

THE GERMAN SIDE OF MEDICAL EDUCATION

BY ABRAHAM FLEXNER

FOR upwards of half a century American medical students have resorted in increasing numbers to the universities and hospitals of Germany. A few of the striking features of German medical education are generally understood and appreciated in America, notably the opportunities for research on the part of advanced students and the value of the assistantship in the laboratories and clinics. It is nevertheless surprising how inadequately many of those who have studied in Germany grasp the sources of German strength in the field of medical education, the actual details of its organization, its failures and its defects. Equal vagueness prevails as to the precise extent to which the German system is transferable to us or as to how far its transfer is desirable.

One must admit that the reverse is just as true, perhaps more so. If we do not fully understand the Germans, they even less fully understand us. For their failure to see us correctly or in fair perspective in the matter of medical education there are several obvious causes. They have seen us only slightly and superficially in our own country

and the specimen Americans whom they have met in their own laboratories and clinics have not always been selected with a view to representing what is best or what is characteristic in American medical education. It is even a question whether such a hodgepodge as American medical education is really capable of being sampled or represented at all. I recall the amazement with which one of the most distinguished of living teachers of medicine in Germany described to me two American students who had recently asked to enter his service on the recommendation of prominent American colleagues. The first of the two appeared at the clinic, and to the professor's question as to what he wished to see or do, replied, 'I am interested in everything connected with your clinic — its organization, staff, the laboratories belonging to it, the way the current ward work and laboratory work are managed, how topics for research are selected, what is being done in the way of investigation, and how the teaching of students is harmonized with all the other activities.' I suspect that the professor was a little overwhelmed

by the extent of the young American's programme. Nevertheless he was willing. 'Good,' he replied, 'I will do all I can to promote the objects of your visit; my laboratories and wards and assistants are at your service. How long do you propose to stay here?' 'I have all day,' answered our compatriot.

Not much later the second appeared, armed with equally flattering introductions. He was quizzed immediately as to the length of his proposed stay and answered satisfactorily; accordingly a table in the laboratory was assigned to him. Next morning he made a vigorous entrance, peeled off his coat, donned a white jacket, and got busily to work with characteristic American energy. Anon it was remarked that he rushed to the window, waved his handkerchief up and down as if in salutation, and then returned to his table for a few minutes, after which the window performance was repeated. The stolid Germans at work in the room were puzzled, but worked on. On the next day the same series of incidents was repeated. Finally, one of the men ventured to ask an explanation. 'Oh,' said the American, 'we have just been married, and it's my wife waiting for me in the automobile.'

To return, however, to my subject. The importance to us of German methods is quite independent of their and our relative greatness. It was somewhat amusing, on the publication of the Carnegie Foundation bulletin dealing with medical education in Europe, to notice the passion with which some of our medical Jingoës undertook to prove that, however badly we came off in the educational comparison, American medicine is as a matter of fact superior to that of any country in Europe. Not being a medical man myself, I am quite incompetent to pass upon the issue here involved. But as a

dispassionate layman, I cannot but be struck by the fact that in whatever medical school an American student may graduate, he rarely seeks further opportunity elsewhere in his own country. The Harvard graduate does not go to Johns Hopkins for larger fields of study; the Johns Hopkins man does not go to Columbia; the Columbia man does not go to Pennsylvania. They all go to Germany if they can. A lay interpretation of these facts may be of course wholly mistaken. The students here in question may go to Germany because it is, or has been, the fashion; or, after their strenuous exertions, they may need the rest and change provided by a sea voyage. Until, however, eager foreigners begin to flock to American schools for the purpose of continuing their studies, it is extremely likely that the one-sided movement of American students to Germany will be construed by laymen to mean that they find something there which is not found with equal ease and in equal abundance in the medical schools of their own land.

To what is this superiority, if such it be, due? It is to be attributed in the first place to the fact that a wise and powerful government has drawn a sharp line below which no medical school can live. The German medical faculties are not all equally strong, equally varied, or equally resourceful. Their laboratories differ in size, in modernity, in productivity, and in efficiency. The German clinics vary in the extent of differentiation, in the number of beds, in the adequacy and efficiency of their laboratory attachments. These variations are sometimes very pronounced, according as the man in charge is more or less able, more or less progressive, and more or less well supported. Nor does any one propose to extinguish these differences. 'Standardization' has never been sug-

gested, in the sense that facilities and equipment and methods must conform to a pattern, — even though the pattern may be unexceptionable. Differences such as are above alluded to give zest to scientific and medical competition; they are the inevitable outcome of variety in history, situation, talent, and purpose.

But for us the important point is that the differences never cut below a certain well-marked and lofty level. In respect to the educational qualifications of its students, in respect to the intelligence and capacity of its teachers, in respect to general laboratory and clinical facilities, every medical school in Germany surpasses, and far surpasses, what any state in America lays down as the minimum requirement. There is, I repeat, no uniformity; but not in all Germany is there a feebly equipped or a feebly manned medical school, or a heterogeneous body of medical students. How high the minimum standard is in all these respects I will try to make clear by stating that on the minimum standard on which a medical school can live in Germany, over three fourths of the medical schools of the United States and Canada would be at once stamped out of existence. Standardization in Germany is therefore a negative policy: it forbids the incapable; it places no restraint upon the development of that which is adjudged fit to live. It does not embarrass the good by pedantic or bureaucratic interference. True enough, the schools have developed along similar lines; but no minute governmental regulation requires that this be so. There is no formulated standard that would interfere with the development of variations; and variations of the greatest importance continually crop out, and at the very places where variations are most fruitfully significant. But the main

point is that the power to forbid the creation of unfit universities and medical departments is real and is strictly applied. It was, for example, a matter of years before the rich and ambitious city of Frankfurt was permitted to proceed with the organization of the university which it is shortly to possess; and it obtained the necessary authorization only after conclusively demonstrating the possession of the necessary facilities: in the case of medicine, — money, laboratories and clinics of the proper character and capacity.

A passing contrast may show the practical result of a different policy. The only American state which possesses a department of education somewhat resembling that of a German state is New York. The home of the Department of Education in Albany is rather more imposing than that of the Prussian Department of Education in Berlin; and the New York department also has large powers. The difference is that the Prussian department uses its powers and the New York department, despite improvement in recent years, does not; in the city and state of New York, medical schools still exist which are utterly incapable of fulfilling respectably the purpose for which they purport to have been established; and schools in other states are recognized, despite equal or greater defects. That is to say, in the one American state in which an agency has been created for the maintenance of a decent minimum, the decent minimum is not yet maintained; still less so in other states. I do not wish to imply that this is the fault of the present officials. They may plead that they are not sustained by enlightened opinion, — professional or public. But the fact remains. In Germany the minimum is strictly maintained and the minimum is high.

Aside from the high minimum level

in respect to equipment and organization, perhaps the most important single feature of medical education in Germany is the character of the student body. The achievements of German medicine, scientific and educational, are largely due to the solidity of secondary education in Germany. I do not deny that this education has its defects; but they concern us very slightly, for they are the last thing in the world to which we, as a nation, are liable. Secondary education in Germany may be too inflexible. The point, however, need not be dwelt on in a country where flabby and inefficient methods of teaching prevail from the primary school through the high school, only to become still more flabby and inefficient in the college. No boy is permitted to begin the study of medicine in Germany until he has passed through a prolonged and serious secondary-school training, covering nine years. In the course of this training he comes to realize that he has an intellect, and to learn how that intellect can be made to do its proper work. He brings into the medical school disciplined, serious intellectual power, and he cannot enter without it. We shall never rival the achievements of Germany, or, for that matter, of France, in any intellectual field, until we have perfected a system of secondary education that is at least as effective as the German *Gymnasium* and the French *Lycée*.

The medical curriculum in Germany practically falls into three unequal divisions. The first comprises physics, chemistry, and biology, and is, in my judgment, treated in an inadequate fashion. The work occupies the first semesters in the university, where adequate opportunity for the sound teaching of these branches is lacking. As a matter of fact, the medical curriculum is, even when narrowly viewed, so ex-

tensive that it is highly important to detach from it any subject which can be as well, or better, taught in the secondary school or in the college. Physics, chemistry, and biology, being essentially the foundations of medical study, belong in the *Gymnasium*, not in the university. Local and historical reasons, on which I need not enlarge, have thus far prevented a sound readjustment on this point.

The second division includes anatomy, physiology, pharmacology, pathology, and legal medicine. The facilities for teaching and investigation in all these branches, though more extensive in some places than in others, are everywhere excellent. It is, however, a characteristic of the German university that the student is allowed enormous liberty in the choice, arrangement, and conduct of his various courses. It is assumed that he has received what discipline he needs in the course of his secondary education. He enters the medical school a mature man. He is in the university as he would be in an office, a railroad, or a factory, — responsible for his own doings. If he chooses to fail, that is his high privilege, for the exercise of which he will be dropped out. If he chooses to achieve mediocre success, that, too, is within his power. If he chooses to work overtime, every encouragement and all possible appreciation will be extended to him.

A nation of educational "spoon-feeders," such as, alas, we in this country are, may well stand aghast at this free-and-easy treatment. I am myself inclined to think that the German arrangement is needlessly chaotic and wasteful; but I have no quarrel with the full responsibility which it throws upon the already well-disciplined medical student. The German instructor is not a probation officer dealing with children in their early twenties. He

provides a rich and abundant fare. He could not provide this rich and abundant fare if his strength had to be exhausted in police duty, in quizzing, drilling, and marking. The two things of course hang together. Where there are well-trained students, there may in the years of maturity come full responsibility. If the student body were incompetent, the university professor would have to degenerate into a 'school marm,' as is frequently the case in our country.

We Americans are in this respect absurdly inconsistent. Despite what is denominated a reaction against the elective system, a highly elastic curriculum is nowadays in vogue in both high school and college. In other words, elective freedom sufficient to deprive the curriculum of both continuity and coherence still survives. A fair measure of the leeway allowed to boys in the secondary school is provided by the enlarging variety of the alternatives allowed by the college entrance requirements and the steadily contracting sphere of the college entrance examinations. Individual, local, or other considerations are suffered to suggest to the high-school boy what he should study, and the colleges are increasingly inclined to accept it, if qualitatively satisfactory, as the basis of academic work. In the college itself freedom perhaps quite as great prevails. A few very general directions with a view to procuring some intensive work in one field, accompanied by a certain amount of sympathetic attention to allied topics, form the main restriction upon the student's dispersive tendencies. I am not concerned now to criticise these arrangements. I wish simply to draw attention to them by way of contrasting them with the martinet spirit which prevails the moment his liberal education is completed and the student begins to attack a subject in which he is

really interested. That is the moment that we Americans select for tying him hand and foot: once he enters the medical school, he is, for the most part, committed to a four years' uniform grind, precisely as if it were known just what he ought to learn and as if the curriculum-makers knew it. The necessary subjects and parts of subjects are specified, as is the number of hours that he must devote to each. Routine is so exacting that the average medical student is not quite equal to it, and the better student is quite used up by it. Instead of furnishing opportunity and stimulus for development, the American medical school closes down upon the enterprising student, long inured to academic freedom, with an exhausting and depressing uniformity.

This phenomenon is closely connected with another previously pointed out. Our laws — or their lax enforcement — permit the continued existence of weak medical schools. The public interest demands that their graduates be as well trained as possible. The states have endeavored, by precise specifications as to what the student must be taught, how and how long, to force inherently poor schools to be better than it is in their nature to be. Some poor schools have been thereby made so uncomfortable that they have desisted; a few have improved slightly; but the good schools have been harmed, and medicine and medical science have been deprived of initiative and originality. The Germans, surveying our situation, taunt us good-humoredly: they recall our pride in being a 'practical people.' 'Would not a truly practical people reach the end by forbidding the incompetent rather than by crippling the competent?' I have been frequently asked.

The third division of the German curriculum is devoted to the clinical

branches. The student pursues these branches almost in what order he pleases. His freedom is even greater than the freedom he has enjoyed in the laboratories. The failure to work out his studies in more logical sequence seems to me once more an unnecessary dissipation of time, energy and interest. But the absolute responsibility of the mature student for his own course I regard as a highly important characteristic. The German procedure recognizes and emphasizes the vastness of the field, its essential and inherent lack of any one type of organization, and the abundance of loose ends and unsolved problems. No two students have pursued precisely the same course; their contact is therefore novel and stimulating. They know different things, reached by different routes; for the student wanders from place to place, seeking new teachers, whose diverse views stimulate thought and rebuke conformity. An air of adventure therefore permeates laboratory and lecture-room, — and in such environment native power enjoys an incentive which the neatly dovetailed course of study is powerless to impart, though potent to destroy.

With the teaching methods commonly employed much fault can be fairly found. The German university was originally, and long remained, a lecturing institution. The laboratory and the clinic have been grafted on it. Meanwhile, the lecture remains the backbone of the general instruction in all departments. Its stubborn hold is due not only to tradition but to interest. The university attracts strong and able men partly because a successful university career is highly profitable, and the profits depend upon the large classes which can be assembled to hear the professors' lectures. Efforts to improve the lecture by joining with it occasional practical exercises either

in the laboratory or in the clinic have not, in my judgment, succeeded. But the training of the student is enormously better than one would judge from a casual glimpse into a crowded amphitheatre. It is enormously better, in the first place, because of the skill and intelligence of the teacher; in the second, because of the highly trained quality of the student; in the third, because every student who is worth his salt takes advantage in one form or another of the abundant opportunities for individual work as a volunteer or as an assistant in the laboratories and clinics.

This voluntary activity is indeed the very essence of the German system of medical education. It begins with the boy's entrance into the medical school and it does not stop for years after his graduation from the university. Aside from the variety of opportunity offered by varied and abundant courses, in term time as in vacation you will find *famuli*, or student-assistants, working in the laboratories of anatomy, physiology, and pathology at every spare moment from the very outset of their medical studies. Six, eight, or a dozen boys will be engaged in working up extra or superfluous material, watching carefully for every scrap that is not consumed in the daily demonstration. The same practice holds in the clinic. The elasticity of the time-table permits and encourages this valuable custom. Student volunteers are found in every hospital service, during the semester as well as between semesters. And the habit of working overtime — a natural consequence of consistent opportunity and stimulus throughout the medical course — does not of course disappear with the attainment of the degree. No serious person regards his educational career as finished until, as assistant, he has served under one or more dis-

tinguished masters. A year's hospital service is indeed required; but it has thus far proved of little worth on account of lack of supervision and oversight. But of the high value of the assistantship, whether it be volunteer or appointed, there is no doubt whatsoever. No praise is too great for the patience and devotion with which the German student of medicine, who has passed nine years in the Gymnasium and at least five years in the university, devotes himself on small or no pay to the service of assistant for periods ranging from one to ten years, without which service he does not regard himself as equal to the full responsibilities of his calling.

In connection with clinical teaching, I have one more point to make, — a point in respect to which we Americans make a particularly bad showing. The German medical profession respects — as the American medical profession does not respect — the teacher of medicine. The German doctors do not think — as American doctors usually do think — that the practicing profession of a town is quite capable of taking up without forethought or preparation the responsibilities of clinical teaching. Very properly, I think, the Germans hold that medical teaching is a profession, a career, — not identical with medical practice. They therefore allow the universities to select their teachers of medicine and surgery where and as they please; and they do not dream of contesting hospital privileges with men thus chosen. I can imagine no more instructive contrast than could be drawn between the great Allgemeines Krankenhaus of Vienna and Bellevue Hospital, New York, or the Cook County Hospital of Chicago. At Vienna the hospital has university and non-university divisions; as a matter of course, the university is free to appoint whom it

pleases, and the men appointed are free to conduct their wards as their judgment approves. At Bellevue there are also university and non-university divisions; but no university is really free in its own division, and, if one division desires to do a particular thing, the others can automatically come together to prevent.

The German hospitals that are affiliated with medical faculties are in earnest about medical education and medical research. They permit universities without question to summon their clinical professors whence they please; and the universities scour all German-speaking Europe for competent leaders. The professor, once installed in the clinic, is eager to distinguish his tenancy by the productive work of himself, his assistants and his students. America makes a sad contrast in this very important respect. With few exceptions the relations between medical schools and hospitals leave the schools no initiative in the choice of clinical teachers. In some instances a proper understanding has indeed been arrived at, but even in these, the school is rarely strong enough to utilize its nominal privileges. To no small extent, the improvement is as yet mainly on paper. More serious still, our clinical heads — mainly unproductive men — are far from hospitable to young workers. Where the chief is not himself a productive scientist, obvious considerations make it inexpedient for him to open the doors wide to ambitious and original advanced students.

The truth is that the clinical teacher in the German sense hardly exists as yet in America at all. As contrasted with Germany, American teaching of medicine, surgery, and obstetrics, and so on, cannot properly be called professional teaching. Our professors of the clinical subjects, with exceptions so few as to be numerically negligible

are practitioners who make no effort to create the scientific or academic atmosphere and environment characteristic of the German clinic. The university spirit is missing in the clinical half of the American medical school. Let us not deceive ourselves on this score. We are paying the price of long-continued and still-continuing exploitation of clinical teaching. A race of practitioners willing to sacrifice personal advantage for scientific progress is just beginning to be bred. In consequence, the few young men who have renounced practice have received quick and large rewards in the shape of promotion and opportunity. But the movement is in its incipiency. The general situation has not been transformed, even though it has been improved. The spirit of a medical school cannot be wholly renewed even if one or two clinical posts are tenanted by devoted and ambitious men.

An amusing example of total incapacity to appreciate the ridiculous has recently been furnished by a New York institution. In order to avoid being lowered in classification by the Council on Education of the American Medical Association, certain influential members of its medical faculty undertook to introduce certain improvements, — itself a situation which could not arise in Germany. The university authorities refused to carry out the bargain, whereupon the members in question resigned. Did this affect the school? Not a bit! The vacant places were at once filled with practicing doctors. I venture to say that the incident could be repeated indefinitely, and the faculty kept full none the less.

The essential features which have contributed to the greatness of German medicine may then be concisely formulated as follows: first, the high minimum level of organization and

equipment, below which the government will permit no medical school to live; second, the prolonged and serious secondary-school training which is absolutely, without exception, exacted of every student in the medical faculty; third, the freedom of the German university, which gives the professor the strength and leisure to work and encourages the capable student to do more than the minimum requirements of the curriculum for graduation; finally, the high respect in which the practicing profession holds the teaching profession, and the custom of calling teachers freely from university to university. Reformers of American conditions will do well to bear these four criteria in mind. Those schools which cannot now meet them, or soon hope to meet them, ought not to be allowed to go on contributing their quota of immature and ill-trained practitioners to a medical profession whose general average is already probably below the lowest to be found in any other great modern nation.

My praise of German medical education, though high, has not been un-mixed. But to one important defect in their situation, — a defect which the native German critic hardly suspects, — particular attention may be called. In the creation and development of the medical faculties in Germany government has done everything. Practically nothing has come from private initiative. For this reason there is even now very little to be hoped for from private sources. The demands on government for the support of the army, the navy, the schools, and so forth, are so great that the universities unquestionably suffer for lack of the funds needed for expansion. The German medical scientist, therefore, looks with envy and wonder upon the munificence of the great American benefactors of medical education. Johns

Hopkins is an old story; but it may be repeated any day, as can readily be illustrated. Three years ago, for example, there was hardly a single auspicious opening for medical education west of the Mississippi River. Within that time, however, preliminary steps have been taken to establish in St. Louis an institution whose ideals and equipment place it on the same level with the Johns Hopkins Medical School. Through the wisdom and generosity of a small group of men, Washington University, St. Louis, has constituted a medical faculty composed of able scientists brought together from different quarters of the continent. It has built an admirable set of modern laboratories, to be opened the coming autumn, and it has established a working connection with a newly endowed hospital answering every necessary purpose in respect to treatment, science, and education. The difficulties in the way of launching this undertaking were very great. An old type of medical school had to be slowly wound up, even while the new school was ushered into being. Abundant building and endowment funds had also to be provided. The arduous and delicate steps have been successfully carried through, thanks to the confidence, imagination, and generosity of local benefactors.

Farseeing, public-spirited, and generous citizens of this type are found only, or mainly, in America. Whatever be the advantages enjoyed by the teachers across the waters, men of this type are not 'made in Germany.'

The large scope allowed in America to private initiative is, however, not without countervailing disadvantages. It produced the excellent medical schools I have named in Baltimore and St. Louis, and is doubtless destined to produce others in the near future. But it produces other things, too. For example: the rapid decrease in medical schools during recent years might be interpreted by an ordinarily intelligent person to mean that the day of the unsupported medical school, with ill-taught students and with incompetent local practitioners as faculty, has gone by. But in this free country it is dangerous to look upon anything as finally and utterly dead. Nothing prevents the resuscitation of a departed medical school or the creation of a new one without adequate resources.

Our real problem lies here. Private initiative in education—in originating as well as in furthering educational movements—has amply approved itself in America. Its scope is likely to increase rather than decrease, as conscience and intelligence suggest further fields of endeavor. The Germans have thus far denied themselves expansion thus secured; and they give little indication of ever embracing it. The excesses and absurdities to which private initiative in America has led appear partly to justify their policy. It is therefore for us to decide whether we can retain the full benefits of large individual initiative without laying ourselves open to its abuse.