[June, 1919]

MEDICAL EDUCATION IN THE UNITED STATES

A PROGRAM

I

Medical education lags far behind medical science

As compared with progress at any previous stage in the world's history medical science has in recent years advanced with remarkable rapidity. Advances scored by medical investigators are, however, far from being incorporated into medical education and medical practice. This fact, well known to critical students of medical education in America, has been brought home to everybody by the experience afforded by the war. Emphatic testimony to this effect is given by those who carried heavy medical and surgical responsibility for the new army. Consider, for example, the evidence of Dr Nellis B Foster, formerly professor of medicine in the University of Michigan, who was successively chief of medical service in three military hospitals. In a recent paper on the subject, Dr Foster says:

"The impression gained from this experience was a painful shock to me, and, as I later found, to many others who had given the best years of their lives to the teaching of medicine. The too numerous examples of inefficiency and ignorance of physicians afford a subject for deep study. * * * * * * * * There can be very little question that medical inefficiency is much more widespread than we have been willing to admit. In round numbers 150 base hospitals were mobilized. It was only with the greatest difficulty that physicians professionally capable of acting as chiefs of service were found for these hospitals. The dearth was not due to scarcity of physicians of intelligence and

native capacity, but purely to a want of scientific training and professional knowledge in these officers. In the first place, this is demonstrated by the fact that it was possible, by means of intensive postgraduate courses at the camp hospitals, to train many general practitioners into satisfactory internists who qualified later as chiefs. In the second place, no adequate number of physicians capable of diagnosing the common cardiac diseases could be found to act on examining boards."

The natural explanation is that these deplorable conditions are a consequence of our prolonged experience with poor medical schools and that our medical schools are now as a rule turning out a much superior product. This is not the case. A few strong schools are indeed training well qualified practitioners, but it is still true that by far the larger number of our medical schools have made only slight progress. On this subject Dr Foster says:

"The number of untrained, incompetent recent graduates is the most depressing feature of my experience in army hospitals. These were mostly, if not all, possessed of some ability and eager to learn, and the rapidity of their progress, when they were given a fair chance, was wholly damning to their earlier educational surroundings."

There is, therefore, no doubt as to the urgency and necessity of prompt and effective measures for the improvement of medical schools in the interest of public health and human well-being.

II

Yet we know how to teach medicine

Fortunately, there is no educational enterprise that can be more intelligently attacked. We know how to train competent practitioners and investigators in the field of medicine and surgery. We know with sufficient definiteness how many establishments of this kind the present needs of the country require and in most cases where they ought to be located. We know how medical schools and hospitals ought to be organized and how they ought to be related to the general educational system, secondary and higher, of the country. In addition, we are already training more teachers of medicine and surgery competent to carry on medical education in the right way than can now find teaching posts. That is, we have and are developing teachers, but we have too few well-equipped and well-financed institutions to utilize them. In other words, if high grade medical schools were successively developed in different sections until the full quota needed were reached, there would probably be no difficulty about finding for these teaching and research posts men competent to fill them. Under these conditions, the time is ripe for an organized and progressive effort to bring medical education throughout the United States to the level made possible by the recent progress of medical science.

III

Number and location of schools needed

At the time of the Carnegie Foundation's Report on Medical Education in the United States and Canada (1910) there were in the United States alone 151 medical schools. The bulletin in which this study was embodied suggested that this number could at this time be safely reduced to about thirty-one, the distribution of which is indicated on the accompanying map. In nine years the number of schools has decreased to ninety and there are not lacking indications that this number will be considerably reduced through natural causes in the near future. The thirty-one schools for which a clear opportunity at present exists would be located approximately as follows:

a. New England. Medical Departments connected with Harvard and Yale Universities. (2)

b. Middle and Atlantic States. Medical Departments connected with universities in New York, Philadelphia, Pittsburgh, Baltimore, Syracuse or Rochester, and Howard University at Washington. (6)

c. The situation in the Southern States is somewhat less definite. Undoubted opportunity exists already at Nashville, New Orleans and Galveston. Possibilities requiring careful consideration and perhaps a longer period of time for final decision in Virginia and Georgia. (6)

d. In the Northern Central States, the opportunities at Cincinnati, Columbus, Cleveland, Chicago, Indianapolis are definite and assured. (5)

e. In the Middle West, Minneapolis, Iowa City, St Louis, Kansas City and Omaha can be dealt with immediately or in the very near future. One or two additional possibilities would undoubtedly develop within the next decade or

> two. As for the country farther west, there are opportunities at Salt Lake City and Denver. On the coast, San Francisco and Seattle, perhaps also Portland, require attention. (12)

Of the institutions mentioned in the above list a small number, not exceeding six or eight, are already in position to give solid medical training in keeping with modern ideals. Several of these, however, are in urgent need of additional resources. The remaining institutions, between twenty and twenty-five in number, are seriously defective, though there is in almost every case something substantial in the way of financial resources, modern laboratory buildings, and sometimes hospital buildings upon which to build.

IV

What does medical education cost?

A medical course consists of four years of school training: the first two years devoted mainly to the fundamental or laboratory branches, the last two to the clinical or hospital branches. It is not difficult to make a helpful estimate as to the cost of carrying the first two or laboratory years. In round numbers, an income of $100,000 will provide excellent opportunities for teaching and research in the necessary departments of the first two years of the medical course. Larger sums can of course be employed to advantage in both teaching and research, but the sum named will furnish satisfactory modern opportunities for a student body numbering 250. The investment required for buildings and equipment may of course vary greatly

with the extent and character of the equipment. Modest but adequate accommodations for laboratory can, however, be furnished within an investment of something like a half million dollars.

The clinical years are more difficult to deal with, since there are two factors involved: (1) the building and maintenance of the hospital; (2) the provision for teaching and research. It has been found as a matter of experience that a hospital costing approximately a million dollars with an endowment of a million dollars or even less can be made to suffice for the absolutely necessary purposes of a small modern medical school. Obviously, however, provision on this scale leaves much space for future development. The sums needed for teaching on the clinical side are also more difficult to fix than those needed in the laboratory branches, since the field is so much larger and more complex. Nevertheless, an expenditure of $100,000 will provide excellent modern teaching and at least the absolute essentials for clinical investigation and research. It would appear, therefore, that for current maintenance an income of $200,000 will carry a modern medical school of approximately 250 students. The income from fees in an institution of this sort would be in the neighborhood of $40,000. In round numbers, there would be a deficit of $160,000, equal to the income at 5% on approximately $3,000,000, aside from the investment in laboratories, hospital buildings and equipment, and hospital endowment.

V

Obtaining the money

The total cost of a modern medical school may therefore be safely placed at a minimum of $6,000,000. Some schools at least should possess considerably larger resources, in order (1) that a larger attendance may be provided for in large centers of population, (2) that more expensive and elaborate forms of research may be prosecuted where conditions favor. To obtain the funds needed for a general reconstruction has until recently been a hopeless undertaking. Medical education was for so many years discredited because it was a private business venture on the part of doctors; and it was therefore impossible to interest philanthropists in it. Latterly, however, it has begun to be realized that high grade medical schools are educational institutions in which the local practising profession has no interest, in consequence of which it is coming to be possible to enlist in favor of the best medical schools the type of financial coöperation that has long been enlisted in behalf of general college and university endowments. When the General Education Board made its first large gifts in this field to the Johns Hopkins University, the Board gave the entire sum, $1,500,000. In making its last gift it contributed $400,000 towards $1,000,000. There is little doubt that in the very near future successful efforts of the same kind could be made in Boston, Cleveland, and perhaps other cities. That is, medical schools of university grade are more and more acquiring the status of colleges and universities, so that the

large sums may be raised through the leverage of gifts representing an important, though in many cases not the preponderating, share in the undertaking. Doubtless the terms on which progress could be made would become more favorable as the movement gained in momentum and public recognition. These terms would of course for a long time be more favorable in the Eastern and the Middle States than they are in the Southern States, but even in the South there are signs that states and private individuals are disposed to coöperate within limits of their ability. In the middle and extreme West, the execution of this conception will require coöperation with the state universities. Successful coöperation between state universities and private organizations or individuals is already taking place in Indianapolis, Minneapolis and San Francisco. The experience of the International Health Board coöperating with state authorities in the Southern States and in foreign countries woyld seem to show that there is no possible danger to be apprehended from coöperation with public authorities in the fields of medicine and public health. There is indeed an enormous advantage to be gained through such coöperation. The states are already increasing their appropriations for medical education and for public health; but it is difficult at this moment to procure from the people the relatively large sums needed for research. Private funds have therefore an opportunity to promote what the states are at this time least likely to support liberally through operation with the states in the promotion of research and the refinements of medical teaching.

The following table exhibits the terms on which the General Education Board has assisted university medical schools during the last six years:

Date	Institution	Total Sum Raised	General Education Board Contribution	From Outside Sources
1913	Johns Hopkins Univ	$1,400,000	$1,400,000	0
1914	Johns Hopkins Univ	400,000	400,000	0
1919	Johns Hopkins Univ	1,000,000	400,000	$ 600,000
1914-9	Yale University	2,500,000	582,900	1,917,100
1914	Washington University	1,500,000	1,000,000	500,000
1919	Washington University	300,000	150,000	150,000
1916	University of Chicago	5,300,000	2,000,000*	3,300,000
1917	Columbia University (proposed)	7,500,000	2,500,000*	5,000,000

*One-half from Rockefeller Foundation

An inspection of these figures shows that progress has already been made in enlisting the coöperation of outside agencies in raising funds for the most advanced type of medical education.

If we assume that a modern medical school at least requires facilities and endowment representing between $6,000,000 and $7,000,000, the assests of thirty schools would in value approximate $200,000,000; if fifteen of these schools were more or less highly developed, the total would exceed $300,000,000. The present resources of the schools under

consideration hardly exceed one-third of this sum. To place medical education in the United States, country wide, on a modern basis in the next two or three decades will call for something like $200,000,000. West of the Mississippi taxation will certainly supply the essentials and something more; south of the Ohio, taxation will do a part. In all sections, increasing sums will doubtless come from gift or endowment.

The history of the General Education Board shows what can be accomplished in respect to general university endowment through the stimulus given by coöperation. The endowment of the Board is now valued at $34,563,951. In the last 13 years, the Board's contributions amounting to $15,668,703 will ultimately add $71,278,142 to the resources of the institutions assisted.

It is certain that at present a relatively larger share would have to be contributed in order to raise additional funds for medical education; it is probable that even some years hence, especially in the South, conditions would be less favorable than in dealing with general endowments. If, however, a fund of, say, $30,000,000 were available, principal and interest to be distributed within a period varying from twenty-five to fifty years, it seems by no means improbable that, partly through its leverage and partly through the momentum thus communicated to medical education, a total sum of two hundred millions could be added to the resources of the thirty-one medical schools required to satisfy the country's need.

The General Education Board is in position to direct a large work of this kind. It is in touch with the institutions which would participate in this development; with several of them it has already coöperated. Should the opportunity come, the details of this memorandum would of course be regarded as subject to revision in the light of future experience. Assuredly, however, within the period during which the fund would be active, there is no reason to apprehend any fundamental alteration of needs or conditions - educational or social.