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2012

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Recommended Citation

McClelland, Charles E.. "THE GERMAN MODEL FOR AMERICAN MEDICAL REFORM." *Isabella Löhr, Matthias Middell and Hannes Siegrist (eds.), Kultur und Beruf in Europa [Europäische Geschichte in Quellen und Essays, Vol. 2]* (Stuttgart: Steiner, 2012), 189-96. (2012). https://digitalrepository.unm.edu/hist_fsp/2

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THE GERMAN MODEL FOR AMERICAN MEDICAL REFORM

Charles E. McClelland

[MS of a colloquium paper at the University of Leipzig later published in Isabella Löhr, Matthias Middell and Hannes Siegrist (eds.), *Kultur und Beruf in Europa [Europäische Geschichte in Quellen und Essays, Vol. 2]* (Stuttgart: Steiner, 2012), 189-96.]

The “Flexner Report” (originally published in 1910) recently passed its hundredth anniversary. It may be regarded partly as a cultural manifesto, since it proposed to revolutionize higher education and the ancient “art” of healing. It still makes compelling reading and retains a number of unique features. [For the full text, see Appendix at the end of this MS.]

First, few such public documents have had such a deep impact on any cultural activity anywhere in the twentieth century, and certainly on the structure of medical education and practice in the USA and ultimately, through imitation, around the world.

Second, although this “cultural document” is much better known in North America than Europe, its background and principal ideas are distinctly European in origin and represent a successful massive cultural transfer. Effectively, this transfer meant the adoption of an organically-developed system of medical education – including an emphasis on scientific research, the integration of patient treatment and teaching, national normatization of the medical arts and professional standards previously lacking in the disparate and vast territory of the USA. Third, although much of the lengthy analysis and even longer presentation of data concentrate on the details of each step in recruitment and rigorous scientific training of future physicians as well as how medical faculties should be reorganized to accomplish those tasks, the “unspoken assumptions” behind the detailed analysis derived largely from a European – and specifically German – model as understood by the author, himself the child of a German-Jewish émigré family.

Fourth, this blueprint for standardized and demanding professionalization carried implications of wider educational and cultural mobilization, since it presupposed a radical restructuring and upgrading of the secondary and university system in both humanistic and science fields to prepare not only future physicians for medical study but also the broader educated elite in other professions. Along with comparable (if less stringent) reforms in the legal profession, the tightening of standards and certification for two of the leading academic professions (medicine and law) effectively placed the USA on a century-long path to a highly stratified and elite-dominated professional culture.

Finally, the full title of the document¹ reveals a major reason for the successful implementation of the report, the fact that it was backed with the inducement of massive

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Medical Education in the United States and Canada. A Report to the Carnegie Foundation for the Advancement of Teaching, by Abraham Flexner [Bulletin Number Four] (New York: Carnegie Foundation, 1910), 364 pp. Full text available as PDF from http://www.carnegiefoundation.org/sites/default/files/elibrary/Carnegie_Flexner_Report.pdf

financial incentives provided by the Carnegie and Rockefeller Foundations (and later other philanthropic beneficiaries of the massive untaxed wealth accumulated by the industrial oligarchs of America's Gilded Age, then often called "robber barons"). Indeed, the way in which the wealth of two of these philanthropists in particular, Carnegie (the steel magnate) and Rockefeller (the oil czar) was funneled from the first great philanthropic foundations under the guidance of a handful of ordinary bourgeois professional advisers in order decisively to reshape cultural and educational institutions has deserved a study of its own.² In today's era of comparable unequal distributions of wealth and enfeebled state support for cultural institutions, the capacity for radical interventions in modes of cultural transmission by small and well-financed elites – for good or ill – is instructive.

The Flexner Report furthermore reflected rapid changes in the economy, demographics, and cultural needs of many parts of North America by the beginning of the twentieth century. Instead of a primarily agricultural economy based on the free or cheap lands of expanding frontiers, the USA especially had become primarily an industrial, urban, and advanced capitalist land. Waves of immigrants to burgeoning cities provoked crises in delivery of such services as health care and education. American education, like professional and cultural organization, had been at least since the Jacksonian Era (1830s) a variegated, mostly local and often entrepreneurial affair, with little or no public regulation. "Free enterprise" meant almost literally that virtually anybody (except of course women and to some extent the racially discriminated) could claim to be a physician, attorney, clergyman, professor or artist, and if one of them wanted the "competitive edge" of some certificates (e.g. a medical degree), established practitioners were happy to take on "apprentices" or even set up proprietary "schools" to provide small groups – by lecture and rote learning – a few weeks of instruction, in return for the fees that were the only serious requirement for admission.

Of course in the more settled parts of North America, e.g. the large cities of the Northeast and a few other places, many old "colleges" had transformed themselves into something a visiting Berlin professor could recognize as a modern "university" by 1900³ and several (e.g. Harvard, Yale, Columbia, the University of Pennsylvania -- all in urban areas) had taken steps emulating the example of the newly founded Johns Hopkins University (Baltimore) – itself clearly modeled on German examples – by integrating a

² Wheatley, Steven. C., *The Politics of Philanthropy: Abraham Flexner and Medical Education* (Madison: University of Wisconsin Press, 1989).

³ For an example, see Hugo Münsterberg, "Amerika," in Arthur Kirchhoff (ed.), *Die akademische Frau. Gutachten hervorragender Universitätsprofessoren, Frauenlehrer und Schriftsteller über die Befähigung der Frau zum wissenschaftlichen Studium und Berufe* (Berlin: Steinitz, 1897), 343-53 and the discussion of its findings in Charles E. McClelland, "American Examples for German Universities: Admitting Women before World War I," in Edwin Keiner et al (eds.), *Metamorphosen der Bildung. Historie – Empirie – Theorie* (Bad Heilbrunn: Klinkhardt, 2011), 323-335. Münsterberg became a close advisor to Flexner a decade later when the latter did postgraduate work at Harvard.

full-time medical faculty and urban teaching hospital into the previous “college.” Until the last third of the nineteenth century American institutions of higher education had normally embraced chiefly what in Germany would be called the philosophical and theological faculties. Even these resembled more the classical and humanistic traditions of their old English models, with considerably less rigor than even lethargic Oxford and Cambridge. Few such institutions awarded M.D. degrees or doctorates in law; the first PhD has been awarded (by Yale) as late as 1867. The transformation of old-line “colleges” and recently-founded (many of them “land-grant”) state universities was loosely based on the German model and notably included the addition of medical and legal faculties. Furthermore, the faculties strove toward a fully “professional” professoriate, implying as in Germany full-time salaried professors rather than “moonlighting” (part-time) local physicians and attorneys, as well as investment in laboratory sciences and other costly resources. These innovations also distinguished many brand-new foundings in the American Midwest and Pacific and Gulf Coasts.

The process of cultural transfer was thus well underway by 1900, even without Flexner. Stimulated by his Harvard postgraduate work, especially with the transplanted German professor Hugo Münsterberg, and enjoying a reputation as a highly-regarded, published educational reformer, he was offered a unique job by the Carnegie Foundation that sought to distribute some of the massive wealth of its founder by improving education (including even hundreds of public libraries). Flexner’s personal training and his connections through his physician brother to the medical profession in general as well as the Johns Hopkins University in particular led to his being chosen to prepare a survey of the effectiveness of medical education in the USA. But the majority of the 155 self-styled “medical schools” visited by Flexner before issuing his report continued as free-standing proprietary institutions or, even if they were nominally linked up with a private or even public institution of higher learning, they often disposed over inadequate or non-existent laboratories, equipment, hospitals or the funds to acquire them. Their educational requirements for admission were often abysmally low, the course of study short and superficial, based chiefly on lectures and textbooks. In an era when Nobel Prizes were regularly being awarded to German medical researchers for life-saving scientific discoveries, many American physicians probably did not know how to use a microscope or read an x-ray properly. Flexner demanded a minimum standard of prior education (high school diploma and at least two years of college with basic science), four full years of medical study, exposure to laboratory science, the predominance of full-time faculty rather than part-time local MDs as instructors, and *active* clinical experience in a hospital. This represented something approaching the minimum standards of universities he knew in Germany, such as Berlin. The rigorous, university-based, clinic-linked education of many Central European physicians (supplemented by continuing education after licensing), strict licensing requirements, and the incidental vast increase in public medicalization as a result of state-sponsored health insurance schemes contrasted sharply with the haphazard, still loosely-controlled formal education, clinical experience, licensing and professional sanctions typical of the USA as late as 1900. Flexner’s report received widespread public discussion that generated political pressure in the “Progressive Era.” For example, whereas only 16 out of 155 medical schools had required two years of prior undergraduate college education for admission in 1910, over

90% of the surviving ones did by 1920. Up to 40% of proprietary medical schools may have closed, merged, or linked up with universities and upgraded as a result of Flexner's harsh criticisms.

Flexner's Report mentions Germany only once (and indeed the other European models he had in mind never). The American "Progressive Era" in which his report is imbedded eschewed references to Europe's superiority in matters of culture and science. It was the beginning of American world empire and self-confidence. Nevertheless, the handful of exemplary American medical faculties cited in Flexner's long report were all based on the reforms introduced in a few elite private and ambitious public universities scant decades before, themselves the result of a cultural transfer carried personally by tens of thousands of American students who had studied in Central Europe. Indeed, the Flexner Report may be seen not so much as a completely novel initiative as the culmination of this longer transfer, even as a cultural "declaration of independence" from the long-standing need of Americans to spend years during the nineteenth century -- first in Britain, then Paris, latterly in Germany, Austria-Hungary or Switzerland-- to obtain cutting-edge higher education. It was only fitting that Flexner, one of the first great administrators of vast private cultural patronage in the USA, was able to repay America's debt to Europe by raising funds for and organizing the Princeton Institute for Advanced Study as the clouds of fascist anti-intellectualism gathered in 1930s Europe. He could offer a refuge to Albert Einstein and others there, promoting another kind of cultural interchange and transfer of world-historical significance.

Abraham Flexner's own biography⁴ and career arc are interesting in themselves as signs of an era in transnational cultural interchange. His father began as an itinerant Jewish peddler, an immigrant from Bohemia to Kentucky. His brother Simon became a distinguished professor of medicine and later director of the Rockefeller Institute for Medical Research in New York. From this position he could rescue Abraham from running an experimental private prep school in frontier America along the lines of Pestalozzi and Dewey (leading to a book about American school failure) and into the unprecedented job of advising billionaires about how to spend their money to improve education. Flexner's concern (as well as that of his backers) was not merely the reform of professional higher education, but of the entire stricture of American education. Here Continental school models, from Kindergarten to the German *Realgymnasium*, appealed as an alternative to the haphazard anarchy of a decentralized American patchwork. Carnegie's hundreds of public free libraries were as much a part of this cultural adaptation as were efforts to reform medical training. And as in Europe, a medical or legal professional was meant to take on the attributes of a gentleman learned in the humanities and sciences, transcending the artisanal and uncultured reputation of many small-town and rural doctors emitted by the *de facto* businesses that proprietary short-course medical "schools" represented.

⁴ The best biography is Bonner, Thomas Neville, *Iconoclast: Abraham Flexner and a Life in Learning* (Baltimore: Johns Hopkins Univ. Press, 2002). Wheatley, S. C., *The Politics of Philanthropy: Abraham Flexner and Medical Education*. (Madison: University of Wisconsin Press, 1989).

One important intended result of making medical education more demanding (and expensive) was to reduce the quantity of physicians, reduce competition and “quackery” while massively enhancing the authority, incomes and social standing of this new medical elite. This was incidentally exactly the wish-list of German physicians at the time as well, but their successes in the “professionalization project” (partly no doubts as a consequence of World War I) were not as dramatic as their American colleagues’. The new American medical elite in turn, principally through the massive influence of a reinvigorated American Medical Association, was largely able for the first time to distaste the terms of medical care in the United States for a half-century or more after the Flexner Report. The relative success of the “professionalization project” among American (as contrasted to Central European) physicians should also alert us to the non-linearity of cultural transfers, as well as to the significance of widely diverging economic and political matrices after 1910. The radical tightening of standards for the production of physicians attributed to the Flexner reforms, which produced a trend toward greater social exclusivity and dominance over the market for medical services in America, contrasted strongly with the wartime loosening of educational and licensing standards followed by opening the floodgates to university study in post-1918 Germany.

Despite the many contrasts and even ironies wrapped up in the further history of this cultural transfer, the Flexner Report and its largely unspoken assumptions about contemporary Central European educational purposes and outcomes arguably deserves more attention outside the narrower history of medicine than it now receives.

BIBLIOGRAPHY

Barzansky, Barbara M., Norman Gevitz, *Beyond Flexner : Medical Education in the Twentieth Century* (New York : Greenwood Press, 1992) [*Contributions in medical studies*, no. 34]

Bonner, Thomas, “Abraham Flexner and the German University: The Progressive as Traditionalist,” *Paedagogica historica*, 33 (1997), 100-14.

Bonner, Thomas Neville, *Iconoclast: Abraham Flexner and a Life in Learning* (Baltimore: Johns Hopkins University Press, 2002)

Flexner, Abraham, *Medical Education. A Comparative Study* (NY: Macmillan, 1925)

Wheatley, Steven. C., *The Politics of Philanthropy: Abraham Flexner and Medical Education* (Madison: University of Wisconsin Press, 1989)

APPENDIX: Full text of the Flexner Report

Flexner, Abraham, Medical Education in the United States and Canada (1910)⁵

When the work of the Foundation began five years ago the trustees found themselves intrusted with an endowment to be expended for the benefit of teachers in the colleges and universities of the United States, Canada, and Newfoundland. It required but the briefest examination to show that amongst the thousand institutions in English-speaking North America which bore the name college or university there was little unity of purpose or of standards. A large majority of all the institutions in the United States bearing the name college were really concerned with secondary education.

Under these conditions the trustees felt themselves compelled to begin a critical study of the work of the college and of the university in different parts of this wide area, and to commend to colleges and universities the adoption of such standards as would intelligently relate the college to the secondary school and to the university. While the Foundation has carefully refrained from attempting to become a standardizing agency, its influence has been thrown in the direction of a differentiation between the secondary school and the college, and between the college and the university. It is indeed only one of a number of agencies, including the stronger colleges and universities, seeking to bring about in American education some fair conception of unity and the attainment ultimately of a system of schools intelligently related to each other and to the ambitions and needs of a democracy.

At the beginning, the Foundation naturally turned its study to the college, as that part of our educational system most directly to be benefited by its endowment. Inevitably, however, the scrutiny of the college led to the consideration of the relations between the college or university and the professional schools which had gathered about it or were included in it. The confusion found here was quite as great as that which exists between the field of the college and that of the secondary school. Colleges and universities were discovered to have all sorts of relations to their professional schools of law, of medicine, and of theology. In some cases these relations were of the frailest texture, constituting practically only a license from the college by which a proprietary medical school or law school was enabled to live under its name. In other cases the medical school was incorporated into the college or university, but remained an imperium in imperio, the college assuming no responsibility for its standards or its support. In yet other cases the

⁵ Flexner, Abraham, *Medical Education in the United States and Canada*. A Report to the Carnegie Foundation for the Advancement of Teaching, New York 1910, pp. vii-viii, x-xi, 14, 129f.

college or university assumed partial obligation of support, but no responsibility for the standards of the professional school, while in only a relatively small number of cases was the school of law or of medicine an integral part of the university, receiving from it university standards and adequate maintenance. For the past two decades there has been a marked tendency to set up some connection between universities and detached medical schools, but under the very loose construction just referred to.

Meanwhile the requirements of medical education have enormously increased. The fundamental sciences upon which medicine depends have been greatly extended. The laboratory has come to furnish alike to the physician and to the surgeon a new means for diagnosing and combating disease. The education of the medical practitioner under these changed conditions makes entirely different demands in respect to both preliminary and professional training.

Under these conditions and in the face of the advancing standards of the best medical schools it was clear that the time had come when the relation of professional education in medicine to the general system of education should be clearly defined. The first step towards such a clear understanding was to ascertain the facts concerning medical education and the medical schools themselves at the present time. In accordance, therefore, with the recommendation of the president and the executive committee, the trustees of the Carnegie Foundation at their meeting in November, 1908, authorized a study and report upon the schools of medicine and law in the United States and appropriated the money necessary for this undertaking. The present report upon medical education, prepared, under the direction of the Foundation, by Mr. Abraham Flexner, is the first result of that action. [...]

The striking and significant facts which are here brought out are of enormous consequence not only to the medical practitioner, but to every citizen of the United States and Canada; for it is a singular fact that the organization of medical education in this country has hitherto been such as not only to commercialize the process of education itself, but also to obscure in the minds of the public any discrimination between the well trained physician and the physician who has had no adequate training whatsoever. As a rule, Americans, when they avail themselves of the services of a physician, make only the slightest inquiry as to what his previous training and preparation have been. One of the problems of the future is to educate the public itself to appreciate the fact that very seldom, under existing conditions, does a patient receive the best aid which it is possible to give him in the present state of medicine, and that this is due mainly to the fact that a vast army of men is admitted to the practice of medicine who are untrained in sciences

fundamental to the profession and quite without a sufficient experience with disease. A right education of public opinion is one of the problems of future medical education.

The significant facts revealed by this study are these:

(1) For twenty-five years past there has been an enormous over-production of uneducated and ill trained medical practitioners. This has been in absolute disregard of the public welfare and without any serious thought of the interests of the public. Taking the United States as a whole, physicians are four or five times as numerous in proportion to population as in older countries like Germany.

(2) Over-production of ill trained men is due in the main to the existence of a very large number of commercial schools, sustained in many cases by advertising methods through which a mass of unprepared youth is drawn out of industrial occupations into the study of medicine.

(3) Until recently the conduct of a medical school was a profitable business, for the methods of instruction were mainly didactic. As the need for laboratories has become more keenly felt, the expenses of an efficient medical school have been greatly increased. The inadequacy of many of these schools may be judged from the fact that nearly half of all our medical schools have incomes below \$10,000, and these incomes determine the quality of instruction that they can and do offer.

Colleges and universities have in large measure failed in the past twenty-five years to appreciate the great advance in medical education and the increased cost of teaching it along modern lines. Many universities desirous of apparent educational completeness have annexed medical schools without making themselves responsible either for the standards of the professional schools or for their support.

(4) The existence of many of these unnecessary and inadequate medical schools has been defended by the argument that a poor medical school is justified in the interest of the poor boy. It is clear that the poor boy has no right to go into any profession for which he is not willing to obtain adequate preparation; but the facts set forth in this report make it evident that this argument is insincere, and that the excuse which has hitherto been put forward in the name of the poor boy is in reality an argument in behalf of the poor medical school.

(5) A hospital under complete educational control is as necessary to a medical school as is a laboratory of chemistry or pathology. High grade teaching within a hospital introduces a most wholesome and beneficial influence into its routine. Trustees of hospitals, public and private, should therefore go to the limit of their authority in opening

hospital wards to teaching, provided only that the universities secure sufficient funds on their side to employ as teachers men who are devoted to clinical science. [...]

The experience of older countries is therefore suggestive [...] Professor Paulsen [...] reports that “the number of physicians has increased with great rapidity so that now there is, in Germany, one doctor for every 2000 souls, and in the large cities one for every 1000.” What would the amazed philosopher have said had he known that in the entire United States there is already on the average one doctor for every 568 persons, that in our large cities there is frequently one doctor for every 400 or less, that many small towns with less than 200 inhabitants each have two or three physicians apiece!

Overproduction is stamped on the face of these facts; and if, in its despite, there are localities without a physicians, it is clear that even long-continued -overproduction of cheaply made doctors cannot force distribution beyond a well-marked point. [...]

The budget of a department thus organized in a medical school of, say, 250 students, favorably situated, would assign \$3000 to \$5000 a year to its head, \$2000 to \$2500 to a first assistant, \$1000 to \$2000 to additional assistants, \$750 to a helper, and \$2500 to \$5000 to maintenance, including books, new apparatus, material, animals, etc. The total, ranging from \$9250 to \$15,250, still omits a proportionate share of the general overhead expense of administering the institution. A university department in one of the fundamental medical sciences, none too elaborately provided, cannot, then, on the average be effectively maintained for less than \$10,000 to \$15,000 per annum. At the moment, of course, the departments are not all equally expensive. Anatomy and pathology cost more than pharmacology and bacteriology. But the average is not thus seriously disturbed; for the former will extend above the line as much as the latter can be reduced below it. All of them, as they are developed, tend to cost more. Where the sum named has not yet been reached, the tendency towards it is unmistakable. It is, of course, true that fairly good instruction is at times furnished more cheaply. In the small two-year schools situated in small towns, the professors receive less, sometimes much less, than the sums stated; and the expense of maintenance does not at times exceed a few hundred dollars per annum. But these departments cannot continue on this makeshift basis: they are now manned by young men, who, finding themselves doomed to routine and sterility, begin fighting at once to get away. The teacher who is content under such circumstances will soon be out of date; and the instruction, however conscientious, will be decidedly limited in range. To live, these departments must be much more liberally supported; and in the small two-year schools where this has been the case notably at Cornell and Wisconsin the departmental budgets correspond pretty closely to our present estimate.

The organization of a department of, say, physiology on the minimum basis of efficiency, for 25 students or less, would require, after providing the initial plant, \$3000 for the professor, \$1000 for his assistant, \$750 expense on the score of material for class use, \$250 to keep some little research going, \$300 for books and periodicals, \$600 for a janitor, a total of \$5900 for the routine teaching of a few students under undesirable limitations. As it is clear that there is no justification just now for the existence of medical schools that are incapable of greatly bettering the type, it follows that schools unable or indisposed to spend the requisite sums lack a valid reason for being. We may then assume that the five departments of a properly organized medical school, capable of handling 125 students, in its first two years can hardly be properly sustained on a total budget of less than from \$50,000 to \$75,000 annually. If, now, the student pays \$150 a year for tuition, there will be an annual deficit ranging from \$31,250 to \$56,250 a year. Not all the medical schools that are alive to their responsibility are, as we shall see, at this moment able to provide on this scale for each of the fundamental departments; but they are in no doubt that these departments need such support; and they are straining every effort to procure it for them.⁶

⁶ A comparison of the estimates above given with corresponding budgets in German universities is highly suggestive. Despite the fact that the cost of apparatus, supplies, etc., is much lower in Germany than here, the sums spent in various universities on laboratory maintenance are as follows :

Königsberg (170 medical students)		Breslau (189 medical students)	
Anatomy	16,349 marks	Anatomy	26,618 marks
Pathology	9,860 "	Pathology	14,932 "
Berlin (1107 medical students)		Göttingen (189 medical students)	
Anatomy	57,436 marks	Anatomy	19,850 marks
Physiology	89,766 "	Physiology	9,606 "

(From Etat des Ministeriums der Unterrichts- und Medizinal Angelegenheiten, 1909, Beilage 6.)

Still more significant is the ratio between expenditure for salaries and that for laboratory maintenance, and the steady encroachment of the latter: out of every 100 marks spent in German universities, there went in

1868	45.95 marks to salaries	37.07 marks to laboratories
1878	41.94 " " "	40.46 " " "
1888	36.00 " " "	47.18 " " "
1902	29.46 " " "	53.77 " " "
1906	27.93 " " "	55.45 " " "

(From Preussische Statistik, 204: Statistik der preussischen Landesuniversitäten, 1908, p. 7.)

Finally, the actual sums spent on salaries and laboratories respectively tell the same significant

story:

Total expenditure in Prussian universities in			
1868	1,786,108 marks for salaries	1,440,955 marks for laboratories	
1878	2,959,187 " " "	2,959,103 " " "	
1888	3,305,125 " " "	4,331,649 " " "	

1898	3,499,785	“	“	“	6,094,316	“	“	“
1906	4,308,980	“	“	“	8,554,581	“	“	“

(Ibid., p. 14.)

That is, in 38 years, total salaries have increased 141 per cent, total laboratory expense, 490 per cent. In the same period, the total attendance of medical students in the same universities has risen 113 per cent (from 2771 in winter semester, 1868, to 5903, winter semester, 1906).

Paulsen (German Universities, translated by Thilly, p. 219, note) quotes from the Rector's Address of Adolph Wagner in 1896:

"Expenditures for salaries and institutes in the University of Berlin show the following growth:

Year	Salaries	Institutes
1811	116,550 marks (71.8 per cent)	39,294 marks (24.0 per cent)
1834	193,650 " (64.6 " ")	78,434 " (26.2 " ")
1880	321,000 " (52.8 " ")	267,000 " (40.1 " ")
1896-7	865,000 " (30.9 " ")	1,481,000 " (52.9 " ")"

All the seminaries in the mental sciences (there are 18) cost 17,650 marks annually; the 15 natural-scientific institutes and collections cost 379,798 marks; the 10 medical-scientific institutes 190,054 marks; the 10 clinical institutes, 617,691 marks.

The publications of the Prussian government mentioned above are models, which we would do well to adopt. They enable us to follow in minute detail the educational developments of the last seventy-five years, with their social implications. The American student of similar problems deals with chaos. It is difficult to obtain definite and complete statements from any one institution; and quite impossible to compare data from several institutions without exhaustive inquiry by way of ascertaining whether they cover the same ground. The German statistics prove clearly, however, the point at issue, i.e., the rapidly increasing cost of properly organized medical education.