

medical study seem to be sufficient. Students here do more work and less play than abroad ; the teaching and drilling in the schools are more efficient ; and, finally, the report of the president of Harvard University on the optional four-years' course in the medical school does not show that students who have taken that course are better educated than those who have been graduated in three years. Study after graduation and not with direct bearing upon examinations seems to produce better results in most instances than a lengthened course before graduation.

One of the most desirable and at the same time difficult things to secure is tolerably uniform legislation in the different States. A reciprocity of action will do much to promote this object, and, with this in view, a recognition of licenses issued by examining boards of other States, the requirements of which are not less stringent than those of the New York board, should be provided for. Foreign credentials, also, from boards fully equal in their requirements to the New York board, should be recognized. The examination and endorsement of such documents could be best and most conveniently done by the colleges.

I fully agree with Dr. Eggleston that there are very few medical colleges in the United States in which the teaching is so thorough and efficient as it is in Great Britain, France, or Germany; still there are some in which the instruction is, in certain regards, even superior to what is found abroad. Many of the smaller colleges, however, are absolutely beneath contempt, and their inefficiency is simply disgraceful, while, at the same time, they publish in their circulars the most elaborate and high-sounding methods and requirements. The four medical colleges in Washington hold their lectures in the evening for the convenience of students who are at work in the departments during the day. Were certain colleges to form an association and refuse to recognize the tickets and diplomas of those institutions which do not come up to a proper standard of efficiency, most of these disreputable organizations would soon cease to exist.

AUSTIN FLINT.

It is undoubtedly true that a large number of students of medicine in Europe have received advantages in preliminary education superior to students in the United States. But we must

not forget that many of our graduates have enjoyed the privileges of a classical curriculum prior to undertaking their medical studies. Some prefix A.B. or A.M. to their M.D. Many more might do so, but wish to avoid appearing pedantic. Through competitive examinations they succeed in securing positions in our hospitals, and, after a thorough training, avail themselves of foreign travel and European climes, or study under some specialists, while others take a second degree abroad.

Even our best-informed citizens are probably not aware of the fact that in our municipal colleges there are hundreds of physicians who take *ad-eundem* degrees after having been engaged in practice for several years. This is a demonstration of their zeal for knowledge and of the rapid advancement of medical science. They not only attend the lectures and clinics, but respond to questions in their class "quizzes," like the undergraduates, and submit to as rigid final examinations. Of what other profession can this be said?

The late Dr. John Whittaker, renowned for his skill in drilling medical students, and subsequently a successful professor of anatomy in this city, informed me that when he came to this country he was surprised at the greater aptitude of American students for acquiring knowledge over those he had instructed in Great Britain, where he graduated and taught for many years. Our students "meant business"; the limited means of most of them restrained them from wasting valuable time in frivolity or idleness. Our young men, in every department of life, whether professional or of a business character, assume responsibilities at an earlier age than those in Europe. Fifty years ago classical colleges received students at the age of fourteen. Now the preliminary training requires several additional years.

As a consequence of the peculiar application in our land of the old adage "*Ars longa, vita brevis*," we omit in our medical courses themes of minor value and substitute those of more vital importance to the medical practitioner. Of course, all knowledge is of service in developing the intellectual faculties, broadening the range of thought, and producing a more matured man. While it is essential for a doctor to know something of the Latin and Greek languages to comprehend medical nomenclature and write prescriptions, yet I doubt the wisdom of the old system, where a boy commenced the study of Latin at

eight years of age, of Greek at nine, and continued said studies through his collegiate course, devoting a goodly part of ten years to the classics, to the exclusion of the modern languages, which he should be able to read with facility (if not to speak them fluently) in order to place German, French, and Italian journals and scientific books at his command. Centuries past, learned men employed the Latin language as the vehicle of their thoughts, and all aspirants for knowledge in medicine, law, or religion had to be classical scholars. But a new era has arisen. The *living* languages are more in demand than the *dead* ones.

For the average medical man the higher branches of mathematics, such as conic sections, the calculus, etc., have little value, excepting as a means for developing certain brain powers. The Almighty has permitted us to solve many of the problems hidden to our ancestors. The rapidly-developing themes of chemistry and physics demand the attention of the medical student. Some of the old practitioners decry these studies.

The mystery of animal heat has been revealed, and although in regard to the nervous system we might in former times have written over the human body, as on the old charts of Africa, "*unknown regions*," yet the physicist and chemist have undertaken the exploration. This is the age of thermometers, lenses, prisms, and electric instruments. We may well adopt as a motto the Scriptural expression, "There is nothing covered that shall not be revealed, neither hid that shall not be known." Medical schools are now demanding not only a general knowledge of these important sciences, but a practical laboratorial skill in handling test-tubes, retorts, chemical apparatus, and physical instruments of research.

A learned member of the bar, while looking at a class in the chemical laboratory, remarked: "When I attended Yale College I used to see the *professor* work miracles; here I see the *students* work miracles."

While many decry our American methods of instructing medical classes, allow me to narrate an incident. In the fall of 1862 I was invited by the late distinguished physiologist, Charles Robin, to be present at the opening of l'École de Médecine in Paris. He said the Emperor deemed that the French medical course was less complete than that in the schools of Germany and Austria. He had permitted

Paul Du Bois, the *secrétaire perpétuel*, to resign, and had appointed Rayer and himself to fill important chairs. But as he had not respected certain ancient customs in said appointments, Professor Robin feared the medical students would create a disturbance. I accepted the invitation and witnessed most disgraceful scenes. Several hundred medical students were arrested by the police for their attempt to prevent this much-needed reformation in medical instruction.

Professor Wurtz subsequently honored me with an invitation to be present, or, as the French term it, to "assist" at his opening chemical lecture. Prior to entering the amphitheatre, I asked where he instructed the medical classes in analytical chemistry. He replied that he had no laboratory for this purpose. I narrated to him the custom and conveniences in the American schools of medicine, where I had occupied the chair of chemistry. In the New York Medical College, opened in 1850, besides providing the apparatus for lecture illustrations, we arranged a students' chemical laboratory (the first established in a medical college in the United States), and gave them instruction in the analyses of poisons, urine, calculi, milk, etc. At the Long Island Hospital Medical College, founded in 1860, a students' laboratory was likewise provided for this practical work, as also at the New York Bellevue Hospital Medical College. Besides an oral or written examination in chemistry, all candidates for graduation had to exhibit their skill in the analyses of such substances as were of importance to the physician in his practice.

One of the late chancellors of a renowned German university remarked to a medical teacher, not long since, that the severest trial of his life was the examination of medical students in chemistry. Another German ex-chancellor, also a distinguished chemist, said to the same inquirer: "If the medical students could only remember so simple a fact as that Epsom salt is the sulphate of magnesia, it would afford me satisfaction"!

Since 1843 I have been connected with medical colleges as student, assistant in chemistry, and, later, as professor in this department, and I know that the faculties of medical colleges have always been attacked by certain of the profession for the incompleteness of the courses of instruction; and yet when said instructors have enlarged and increased the curriculum of study, they have keenly felt a lack of support from practitioners. For on

their advice office students mainly depend in their selection of the college in which they shall study and hope for a successful graduation. Ten years ago one of the New York medical colleges endeavored to establish a three-years' graded course. The other colleges did not offer to coöperate. They dared not make the venture. Hence it was expected that the number of students would be diminished for several years, as many of them would avail themselves of the other medical colleges in New York City and Philadelphia where the shorter course existed. But the countenance, sympathy, and support of the profession were unwisely relied on to aid in this advance movement. After a fair trial, the Utopian scheme had to be abandoned, or the college would have been broken up. If at that time a State law had existed obliging all its medical schools to give a three-years' graded course of study, it would have but partially met the case; for in States not remote were venerable medical colleges in which only two years' attendance at the lectures and three years of study were required of the candidates for graduation. Here action by the National Government would have effectually accomplished the desired result.

The lengthened course is more serious to students in rural districts or from a distance than to city students. It involves the expense of a third year's residence away from their homes, and also the cost of travel. Otherwise it is greatly to the advantage of teachers and their pupils. It relieves both from over-exertion. Now, every hour and half-hour of the student's time is occupied from morn till midnight with lectures, clinics, dissections, quizzes, attendance at the hospitals, and special studies. On one occasion, at the close of the laboratorial drill, I suggested to the faithful workers to take a dozen test-tubes and chemicals to their rooms and familiarize themselves with the reactions. One of them exclaimed, "But we haven't time to eat!"—a remark that was echoed by such a chorus of laughter as indicated how fully the rest of the class agreed with the sentiment of the audacious spokesman.

In most of the European colleges the professors are paid by the governments. Many have residences provided for them, or an equivalent allowance; also apparatus, laboratories, and remunerated assistants. Professors' fees are higher there than in this country. They have also subsidiary emoluments. Dumas was

made senator; so also Berthelot and Naquet, for which they received, under the Empire, 100,000 francs. After thirty years of service, if they have reached the age of threescore, the French government provides a pension. Professors Helmholtz and Du Bois Reymond divide a large and elegant structure, at least three hundred feet square, with domiciles for themselves and their assistants; two large lecture-rooms and extensive suites of private laboratories; also laboratories for students, and museums filled with costly apparatus. There are similar provisions for Von Hofmann, Ludwig, and all renowned German professors. The veteran teacher, Frederick Wöhler, when he built his laboratory at Göttingen, returned 30,000 thalers to the Hanoverian government, claiming that it was in excess of the requirements.

As a rule, professors in nearly all our colleges have meagre remuneration for their faithful labors. Their widows and fatherless daughters are often left to support themselves by teaching or keeping boarding-houses; while the widows of French and German professors are pensioned. The late Professor Arnold Guyot, after a few years' residence in Cambridge, Mass., said to me that "money given during the life-time or after the demise of the donor for educational purposes is generally appropriated for erecting edifices, instead of founding chairs. Unless there is a change our educators must be celibates."

I was presented with one of the large copper induction coils of the late Professor Joseph Henry, with which he discovered the *induced* galvanic current, while professor of physics in Princeton College, and which he paid for from his meagre salary.* Faraday followed Henry in the development of this grand electrical law, without a knowledge of which the alternating system of lighting by electricity and telegraphing from a moving train would be impossible, without entering into other extensive fields involving his discovery.

I have urged several of our liberal-hearted citizens to consider that the reputation of an educational institution depended on the attainments of its professors and their talents in imparting their knowledge, holding their classes, and instilling zeal in their pupils, rather than in ornamental structures; that their money

* This is but one of the many instruments which taxed his bank account in his vitally important original researches.

should be converted into developed *brains* rather than decorated *buildings*.

Some years since, after a dinner at Governor Tilden's, Professor Morse quoted the popular expression that "Americans worship the almighty dollar." He added: "This is not my belief; on the contrary, in no part of the world are private fortunes more lavishly appropriated for noble purposes than in this country. The man to whom I at one time paid laborer's wages for digging holes in the ground and planting telegraph-poles, has given half a million dollars to found Cornell University!" The names of many other large-hearted Americans were mentioned who had made princely donations for educational purposes. Of late there has been a *crescendo* movement in this direction: even millions are freely given. Through the liberality of Mr. Andrew Carnegie, not only was a pathological laboratory, which bears his name, erected for the Bellevue Hospital Medical College, but at the close of each session he has generously sent his check to cover its expenses.

The expensive apparatus for illustrating lectures in chemistry, physics, physiology, etc., in medical colleges is, as a rule, the property of the individual professors in these branches. The instruments have to be repaired, and constant additions must be made thereto, to keep pace with the advance in these sciences. The professors of practice of medicine, surgery, and obstetrics must command positions in hospitals. For these they rarely receive any salaries. They must also devote much unremunerated time to the sick poor. The late eminent surgeon and physician, Dr. James R. Wood, in the course of his long and useful career in this city, had on his books the names of over one hundred and ten thousand patients that he had treated gratuitously in his office. He also served for more than thirty years as one of the surgeons in the Bellevue Hospital, without a dollar's compensation. How many clergymen or lawyers can exhibit such a record of unrequited labor?

We need more Carnegies and Vanderbilts to enrich our *medical* colleges, endow our professorships, enlarge our laboratories, enhance our facilities for original research, and enliven zeal among our gifted students. Rather than severe criticism, the instructors in our reputable medical colleges deserve commendation from their professional brethren and the general public for

their arduous, self-sacrificing, and ill-requited labors. They will hail with delight any legislation tending to elevate their noble calling.

Many advocate the elimination of professors from examining boards. This will not raise the standard of medical instruction. How many eminent medical practitioners who are not teachers could thoroughly examine graduates of colleges in anatomy, materia medica, physiology, chemistry, physics, pathology, and bacteriology? Professed instructors in these latter themes have to devote much of their time to keeping pace with these rapidly-advancing sciences as applied to medicine. No active practitioner can do it. The educated students would know more than their examiners. How many of the celebrated physicians and surgeons, unless recently graduated, have handled the spectroscope or the polariscope? How many of them can make *quantitative* analyses of the urine, or determine the amounts of free ammonia, albuminoid ammonia, the chlorides, nitrates, and nitrites in water, to decide upon its potable character? Yet the medical student of to-day has to familiarize himself with these themes. He is a much harder worker than his predecessors were.

As an illustration of the composition of an examining board, in 1871 the Legislature of this State passed a law authorizing the Mayor of New York to appoint a commission of four examiners of druggists and prescription clerks in this city. Two of the appointees were skilled druggists; one of them was vice-president of the New York College of Pharmacy. The examiner in Latin and the writing of prescriptions was a physician and professor of Latin in the Manhattan College (where his students had to be taught to speak in this language, to prepare them for the priesthood). The president of the commission, who examined in chemistry, had ten years' experience as professor in the College of Pharmacy. We examined over nine hundred druggists and prescription clerks the first year. At the instigation of the wholesale druggists the law was revoked. When medical men and the public needed protection against the importation of adulterated drugs, the National Government had to be appealed to. A law was passed appointing drug-examiners at every port of entry.

If we are to demand of all matriculants in medical schools diplomas from reputable classical and scientific colleges, or, in lieu

thereof, to pass a preliminary examination (as is now required through a recent act of the New York Legislature), and also that they attend graded medical courses of three years prior to becoming candidates for graduation, an act of the Federal Government could accomplish it. By the same authority boards of medical examiners could be appointed in the various States. But as each State claims the right to authorize the establishment of its universities and colleges, ought not the States to appoint their own examining boards? True, these boards would differ in rigidity. But this would also apply to examiners authorized at Washington.

All our best medical colleges adopt their own modes of examination. Some examinations are conducted privately by each professor, while others are public. At the New York Medical College the students were examined in the presence of the whole faculty and a board of censors, consisting of three eminent practitioners appointed by the board of trustees. At one period we invited the censors appointed by the State Medical Society, which the other New York Medical Colleges did not do. This was a severe ordeal for the candidates. But few of them could respond as successfully as if the examination had been less public.

Our National Government does not interfere in the education of those preparing for the bar or the pulpit. These professions are equally important for the "general welfare of the people" with that of medicine.

The "quack," the "shyster," and the "sheep in wolf's clothing" will always exist. Some men of business, railroad and mining officials, will exhibit the frailties of humanity. Fraudulent bills and coins will ever be found in circulation.

Both professional and non-professional men have seen great progress in all branches of education, and the medical portion has not proved an exception. We may predict that in a few years each State will have its board of medical examiners, and a unification of the entire system of such boards will probably follow without action of the Federal Government.

R. OGDEN DOREMUS.

NOTES AND COMMENTS.

I.

EUROPE IN PERSIAN EYES.

AMERICANS are often amazed at what appears to be almost a deliberate intention on the part of intelligent Europeans to miss of a correct apprehension of the conditions of life in the United States. But on reflection we shall see that this proceeds from the natural difficulty most minds encounter in appreciating what is novel and outside of their experience, and hence jumping to the conclusion that because novel it must be objectionable. In most cases prejudice, rather than a disposition to decide unjustly, is the real cause of such ill-founded assumptions.

If such be the difficulty as between two regions having so much really in common as Western Europe and the United States, how infinitely more arduous must be the problem when Europe and Asia undertake to comprehend each other, and mete out full justice each to each. The numerous works of travel on the East, and the many estimates of Oriental character formed in different ages by Europeans, indicate, perhaps, in several instances keen observation of external facts and vivid pictures of the surface of Oriental life. But very, very few of them show ability on the part of the writer to abandon his own native prepossessions, and to judge of the qualities of the Asiatic mind with fairness or with any clear perception of its essential traits, or of the causes that moulded it and continue to keep its original cast unchanged, while the rest of the world moves on to higher planes of at least material progress.

The recent visit of Nasr-ed-Deen Shah to Europe suggests the natural inquiry as to whether an intelligent Asiatic, after surveying the pomp and splendor of the capitals of Europe and the so-called triumphs of modern science and of Western civilization, would confess to a sense of the inferiority of his own people and country, or, like the European judging of Asiatics, continue to regard Europeans as inferior beings. From what I have seen of Orientals of all ranks and degrees of intelligence, it seems to me altogether improbable that the contrast between European and Asiatic civilization would produce on the mind of an Oriental any impression arousing lasting respect and admiration or working any immediate and decided change in his character. Notwithstanding the wonder caused by the sight of the astonishing inventions of Europe or his occasional inclination to introduce some of them into his own country, the belief of the Asiatic in the superior genius and nobler character of his own people and their institutions will remain unshaken. The pageants of Europe will be to him merely as the amusement one takes in the tricks of a mountebank, which entertain the eye without in any sense affecting the serious side of the beholder's mind. He will return to his own country altogether satisfied that he is not like these misbegotten sons of unbelievers who eat the flesh of the unclean animal and expose the faces of their women in public.

While some such language might very likely be used by an Oriental when expressing his private opinion on this subject, it would be taking a very superficial view of the causes underlying such an opinion to assume that it proceeds from the national vanity of a shallow nature, or from a stolidity that is blind to the march of progress. The reason lies far deeper, and because Europeans have failed to perceive it they have almost uniformly failed to do justice to life and character in the East.