZAPFFE, Chicago.

## COMMITTEES

*Committee on Education and Pedagogics*

ALEXANDER S. BEGG, Chairman, Boston University.  
 BURTON D. MYERS, Indiana University.  
 G. CANBY ROBINSON, Vanderbilt University.  
 S. P. CAFEN, University of Buffalo.  
 L. S. SCHMITT, University of California.

*Committee on Medical Research*

LEWIS H. WEED, Chairman, Johns Hopkins University.  
 CECIL DRINKER, Harvard University.  
 DON R. JOSEPH, St. Louis University.

## MEMBERS

## ALABAMA

University of Alabama, School of Medicine, University.

## CALIFORNIA

College of Medical Evangelists, Loma Linda and Los Angeles.  
 Stanford University School of Medicine, San Francisco and Stanford University.  
 University of California Medical School, San Francisco and Berkeley.

## CANADA

McGill University Faculty of Medicine, Montreal.  
 University of Toronto Faculty of Medicine, Toronto.

## 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.

## 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.

## OREGON

University of Oregon School of Medicine, Portland.

## 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

Meharry Medical College, Nashville.  
 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.

## UTAH

University of Utah School of Medicine, Salt Lake City.

## 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.

## ASSOCIATE MEMBERS

Dr. James R. Guthrie, Dubuque, Iowa.  
 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. Kendrick C. Babcock, Urbana, Ill.