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MEDICAL EDUCATION
1918-1920

By

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[Advance Sheets from the Biennial Survey of Education in the United States, 1918-1920]

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When the report for 1916–1918 was written, the medical schools were in process of being converted under Government control into units of the Students' Army Training Corps. Under the man-power bill the entire Nation was placed on a war basis, and its entire energy was consecrated to the winning of the war. This required that all able-bodied men between the ages of 18 and 45 be enlisted in the Army and Navy. Colleges and universities, including the medical schools, became centers for the training of officers for the new armies. In the instruction, courses of military value were given first consideration, the curricula being prescribed by the War Department, those in the medical schools differing less from the prewar schedule than in other collegiate departments. The members of the medical school faculties who were considered as "essential teachers" were kept at their duty and not granted commissions as medical officers. These teachers, in fact, were actually in the service of the United States. This restriction was in effect a recognition of their skill as "essential teachers," and, had the war continued, some suitable evidence of such recognition would have been devised.

On August 28, 1918, when the change in the status of colleges and medical schools was announced, the medical schools were ready to open the fall sessions on their usual prewar schedule. The changes ordered made necessary an extensive revision of these schedules. These revisions and the fact that the fall session was so near, if it had not already begun, made some confusion inevitable. The time-consuming routine of changing the students from a civilian to a military status—questionnaires, physical examinations, inductions, waiting in line, etc.—took up most of the student's time which otherwise would have been spent in study. The placing of six hours per

week of military training into an already overcrowded schedule added to the confusion, which in many instances was further increased by a temporary conflict between the military officers who were supreme and the educational officers. For example, drill hours were frequently placed at the time set for laboratory or clinical courses. Orders through military channels were finally sent to commanding officers in medical schools where such difficulties occurred to make the hours for military drill conform with the teaching schedules. Other difficulties, such as the assignment of students to guard duty, to raking leaves, to kitchen-police duties, and the like, were also dealt with by orders from the War Department. The change from quiet rooms at their homes or in other private dwellings to barracks where no provision was made for study made it difficult for the students to do effective work. To cap the climax came the epidemic of influenza, which required the closing for a few weeks of many of the schools. During the first eight weeks that elapsed after the opening of the fall session, therefore, very little effective teaching had been done in the medical schools where military training had been established. Some of the colleges extended their sessions for a few weeks into the following summer to make up the time lost.

In spite of the handicaps, however, deans and teachers of medical colleges were cooperating to the utmost with the War Department toward the chief end in view—that of winning the war. All recognized the wisdom of establishing the Students' Army Training Corps as the best means of conserving the supply of medical officers if the war should be long continued. All recognized that a certain amount of confusion was inevitable at the beginning, but that, in time, order and efficiency would prevail, both from the military and educational standpoints. Happily, the war was not prolonged, the signing of the armistice made unnecessary the further sacrifice of time by students and faculties, and the prewar status in medical schools was restored by the War Department as rapidly as possible.

STATUS OF MEDICAL EDUCATION IN 1917.

As shown in previous reports, medical education had been undergoing an extensive reorganization during the 15 years prior to the time when the United States entered the World War. By 1917, in fact, the majority of medical schools were operating under higher entrance standards and possessed more abundant laboratory and hospital facilities, so that for several years the majority of graduates had had the benefit of these advantages. At no previous time had the country been so well supplied with physicians who had received a training in accordance with the latest knowledge of medi-

cine and under the most improved methods of instruction. That further improvements were needed, of course, was well recognized, but these needs were emphasized and the more important were clearly indicated by the experiences of medical officers during the war.

NEEDS IN MEDICINE AS REVEALED BY THE WAR.

In no previous war had so large a proportion of the world's population become involved, and in no previous war was there so great a demand for those possessing the highest knowledge and skill in every line of human interest and endeavor. In no previous war had such vast armies been called into action, or such large numbers of physicians been required. Because of the many and varied measures used in modern warfare also, there was an unprecedented demand for physicians who were skilled along the lines of every narrow specialty. That the supply of such specialists was inadequate to meet the demand was not surprising. Those who are familiar with the great improvements in medical education during the period of 1904 to 1917 will readily appreciate how much more serious would have been the deficiency of qualified physicians had not that campaign for improvement been made.

As a result of the war, the medical schools resumed their prewar status with a much clearer vision of the improvements needed in medical education, and promptly took steps to meet those needs. Perhaps the most important need was of a better training in physical and clinical diagnosis, which, in turn, required a closer contact of the student with the patient, so he could gain a larger experience in writing histories and in making physical examinations. Toward this end an overabundance of clinical lectures and large amphitheater clinics in the medical schools have given way to an increased number of small-group bedside clinics; to clinical clerkships in which students under supervision are placed in charge of patients; and to clinical conferences where students and teachers discuss interesting cases or unusual conditions found.

Another need was for a larger knowledge by physicians generally of public health and hygiene. This required that more hours be devoted to this subject in the undergraduate curriculum and that larger facilities be provided for graduate instruction. A third great need was of larger provision for the training of physicians in all the various specialties of medicine and the establishing of a standard minimum course of graduate training leading to each of these specialties.

RECENT PROGRESS IN MEDICAL EDUCATION.

In many ways the progress in medical education, which has been so marked since 1904, has been continued during 1918 to 1920. The

excessive number of medical schools existing in 1904 has been brought more nearly to a normal supply by the closing of five more of the medical schools—mainly those of low grade. In 1919 the College of Physicians and Surgeons of San Francisco was discontinued; the College of Homeopathic Medicine of the State University of Iowa was abolished by the Iowa Legislature; and two other medical schools were suspended, these being the Lincoln Medical College, Eclectic, Lincoln, Nebr., and the Leonard Medical College, the medical department of Shaw University, an institution for Negro students at Raleigh, N. C. In 1920 the College of Physicians and Surgeons of Los Angeles, the medical department of the University of Southern California, was abolished by the trustees. The medical schools of the Universities of Arkansas and Alabama have discontinued the teaching of the clinical branches, so as to concentrate their efforts on an improved teaching of the preclinical sciences. The latter has moved its medical school from Mobile to Tuscaloosa, where it is being developed on the campus of the university. The University of Wisconsin has secured a legislative enactment under which in the next two years it will provide a complete four-year course, including instruction in the clinical branches. The University of Rochester, N. Y., has received endowment funds of $10,000,000—$5,000,000 each from Mr. George Eastman and from the General Education Board for the founding of new schools of medicine and dentistry.

It is probable that the number of medical schools will be further reduced by the closing of several others of low grade. The total numbers of students and graduates, however, are increasing, and, judging from the number of students enrolled in premedical classes, will continue to increase for at least several years. The increases are now more marked in the highest grade (class A) medical schools.

There are 85 medical schools now existing, and of these 77 are requiring for admission two or more years of work in a college of liberal arts—a requirement which places medical education in America on a par with that in the world's other leading nations.

A brief contrast of the statistics in 1920 with those in 1904 will be of special interest. In 1919–20, of the 14,088 medical students enrolled, 13,408 (95.2 per cent) were in colleges requiring for admission two or more years of collegiate work. In 1920, of the 3,047 graduates, 2,842 (93.3 per cent) possessed the higher preliminary qualifications. In 1904 only 2.5 per cent of all medical schools required these higher qualifications for admission, and only 6.2 per cent of all students and 6.4 per cent of all graduates held such qualifications. (See Table 1.)

TABLE 1.—*Smaller quantity but better quality.*

Entrance requirements.	Colleges.				Students.				Graduates.			
	1904		1920		1904		1920		1904		1920	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Four years of high school or less	158	97.5	8	9.4	26,391	93.8	680	4.8	5,378	93.6	265	6.7
Two years of college work	4	2.5	77	90.6	1,751	6.2	13,408	95.2	369	6.4	2,842	93.3
Total	162	.....	85	.....	28,142	.....	14,088	.....	5,747	.....	3,047	.....

The totals of medical colleges, students, and graduates have been reduced by about 50 per cent since 1904, but it is noteworthy that the number of higher standard schools is 19 times larger than before, and the numbers of better qualified students and graduates are nearly eight times larger. The totals at the present time conform more nearly to the normal supply for this country.

MEDICAL TEACHERS.

Twenty or twenty-five years ago medical faculties were made up, with a few rare exceptions, of practicing physicians who appeared at the college only at the hours assigned to them for lectures or clinics. Teaching positions in the clinical branches were eagerly sought for and frequently held a high financial value. Chairs in the laboratory or preclinical branches also were acceptable, but chiefly as stepping stones to appointments in the clinical departments. With the extension of medical knowledge, however, the need of teachers who should devote all their time to teaching in the medical school became apparent, especially in the fundamental medical sciences, so that at the present time medical schools have on the average about 20 such teachers. The numbers naturally vary with the financial ability of the medical school to employ them. In those having limited finances, there may be only from three to eight such teachers, aided only by a few student assistants, while in the more generously financed medical schools each preclinical department has a complete staff, including all ranks from professors to demonstrators and assistants, the total reaching as high as 80 or more.

In the last 15 years there has been a gradually increasing number of all-time teachers in the clinical departments also, these being mainly assistants, instructors, and occasionally assistant professors. It was in the clinical departments, however, where teaching positions attracted those practitioners who at the same time were good teach-

ers, and it was not difficult to secure efficient clinical staffs at little or no financial outlay. With the rapidly improving financial status of medical schools in recent years, however, there has been an increasing tendency to limit the practice of the clinical teachers or to engage all their time for such work. For many years several of the prominent medical schools have limited the practice of their professors of medicine and surgery to consultations, to practice in a near-by hospital, to assigning to them a certain number of hospital beds, or by other methods of limitation. During the last few years, also, under grants of money from the Rockefeller General Education Board and the Carnegie Foundation for the Advancement of Teaching, it has been stipulated that the chairs of medicine, surgery, and pediatrics should be filled by salaried physicians, who shall receive no fees for private practice and whose sole interests shall be in medical teaching. Four medical schools are now definitely on that basis and two others are now making provision for such teachers.

As in other departments of education, there is at present a serious shortage of teachers for the full-time positions in medical schools. This is especially true of those who have had a complete medical training, so that many of the teaching positions in the preclinical branches are filled by graduates in the arts and sciences who have not studied medicine. Other things being equal, the former are to be preferred; in fact, are necessary if the much-needed closer relations are to be established between the preclinical and the clinical departments. It is hoped that better salaries or other means may be provided by which a larger number of teachers who have had a medical training may be attracted to teaching positions.

With the development of improved methods of clinical teaching there is a growing need of full-time teachers in the clinical departments also. Some of these would in time develop the skill and reputation which would make them eligible later to occupy the full-time professorships in medicine, surgery, and pediatries which are becoming more and more available.

LIMITATION OF ENROLLMENTS.

Sixteen of the better medical schools have limited their enrollments to the number which they judge can be taught satisfactorily and are turning away each year many who are qualified to enter. Other medical schools are contemplating similar action. This, coupled with the reports of increased enrollment of premedical students, has caused some anxiety lest in the early future the medical schools will be unable to take care of all the well-qualified students who may wish to study medicine. An investigation, however (see Table 2), shows that the 68 highest grade (class A) medical schools can enroll without over-

crowding 15,430 medical students, or about 1,500 more than are enrolled in the 85 medical schools now existing in the United States.

TABLE 2.—*Capacity of medical schools under limited enrollments.*

Medical colleges.	Number colleges.	Total enrollment.					Average enrollment per college.
		First year.	Second year.	Third year.	Fourth year.	All four years.	
Enrollments limited	16	1,136	1,121	1,151	1,157	4,550	285
Report highest capacity with efficiency:							
Four-year colleges	31	2,222	2,109	2,063	2,056	8,450	273
Two-year colleges	8	307	304	.....	.....	611	76
Estimated highest capacity with efficiency:							
Four-year colleges	10	430	430	410	410	1,680	168
Two-year colleges	3	65	65	.....	.....	130	43
Totals, class A colleges	68	4,160	4,029	3,624	3,617	15,430	227

By the employment of more teachers, by the enlargement of their laboratories, and by the completion of the new college buildings which have been planned, or are now in course of construction, it will be possible, if necessary, to handle efficiently as many as 17,000 or 18,000 students. It appears, therefore, that the medical schools now existing are fully adequate to meet the needs for several years to come.

CONTINUOUS SESSIONS IN MEDICAL SCHOOLS.

Much discussion has been given in educational circles to the reorganization now under way of the grammar school and high school curricula whereby two years of the student's time is being saved. Another entire year of time is being saved in the medical course itself, in medical schools which have adopted a continuous session. Two methods have thus far been devised. One is the "quarter system," by which the calendar year is divided into four terms of three months each, successful completion of the work of any three quarters to count as a college year. The second plan is to divide the year into three terms of four months each, the work of any two terms to count as one college year.

The continuous session permits the student who is physically and mentally able to do so to continue at his medical studies the year around. The "quarter system" provides a week's vacation between the fall and winter quarters, another week between the winter and spring quarters and (as worked out at the University of Chicago) three or four weeks' vacation between the summer and fall quarters. This is an adequate vacation time for the majority of students and would save much time now wasted in the present over-long three months' vacation period.

The continuous session would enable each medical school to teach larger numbers of students; it would also keep an expensive teaching plant in continuous and, therefore, larger service; students who may for good reason have failed to matriculate at the beginning of each session would no longer be required to wait an entire year, but could begin during the following quarter, and students having to take make-up courses could also clear them up during the summer session.

HOSPITAL INTERNSHIPS.

Another important means of perfecting the training of future physicians is to require an internship in a hospital as an essential for the degree of doctor of medicine, or for the license to practice, or both. The internship is at present required for the degree by ten medical schools, and for the license—it so happens, also—by ten State licensing boards. In earlier years such a requirement would have been a hardship, since there were not enough hospitals using interns to provide places for all graduates in medicine. The unprecedented trend toward hospital construction of the last few years, however, has caused the pendulum to swing the other way. Now the hospitals are seeking many more interns than the medical schools could supply, even if the output of medical graduates should be doubled or trebled—a greater quantity than the ordinary needs of medical practice would warrant. Instead of recent graduates as interns, the hospital will need to employ one or more resident physicians to serve for a series of years.

NO DEARTH OF PHYSICIANS.

The greatly increased demand for interns does not mean that there is a shortage of physicians. Nor is a shortage indicated in the fact that many of the rural districts are not supplied with physicians. There is, at the present time, 1 physician to every 720 people in the United States, or twice as many as are found in Great Britain, which has the next largest supply (1 to 1,500, just before the war). The demand for interns by hospitals is due, first, to the rapidly increasing number of hospitals, and second, to the improved educational qualifications of recent graduates in medicine due to the higher admission requirements of medical schools during the last several years and to the greatly improved methods of medical instruction. The scarcity of physicians in rural districts is due to economic conditions—to the fact that physicians can not make a living in those districts; that a physician does not have the advantages either for his family or for his professional work that he finds in the near-by city. The needs of rural districts for physicians

will be offset by the telephone, the automobile, improved roads, and interurban cars, by which patients can more readily get to the physician, or the physician to the patient, than heretofore. Plans are now being contemplated for the erection of community hospitals in each county, which will not only provide physicians with the conveniences for modern diagnosis and treatment not usually found in country districts, but also insure for the patient the benefit of these latest improved methods. Meanwhile, by providing the rural districts with hospitals, better schools, and other means of modern culture and living, the present rapid movement of the population from the country to the city may be checked.

GRADUATE COURSES FOR THE TRAINING OF SPECIALISTS.

The tremendous increase in medical knowledge since the perfecting of the microscope and the discovery of bacteria [1] has led physicians more and more to limit their practice to certain narrow fields of medicine, such as surgery; internal medicine; diseases of the eye; diseases of the ear, nose and throat; diseases of children, etc. By thus limiting his practice the physician is able to develop greater skill in the diagnosis and treatment of the diseases coming within his specialty. The great demand during the war for those having special skill along various lines has emphasized the need of encouraging specialization. It also has pointed the need of methods by which the physician who has taken special preparation to properly qualify himself as a specialist may be differentiated from one who, although professing to be a specialist, has obtained neither the knowledge nor the skill required in the specialty. To provide these methods, 15 special committees under the auspices of the American Medical Association are now studying the needs of the various specialties in order to prepare suggestive minimum courses of instruction by which graduates in medicine may qualify themselves in the various specialties. Some satisfactory method may be established, possibly by the granting of a certificate, by which proper recognition may be given to those who are found competent to practice as specialists. This will enable the public to ascertain who are properly qualified to announce themselves as specialists in medicine, surgery, pediatrics, etc.

GRADUATE COURSES FOR PHYSICIANS.

The establishing of definite courses of training in the various specialties will, it is hoped, lead to the development of courses of clinical instruction in the various large hospitals of the country in

[1] See chapter on medical education in the report for 1914.

which the material for graduate medical teaching is at present unorganized and unused. The improvements in the undergraduate medical schools brought about during the last 15 or 20 years have insured the turning out of better qualified physicians than formerly. There is, however, a special need of courses by which physicians who graduated under less favorable conditions may be made familiar with the latest improved methods of diagnosis and treatment and by which recent graduates may secure special skill along certain limited lines. The development of facilities for graduate instruction will result in larger numbers of thoroughly trained physicians, and the sick and injured will be greatly benefited thereby. The public generally will be benefited also by the greater knowledge of sanitary measures and skill in health preservation.

BETTER LEGAL CONTROL OF THE HEALING ART.

With the great improvements made during the last 15 or 20 years, medical education in the United States is now equal to that in any civilized nation. Medical practice laws, however, have not kept pace with that progress, and as compared with other civilized countries the public in the United States is not nearly so well safeguarded against ignorance and incompetence on the part of those who practice the healing art. A practice act in each State should provide that before anyone is legally authorized to attempt to diagnose diseases or to treat the sick he shall have obtained educational qualifications equal to those furnished by the better medical schools. Such a law in each State should be placed for its enforcement in charge of a single board of competent educators, and liberal funds should be provided for carrying out its provisions. Unfortunately, in this country—and only in this country—a number of so-called "schools" of healing, having specially coined but meaningless titles, have been established in recent years in each of which a certain method of treatment has been advocated as a panacea for the ailments to which human kind is subject. Practitioners of these "schools" are clamoring for legal permission to practice under lower educational requirements than those required of physicians. After a prolonged consideration of this problem the United States Supreme Court decided unanimously[2] that such practitioners, like physicians, must begin by a diagnosis and that "for a general practice science is needed." Other decisions have been rendered showing that the practice of these various schools is in fact only a part of the field covered by the practice of medicine, and that the safety of the public requires a grounding in the fundamental medical sciences.

[2] Collins v. State of Texas (U. S., 1912), 32 S. C. Rept. 280.

THOUSANDS OF REMEDIAL AGENTS.

Many thousands of remedial agents and procedures have been found of value in the treatment of human disorders, the use of any or all of which are included under the general term, "the practice of medicine." Many patients require surgical treatment, such as those having wounds in which arteries are severed, or injuries in which bones are broken, or those suffering from malignant or obstructive tumors, etc. In such cases it would be dangerous or fatal to omit the surgery and to depend alone on manipulation of the spine, on prayer, or on giving only a medicinal substance. Patients with diphtheria must be isolated to prevent the spread of the malady, antitoxin must be promptly administered, local antiseptics applied, and other routine forms of treatment followed. To omit the antitoxin and use any one form of treatment, such as massage, would be disastrous. Failure to recognize the disease as diphtheria would endanger the entire community from the probable spread of the epidemic. Again, patients who have taken poisons, whether accidentally or not, require the prompt use of antidotes, some of which are powerful drugs. Here again, to substitute some other form of treatment, such as massage, suggestion, prayer, manual manipulation, or rubbing of the spine, would be futile, and the patient would simply die from neglect. To know what treatment to apply and to avoid dangerous errors, a scientific training is essential.

KNOWLEDGE OF FUNDAMENTAL SCIENCES ESSENTIAL.

The different methods of treating diseases, taken singly or in groups, are comparable with the various instruments in an orchestra. Before anyone is competent to play in an orchestra—whether it be on the violin, the cornet, the slide trombone, or the bass drum—he must first have received a thorough training in the fundamentals of music. This is necessary so that he may know not only *when to play* but also—just as important—when he *should not play*. In fact, a note from any instrument in the wrong place is usually more disastrous than if the player fails to respond when he should. So in the practice of the healing art. Everyone who treats human diseases and injuries by any special method or system of treatment should have a thorough training in the fundamental medical sciences so that he may know, not only *when to use* the particular method he is specializing in but also—just as important—when that particular method *should not be used*. Here again the use of a wrong remedial agent in the treatment of a patient may be more disastrous than if such treatment is not used at the time the indications call for it. The omission of the right treatment may indeed have

serious results; a wrong treatment may result in the death of the patient or seriously complicate his trouble. To insure efficient care of the sick, therefore, a scientific education is required.

ESSENTIALS FOR THOSE WHO TREAT THE SICK.

From the foregoing it will be seen that the following principles should apply equally to all who are to treat people who are sick or injured, no matter whether he be a physician, an osteopath, a chiropractor, a Christian scientist, or one who is to use intelligently any special method or system of healing:

(1) He needs to have a knowledge of the living human body and its many complex normal structures and functions in order to clearly recognize abnormal conditions, diseases, and their causes.

(2) He needs a training in dispensaries and hospitals, where he can study patients suffering from all the more common diseases, so that he may be able to recognize the disease or injury he is attempting to treat; otherwise his treatment will be unscientific, dangerous guesswork, more likely to do harm than good. This training is needed no matter whether medicines are employed or not and no matter what system or method of treatment may be used.

(3) He needs to be educated in regard to the many and varied forms of remedial agents and procedures which are of generally recognized value, so he may apply the treatment most helpful to each particular patient. That which will be of benefit in one disease may have serious or fatal results in another. In emergency cases an early recognition of the conditions existing is of vital importance, since failure to promptly apply the right treatment may result in the death of the patient.

THE UNIVERSAL REQUIREMENT.

The following is the minimum standard of education now deemed essential in all civilized countries for practitioners of the healing art:

(*a*) Completion of a secondary school course equal to the four-year course in the better high schools, and, in addition,

(*b*) Two years of work in a college of liberal arts, including courses in physics, chemistry, and biology.

(*c*) A medical training under expert teachers, consisting of a four-year course in a well-equipped medical college, including two years in the laboratories of anatomy, physiology, bacteriology, hygiene, pathology, pharmacology, and physiological chemistry, and two years devoted to the study of patients with all classes of diseases in the dispensary and at the patient's bedside in a hospital.

(*d*) The practical experience obtained in a fifth year spent as an intern (resident physician) in a good hospital.

A SQUARE DEAL FOR ALL.

The minimum training outlined in paragraphs (*a*), (*b*), and (*c*) is now required *of physicians* in 33 States in this country, while that outlined in paragraphs (*a*) and (*c*) is required *of physicians* in all States. If physicians are required to have that essential training, it does not seem an American "square deal" that any others who are to treat the sick should be licensed with inferior qualifications. Granted that there is some good in the methods of healing employed by others than physicians, that good will in no way be diminished if those employing such methods are first required to obtain a thorough training in the fundamental medicinal sciences.

One educational standard should be established, therefore, for all practitioners of the healing art, regardless of the system or method of treatment advocated, and no one should be given the legal right to treat the sick unless he measures up to that standard. Everyone who wishes to treat the sick should be required to show that he possesses the education as outlined, then he should be licensed as a physician and allowed to use any method of treatment which his educated common sense would indicate.

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