AN ESSAY

ON THE

MEANS OF IMPROVING MEDICAL EDUCATION

AND

ELEVATING MEDICAL CHARACTER.

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TO

PROFESSOR ROGERS, M.D.,

WHOSE ACHIEVEMENTS AS A SURGEON HAVE DONE HONOUR TO THE HEALING ART,

AND WHOSE ADHERENCE TO WHATEVER IS JUST AND LIBERAL IN MEDICAL POLITICS HAS BEEN UNSWERVING,

THE FOLLOWING ESSAY IS INSCRIBED BY HIS OBLIGED FRIEND AND FORMER PUPIL,

ANDREW BOARDMAN, M.D.

INTRODUCTION.

The views maintained in the following thesis were formed from observation and reflection suggested by the difficulties which I had to encounter in attempting to become fitted for the practice of medicine. The inferences which I have drawn from the facts stated, and the propositions which I make may be or may not be sound; but as the facts themselves are undeniable, the necessity for reform cannot be questioned, and if the following essay have no other effect than that of increasing the interest of the profession in the momentous cause of medical reform, of directing to the subject minds better fitted for the investigation, and of eliciting views more in accordance with scund principles, I shall deem myself repaid a hundred fold.

I have stated that my own experience prompted the investigation of which the following essay is the result; and as facts accurately stated are to the philosophic mind of the utmost value and importance, I respectfully invite attention to a few of the items of that experience.

On formally commencing my medical studies, I attended a private course of anatomical lectures delivered by a gentleman of fine talents and of great professional zeal. With this course I was much pleased and benefited. Everything was described and demonstrated most clearly and satisfactorily; and the descriptions and demonstrations were repeated by the students, subject to the correction of the instructor. In this class were a number, who, as I learned from themselves, paid for the college ticket, that they *might graduate*, but seldom attended the college lectures; and they paid for and attended the private course, that they *might learn anatomy*. I was at once struck with the injustice of making them pay for lectures which they did not attend, and of counting valueless those lectures, dissections, and demonstrations which were so admirably fitted to give a thorough knowledge of the human structure. On attending college lectures myself, I was more deeply convinced of this injustice on finding, by comparison, that *cæteris paribus*, private lectures were superior to public ones as means of acquiring anatomical knowledge. In the private class everything may be seen clearly by every student. In the anatomical theatre, on the contrary, the nearest students cannot see distinctly the parts alluded to; and those at a distance can hardly see them at all. I think I observed distinctly another important fact, namely, that those who depended for support on the voluntary attendance of pupils were more zealous and industrious teachers than those who were favoured

* It will be seen by the reader, at once, that this Introduction was written subsequently to the Dissertation which follows, and which is now published in the form in which it was presented to the Faculty of Geneva College.

and protected by a chartered monopoly. Indeed I have paid for lectures at public institutions which would not have been tolerated from private lecturers. I paid for one course on Physiology which embodied the science, not as it now exists, but as it existed a long time ago; and for another course which was not delivered. I paid for one course on the Theory and Practice which consisted, to a great extent, of historical accounts and laboured refutations of all the defunct and entombed medical absurdities of which the annals of our art speak; and for another course which consisted chiefly of verbatim extracts from Eberle's and from Mackintosh's theory and practice. I paid for a course on Therapeutics in which I could accompany the professor in Eberle and Dunglison, word for word through entire lectures; the plagiarism extending to Dunglison's numerous poetical quotations. I do not wish to convey the idea that the lectures at chartered institutions are generally unworthy of patronage. I have attended lectures at such institutions which have been most able and beneficial, and which have afforded almost unmixed and unanimous satisfaction. I deem much in the present system of medical education to be unsound, but yet it may, by talented and zealous men, be rendered productive of gratifying results. That it is liable to great and manifold abuses, however, is undeniable, and to illustrate this still further, I state the following facts without note or comment.

I attended the lectures of Geneva College during the session of 1839–40, and graduated at the end of the term. I here introduce a comparison between the promises held out in the college circular as inducements to medical students, and the mode in which those promises were fulfilled.

PROMISE OF THE CIRCULAR. That the course on Chemistry should be delivered by a doctor of medicine.

Fulfilment. The Chemical course was delivered by a doctor of divinity, who acknowledged, in my hearing, that he had often to lecture from notes which he had not looked at for five or six years before bringing them into the lecture-room.

PROMISE OF THE CIRCULAR. That a course of lectures on Medical Jurisprudence should be delivered.

Fulfilment. We were not favoured with a single lecture on the subject.

PROMISE OF THE CIRCULAR. That there should be a course of lectures on Physiology.

Fulfilment. No such course was delivered.

PROMISE OF THE CIRCULAR. That the Anatomical class should have a full supply of subjects for dissection.

Fulfilment. Not *a single subject* was provided for dissection during the *whole session*, though students deposited money for them at the rate of $40 a subject at the commencement of the term. Nor was there more than a single subject, and that a very poor one, used for demonstration during the entire anatomical course.

PROMISE OF THE CIRCULAR. That the students, attending Geneva College, should have the great advantage of clinical instruction at THE WESTERN HOSPITAL, an institution connected with the medical school.

Fulfilment. The Western Hospital consisted of the second floor of an old building labelled in large letters, "GENEVA SHOE STORE," and during the whole session it contained *not one* medical patient, and *only one* surgical patient. I was house surgeon, and performed my daily rounds for a considerable time, by going

from one side of the bed of a quiet old negress to the other. Attracted by the reputation of the surgical professor, however, many patients came in from the surrounding country, on whom operations were performed before the class.

PROMISE OF THE ANATOMICAL PROFESSOR. That a special diploma should be presented to the best practical anatomist of the graduating class.

Fulfilment. Such diploma with the heading "*palmam qui meruit ferat*," was made out in my favour; but no means of acquiring practical skill having been afforded, and no tests of practical skill having been applied, I declined the proffered honour.

PROMISE OF THE CIRCULAR. That a gold medal should be presented to the author of the *best thesis* on any medical subject.

Fulfilment. On this subject I am not a competent witness, and, therefore, take the liberty of introducing the following copy of a letter addressed by Professor Rogers to a few of his friends:

GENEVA, 20*th January*, 1840.

Dear Sir,—I sit down this evening to state briefly the cause of my resigning the chair of Surgery in the Geneva Medical College, that you may be enabled to give an authentic explanation to any of my friends who may inquire concerning it.

After accepting the Professorship of Surgery, I engaged to place, annually, at the disposal of the faculty, a gold medal for presentation to that graduate who should produce the *best thesis* on some medical subject. During last summer I received a letter from a former student of mine (Mr. Boardman), announcing his intention of graduating at Geneva; and inquiring whether the thesis would be judged of by the accordance of their views with those of the professors, or by the comparative ability with which the writers maintained their opinions, and by the comparative clearness, force, and correctness of style; intimating, at thesame time, that if the latter were the case, he should advocate some views adverse to the present system of medical education.

With the sanction of the only collaborator then in Geneva, I replied, that we were not so illiberal as to expect that gentlemen should conform their opinions to ours, and that, in awarding the medal, we decided exclusively on the comparative merits of the theses as literary productions.

I shall not trouble you with a detailed account of intermediate proceedings, but briefly state that Mr. Boardman came to Geneva, and in due time presented his thesis, that one professor immediately stated that it had great merit, but that a thesis maintaining such views would not be permitted to take the medal, whatever might be its intrinsic merits. The others spoke more liberally, but decided on the same grounds; thus, in fact, putting his thesis out of the pale of competition, and, accordingly, notwithstanding our printed assurance, notwithstanding the personal assurance given by myself and another professor, that merit in composition and ability in writing would form the exclusive grounds of decision, the medal was awarded to a production which no member of the faculty will hazard his reputation by placing on an equal footing with Mr. Boardman's in these respects. The preferred thesis has merit, but there is in it nothing original, no striking views or sustained argumentation: the style is verbose, unequal, and sophomoric, full of scraps of Latin, and allusions to the heathen mythology. The rejected thesis is grave, thoughtful, and argumentative, indicative of an observant and sagacious mind: the style is clear, forcible, and mature, and though the positions are bold, they are maintained with courtesy.

Under the circumstances no course was left me to pursue but that of withdrawing my name from a transaction in which there appeared to me a violation of honour and justice, and an attempt to crush instead of encouraging an inquiring and independent spirit. Yours, very sincerely,

D. L. ROGERS.

I shall merely add to the above letter, an extract from one which I addressed to another professor on the occasion of his making to me a proposition in the name of the faculty.

"Immediately after presenting my thesis, I was informed by one professor that the subject would inevitably damn it without the slightest reference to its merits, and you yourself acknowledge that you took into consideration in your decision, the circumstances which, I had been assured, would be left out of view. I mention these facts to show, sir, that I object not to your judgment, but to your rule of judging—that I feel wronged, not because another has been preferred, but because I have been put out of the pale of competition."

A medal is of small value, but justice and freedom of opinion are of paramount importance.

INAUGURAL DISSERTATION.

The healing art is doubtless coëval with the breach of those laws, on the observance of which immunity from disease depends; and we need no fable from the heathen mythology to account for its origin. Whoever first attempted to relieve the physical sufferings of a fellow being was the father of physic. Ignorant of internal organization and function, and to a great extent of external agents and influences, remedial efforts would at first be confined to the soothing attentions of a sympathizing spirit, a remedy which may yet be classed as not only the most agreeable, but as one of the most efficient of therapeutic agents. The necessity of the healing art sprung then from the misfortunes, the ignorance and the wickedness of man, and the art itself from what may well be called the divinity of human nature—intellect prompted to exertion by benevolence and affection.

Medical men and their profession have often been the butt of the humorist's gibes and the satirist's sarcasms, and not undeservedly in all cases. But a change has come over the profession: the days of bag-wigs, powdered heads, lengthened solemnity of visage and inveterate technicality of phrase, are gone, we hope, forever. The time, too, has passed away, when oil from kittens boiled alive was considered an admirable application to wounds; when toads roasted alive were administered for asthma, and the hairs of mad dogs for hydrophobia; when the powdered thigh-bone of an executed felon was considered a specific in dysentery, and ointment was applied to the inflicting weapon in order to cure the wound; when physicians placed confidence in phylacteries, and watched with intense anxiety the influence of black and white days and the aspects of the stars; and when they hurried their unfortunate patients to an untimely grave in attempting to quench the fires of fever and inflammation, by diligently feeding the consuming flame. To confound medicine as now with medicine as then taught, would be as illiberal and unjust as to confound chemistry with alchymy, astronomy with astrology, or, I must add, phrenology with palmistry.

But though we cannot agree with the writer who defines physic to be the art of amusing the patient while nature cures the disease; nor with him who asserts that almost the only resource of medicine is the art of conjecturing, it cannot be denied that much uncertainty does in reality exist. The talented editor of the Medico-Chirurgical Review recently asserted, (April, 1839,) that "one half of our practice is guess work;" and if he meant his remark to apply not to the art itself, but to the art as practised, many, doubtless, will subscribe to its truth.

Much, however, that has been *popularly* said of the uncertainty of medicine, has arisen from misconceiving its true objects. When a beloved parent or child is lying on the bed of sickness, or a friend who has gilded the pathway of life

with the blessed light of affection, is on the brink of the grave, grief, in its unreasoning paroxysms, asks why our art is not omnipotent; forgetting that it is not for man to set aside the laws of nature, rejuvenate the old, and restore the broken constitution to healthy vigour. Physic possesses not, nor does it look for an elixir of immortality: it merely claims to be the application of such means as accumulated experience, cautious observation and sound judgment have proved efficacious in ameliorating or curing disease; and its perfection would consist in a knowledge of the most certain, ready, and least painful mode of restoring health when restoration is possible, and of the means of soothing pain and prolonging life to the utmost, when restoration is impossible. In view of this definition, it is not too much to say that our art may yet approximate closely to perfection; and, even now, it may be questioned whether uncertainty is not much more in physicians than in physic.

This word uncertainty is often employed, as though it were relative, not to man's ignorance, but to nature's operations. In these, however, whether on the most minute or expanded scale, there is no uncertainty, indefiniteness or chance-play. Whenever, therefore, it is said, that, on any point, uncertainty exists, it merely shows that, on that point, our knowledge of nature is incomplete. There was a time when the motions of the comets were considered irregular and lawless as those of the winds are now commonly considered, but our knowledge has been enlarged, and we can calculate their revolutions with perfect precision; and the time may come, it seems, indeed, near at hand, when it shall be demonstrated that every movement of the air, whether in the form of a zephyr, a gale, or a tornado, depends for its course, intensity, and duration, on laws as invariable as those which buoy the sun upon nothing, and give speed and invariableness to the wingless and compassless comets. In medicine, the physician's assertion that anything is uncertain, is, in truth, an acknowledgment, that, on that point, his knowledge is only partial. No disease occurs which has not a certain adequate cause, though of that cause we may be ignorant, which has not its chief seat in some definite part of the system, though of that seat we may be unable to satisfy ourselves, which has not produced, at any given time, a precise amount of functional derangement or organic change, though our idea of that amount may be most erroneous; and for which there exists not, in the nature of things, a remedial course, the most appropriate that can be pursued, though we, in our ignorance, may honestly pursue a course much less efficacious, or which shall even aggravate instead of ameliorating or curing.

If then there is no uncertainty in nature, we must seek for its sources in man alone, and these may be reduced to three.

1. *The imperfection of existing knowledge.*—The present resources of our art are immense. How quickly and surely do diseases quit or relax their grasp when encountered by learning, experience, and judgment. Then is it demonstrated beyond controversy, how much the healing art can achieve. Still it must be owned, that if the present collective knowledge of the profession were centred in one man of the greatest experience and soundest judgment, he would sometimes be in unpleasant dilemmas from lack of more knowledge. For this we have no remedy but that of winning further discoveries from nature by careful observation and rigid induction.

2. *Our constitutional incapacities.*—There are great constitutional differences in

the mental fitness of men for the practice of medicine. It needs in the intellect a combination of the observing and reflecting faculties, and in the moral nature, a union of caution, courage and sympathy, which is not common. Against mental incapacity the profession might, in some degree, protect itself, by rendering the conditions of admission into its ranks, such as would exclude those who possess not a fair share of the requisite intellectual qualities.

3. *Our lack of such knowledge as exists, and our inability to reduce to practice such knowledge as we possess.*—Over the first source of uncertainty we have no present control; our control over the second is limited; over this, however, it is great, and as the subject of medical education occupies at present the attention of practitioners throughout the union, as everywhere such education is acknowledged to be imperfect, and propositions of reform are made, I shall dwell chiefly in the present essay on the deficiency, inappropriateness and reformation of medical education.

I am aware that what I am about to advance may, at first, appear ultra and visionary, but being profoundly convinced of the truth and importance of my views, I pray that they may not be disregarded, because of the humble source whence they emanate. I adduce facts and invite scrutiny, arguments and beg for calm and serious consideration. I am merely an inquirer, desirous of taking my stand on the broad foundations of human and external nature, and of asking the opinions and practices which I consider the *why* of their existence.

The two most prominent propositions which have been made for the purpose of elevating medical character, and improving medical education, are :—

1. The requirement of a knowledge of Greek and Latin, as a prerequisite to a medical degree.

2. One year's extension of the prerequisite period of study.

The great end of medical education is to enable a class of men to discriminate and cure disease. This is, indeed, a self-evident proposition, but one, which, like the axioms of geometry, is pregnant with important inferences. Let us inquire, then, whether a knowledge of Greek and Latin is an important means for the attainment of this great end. A word is of value only as the representative of an idea. Now if a student possesses an idea perfectly, it is no addition to his knowledge of anything but mere sounds, if he learn a hundred modes of expressing that idea. If, then, these languages be necessary to the physician and surgeon, it must be by conveying to them ideas concerning their art which cannot be conveyed in our mother tongue. But are there any such ideas? Neither Hellenist nor Latinist will affirm that there are. The moderns surpass the ancients in everything relating to medicine, surgery, and the collateral sciences. Anatomy, general, special and pathological, physiology and chemistry, were almost unknown to the latter. The student who shall read "the prince of Latin poets," as a preparation for practice, may, indeed, learn that bees are generated from putrefaction; but, suppose he wants to become acquainted with some disease, and the proper mode of treating it? Would he be better able to tell the appearance of the tongue, to count the pulse, to discover the seat and kind of pain, the nature of the secretions and excretions by a knowledge of Greek and Latin? Surely not. Again, would he be able to tell the sort and amount of medicine better, the temperature of a proposed bath better, the quantity of blood to be taken away, and the manner of taking it better, by a knowledge of

Greek and Latin, than without such knowledge? The very stating of the question must suggest a negative answer. Suppose an artery has to be tied for aneurism? would the question be whether the surgeon could decline *penna* or conjugate *amo?* O, no! But whether he knew the nature and situation of the superincumbent parts, the sort of ligature to be applied, and the manner of applying it, of meeting contingencies, restoring the circulation, and keeping within due limits the subsequent inflammation, would a knowledge of Greek and Latin give him steadiness of hand and eye, coolness and courage? And suppose an operator should take up a nerve instead of an artery, would any one think of ascribing his blunder, in the remotest degree, to his ignorance of the ancient classics? Not even the most strenuous advocate of the proposition which I am now considering.

It is true, that there is a technical language employed by medical men derived principally from the dead tongues. But that is learned at the time a knowledge of the things signified is learned, and neither Hellenist nor Latinist can learn it in any other way; and, though the classical scholar would often be aided in the recollection of terms by his previous education, yet it is undeniable that the derivation of our technical words often affords no clue whatever to their meaning. What aid does the student derive from knowing that sacrum is derived from *sacer*, sacred; fibula from *figo*, to fasten; clavicle from *clavis*, a key; tartar from *tartaros*, infernal; *ranula* and ranunculus from rana, a frog; scrofula from *scrofa*, a swine; artery from *aer*, air, and *tereo*, to keep. Nay, there are many diseases so named, that he who understands the derivation of the words used in naming them, is more likely to misconceive their true nature, than he who merely knows their names as the exponents of certain pathological conditions. I may instance the words typhus and gonorrhœa; also cholera, as applied to the late epidemic; nyctalopia and hemeralopia, as commonly employed. But then the elegance, the euphony of these languages! Let these qualities be admitted to their fullest extent—what then? I answer, that they will be most necessary to the physician when he has to talk in Greek or Latin periods, or to write his prescriptions in hexameters, but that that time has not yet arrived.

But, say the advocates of this proposition, the study of these languages is useful in training the mind. I do not deny this, but maintain, that, as a preparation for the practice of medicine, the mind might be much better and more usefully trained, by a thorough study of our native tongue; by the study of mental and moral philosophy, political economy, the general principles of law, and various branches of natural history. But even admitting that the study of languages should be insisted upon as a prerequisite of practice, the question—what languages? would necessarily be suggested; and the preference could not be given on any grounds of utility, to the Greek and Latin over the French and German. In the two latter, new works of great value are continually appearing; whereas, in the two former, hardly any new work, either literary or scientific, is now published.

That a knowledge of these languages is not necessary to great success in the practice and advancement of our art appears from this:—Some of the greatest geniuses that medicine can boast knew little of any language but their mother tongue. Hippocrates himself knew no Latin, though, for a very obvious reason, he was acquainted with Greek; but neither Hunter nor Armstrong knew either

Latin or Greek. The latter, indeed, for this ignorance, was, on his removal to London, rejected by the College of Physicians, notwithstanding his great medical attainments and ability. Dr. Christison, Professor of Materia Medica in the University of Edinburgh, took the highest honours for Greek, both at school and college; yet, in his testimony before a parliamentary committee of investigation, he affirmed that since entering on the profession of medicine he had found so little occasion to put his Greek to practical use, although pursuing the various branches of medicine as objects of scientific study, that he did not believe that he could, at that moment, translate a single passage that might be placed before him.

From these considerations I conclude, that whatever may be the desirableness of a knowledge of the dead languages, as a prerequisite to other pursuits, to insist on such knowledge as a prerequisite to the practice of medicine would be unjust and irrational.

Let us now examine the second proposition; namely, an extension of the time of study from three to four years. This might be efficacious, could its adoption secure a greater amount of study and observation; but in this it would most probably fail. It is true, indeed, that a man can obtain more knowledge and practical skill in four years than in three; but it is also true, that he may merely proceed with his studies more lazily and leisurely, and thus impair the power of concentrated attention. We want some better test of a man's fitness for a medical degree than that he has had his name on a physician's book, three, four, or any other number of years. Indeed, this proposition is founded on the erroneous notion, that man's acquirements are in the direct ratio of the time they may be studying or pretend to be studying; but it is matter of common observation, that of two who are equally assiduous, one can acquire knowledge and skill much more rapidly than the other, and that of two, who have equal capacity and equal facility of acquirement, the one may be much more assiduous than the other. To subject all capacities and all degrees of assiduity to the same unbending rule of time, is, I think, unjust; it breaks down all the natural distinctions between lassitude and energy, indolence and industry, talent and imbecility.

Having given my reasons for believing the proposed changes to be inadequate and inappropriate, I proceed to survey the present mode and extent of medical education, and prerequisite qualifications of a graduate; and to explain my views of what medical education should be, and what prerequisites should constitute the *sine qua non* of graduation.

By collating the circulars of the various medical schools throughout the United States, it will be found that each has professorships separate or conjoint for the teaching of—1. Anatomy. 2. Physiology. 3. Theory and Practice. 4. Materia Medica. 5. Surgery. 6. Obstetrics. 7. Chemistry. 8. Medical Jurisprudence. And that in each the prerequisites of a diploma are:—1. Three years study with a regular practitioner. 2. Attendance on the lectures of some chartered school during two sessions. 3. The presentation of a thesis on some medical subject. 4. The approval, after examination, of the medical professors whose lectures the candidate has attended.

To the physician, as such, man is the centre of the universe. He should study the human frame in health and disease, and then study all things which relate to, or have an influence upon it. He should be so acquainted with the

human body, as to see, with conception's eye, all its various parts in their true relative position. This constitutes anatomical knowledge. He should be acquainted with the operations of these various parts, their modes and purposes of action; this constitutes physiological knowledge. He should be acquainted with the influence of all physical and moral agents on healthy man; with the properties of the *materia alimentaria*, of air, temperature, occupation; with the influence of location, seasons and emanations; that he may know how to keep the whole organization in a state of health: this constitutes hygienic knowledge. Anatomy, physiology, and hygiene, form the group of studies which have for their object a knowledge of what man is, and of what he should be, and of the mode of keeping his organs in healthy and harmonious play. They are the foundation of all correct knowledge and practice, making known as they do those standards in human and external nature, to remedy or obviate departures from which is the peculiar object of our art. The physician should earnestly direct attention to derangements of function, alterations of structure, the aberrations from hygienic laws on which such derangements and alterations depend, and to the remedial means required to restore the body to physical soundness. All knowledge relating directly to these things, is comprised under the terms pathology and therapeutics. He should be acquainted with the properties, relations, and mode of preparing remedial agents. Materia Medica, Pharmacy, and, to a certain extent, the collateral sciences, are, therefore, important branches of study. He should be acquainted, too, with whatever relates to Operative Surgery, Obstetrics, and Medical Jurisprudence.

By comparing the subjects taught at our medical schools with the above exposition of the attainments necessary to constitute an accomplished practitioner, it will be seen that the objects sought to be attained are almost sufficiently comprehensive. There is, indeed, one important omission, that is, of Hygiene, which comprises knowledge of the utmost importance to the practitioner, and ought, therefore, to form an essential branch of medical education. If, then, the objects sought to be attained are almost sufficiently comprehensive, the inefficiency of medical education must be looked for in the mode in which it is conducted. To this point, then, let us now turn our attention.

The examination which a candidate has to undergo previous to receiving the highest medical honour, and being pronounced most learned and most worthy, is simply of the following nature. During the college terms, the professors say certain things, and at the examination they ask certain questions, in order to ascertain whether what they have said be recollected by the candidates, and he who can say back the sayings of the professors with the most accuracy and readiness, passes with the greatest applause, notwithstanding that this is a feat performable by men who are unfit both by mental constitution and education to undertake the treatment of disease. It is not necessary that it should appear in proof that the candidate is an accurate observer and sound reasoner; that he can dissect, can discriminate disease in the sick room, or that he can even apply pressure to an artery, or a bandage to a limb. All that is required is, that he should be a good echo. It is true, that the candidate has to show certificates of having had his name on a physician's book during three years, but there is no test applied to ascertain whether the time has been profitably spent. It is true, also, that practical observation is recommended, but so long as opportunities for

such observation are not afforded, so long as the education is not practical, and the examinations are not practical, such recommendation can have but small weight or value. There are many medical schools to which no clinical chairs are attached, and in those to which they are attached, they are considered as merely collateral and subordinate. Even dissection itself is practically treated with neglect, so much so, indeed, that three medical schools, at least, as if expressly to warn students from the dissecting room, state, in their circulars, that it is optional whether the pupil dissect or not; thus, that of one medical school for 1838, says, "The dissecting ticket may be taken or omitted at the option of the student, as it is not required to constitute a full course." It is not absolutely required, I believe, in *any* of the medical schools; but expressly to mention the fact as an inducement to students, shows a reprehensible disregard of true educational principles.

It is a fundamental fact in mental philosophy, that the more directly an object is presented to the senses, or rather, to the mind, through the senses, the more accurate, vivid, and enduring, is its impression. Let a strange flower be described with the utmost minuteness and accuracy: after pondering a day over the description, the conception of its form, size, and colour, would not be as clear as after examining an accurate drawing of it, during a few minutes; but the most accurate representation could not convey nearly as clear a conception as an examination of the flower itself. Of its taste and odour, the drawing, of course, could convey no idea whatever; and description could convey only faint and fleeting ones. This principle is well understood by students of natural history. They would smile at the simplicity of him who should talk of becoming acquainted with plants and minerals without examining specimens, without studying nature. I have before remarked that a word is nothing in its mere sound. Many idiots might be taught to repeat a thousand sentences, containing momentous principles and noble sentiments, without having the slightest conception of their truth and beauty. The whole nomenclature of anatomy might be learned by one who had never seen further into the body than the skin; and at an examination, merely verbal, the man who had paid exclusive attention to words, might shine forth far more brilliantly in his answers, than he who had dissected much, but who had been more attentive to things than words. Sarlandière boasts that he has communicated a knowledge of anatomy to medical students in fifteen lessons. He doubtless mistook the nomenclature of anatomy for anatomy itself. Indeed, this is evident from his own words, for, he adds, "I employ preparations (of wax), that there may be no *dissecting* or *delay* whatever during the lessons." Let one who has thus learned anatomy be directed to dissect and demonstrate a region, and his utter ignorance of parts, and their true relative position, will at once be manifested. It is no proof because a student can recount the symptoms of certain diseased conditions from hearsay, that he understands what he recounts, and would be able to recognise the symptoms and ascertain the diseased conditions in the sick room. That a man may recognise objects, appearances, and physical properties, he must have seen, heard, tasted, smelled, and felt for himself, and not by proxy. The truth, that the actual presentation of objects, together with description, is an incomparably better mode of becoming acquainted with them than description alone, is a principle in the science of education which stands out in crystalline beauty and distinctness. This was well illustrated by one of

our professors. "Gentlemen," said Dr. Rogers, "I shall explain to you principles and rules of practice from which you may derive great benefit in your professional career. I shall also describe to you the symptoms which characterize the diseases of which I shall treat, but experience constrains me to acknowledge that these descriptions *alone* will be of little service to you. Let the various kinds of tumours be accurately described and afterwards placed before you, the great probability is that you would be at a loss to distinguish them; though after the distinctive marks had been pointed out on the tumours themselves, you would find no difficulty in doing so, nor in recognising the accuracy of those descriptions which before failed to convey to you any accurate conceptions. I make this observation to impress on your minds the necessity and importance of observation. To know disease, gentlemen, you must see it; no description can enable you to understand symptoms and appearances correctly." Than these remarks none could be more correct or important; but that the student may observe he must have opportunities of observation, and the deficiency of such opportunities is one great defect in medical education.

Another principle of mental philosophy clearly deducible from well known physiological laws, and fully established by experience, is this: Before correctness, facility, and certainty of action can be attained in any profession or employment, the mind and its instruments must be well trained to act harmoniously in that profession or employment. Thus the instructions of a Raphael would be insufficient to make a painter; those of a Praxiteles or a Canova to make a sculptor. To paint well, a man must practice painting; and he should do it under the eye of a master, that his errors may be pointed out, and in future works corrected. In music, the theory of notes may be readily comprehended by one unable to distinguish them when struck. Daily instruction for twenty years would not enable an individual to play a single tune with ease and grace except he practiced as well as studied. It is instruction, combined with attentive discipline of the necessary faculties and instruments of motion, which imparts to the musician such sweetness, grace, and facility of execution. It is regular and laborious discipline which gives to the artistes of the ballet such flexibility, ease, and grace. In the drama, it is not alone great natural endowments and deep study that enable the actor to embody in his tone and action the sentiments and passions in all their degrees and combinations. There must be recitation and training, arduous and long continued. Let a man of fine natural endowments and extensive acquirements come before an audience for the first time as a speaker, and his efforts will be comparatively feeble and unconnected. But mark him after he has become habituated to public speaking. How well he marshalls his facts and illustrations, and elaborates his arguments at the same time that he is infusing beauty, pathos, sarcasm, or indignation, into his melting or burning periods. Yet with the necessity of training the faculties by exercise, judicious and long continued, thus plainly stamped on the mental constitution, medical education is conducted as though the student needed little but book and lecture-knowledge to enable him to discriminate from each other the hundreds of varieties of disease, to appreciate in each the modifications produced by age, sex, climate, occupation, temperament, previous condition, recuperative power, peculiarity of habit, idiosyncrasy of constitution, and local complications, to enable him to discriminate when administering medicine, the effects produced by

disease from the effects produced by the medicine itself; and also, the proper time for augmenting, diminishing, changing or suspending the remedial course, to enable him to operate, be always ready for contingencies, ever prepared for action. This mode of education is as irrational as it is unsuccessful. No wonder that Professor Spenser should have to complain that so few in the profession are able to make an accurate diagnosis. When the young practitioner is called to the bedside of a patient, with danger threatening, and necessity for prompt, decisive, but cautious action, the fine precepts, the beautiful descriptions, the nice distinctions which he has heard from the professors, take to themselves wings. He has not had opportunities for observation, nor been trained to observe, judge, and act for himself, and he is utterly confused. The sorrowful, the humiliating truth, that he has his most important study, that of nature, yet to commence, sinks deeply into his convictions.

There are two great but opposite evils prevalent in society. The mechanic learns the practical part of his calling without learning the scientific principles on which his practice is founded. The physician learns the science without learning the practice of his art. The one can make a piece of mechanism without being able to explain the theory of its construction. The other can explain principles and theories, but cannot reduce them to operation. The education of the one is useful, of the other learned; in both it is defective, but especially in the latter. The artizan may be said to have the fruit without the flowers; the young physician to have the flowers without the fruit: the former, indeed, are the most beautiful, but the latter the most substantial. It is by the union of theory and practice alone, that man becomes both able and accomplished; and, for lack of this union, the practitioner often finds himself in such a dilemma as the artizan would experience who, after hearing lectures on cabinet-making, should receive a certificate of his learning and ability, and be set to construct sofas before having handled a tool.

The present neglect of whatever is practical in education may be well illustrated by reference to the plan of a medical college not long since issued by the University of the city of New York. This was adopted after long deliberation, and consultation, by letters, with the most eminent practitioners throughout the union; it was intended to surpass that of every other school in the United States; therefore, if we have a right to look for perfection in anything, it is surely in this plan. But what do we find? That the professorships are divided into a graduate group, consisting of one for anatomy, one for physiology, one for theory and practice, one for surgery, one for obstetrics, one for chemistry, and for materia medica; and an extra-graduate group comprising a professorship for *clinical* medicine, one for *clinical* surgery, one for clinical midwifery, one for pathological anatomy, and one for operative surgery and surgical anatomy. On the graduate group of professors the student *must* attend; on the extra-graduate professors he *might* attend if he chose, or let it alone if he chose. That is: this plan provided that the student, before obtaining a diploma, *must* attend such professors as merely *describe* diseases and operations: he may absent himself from those who would take him to the operating table and show him how to operate; to the subject, and let him operate for himself; to *post mortem* examinations, and let him see the pathological conditions attendant on various diseases; to the

bedside, and let him observe from day to day the indications and treatment of disease. Is this the way to make able practitioners?

Having shown the defective nature of medical education, it will not be difficult to point out, in a general way, the means of reformation. Physicians must be more attentive to their students; lecturers more laborious and practical. The dissecting-room must be turned into a class-room; and, instead of receiving an occasional visit from the professor, must be the chief arena of his labours. Every subject should, in the first place, be used by the student for the performance of such operations as would not mar it for dissection, and this under the eye of the surgical professor. Hospitals should be turned into and connected with medical schools; and, besides having daily clinical instruction from able and experienced men, each student should be allowed to visit for himself, once a day at least, a certain number of cases, the history of which he should be required to write down in a note-book, which should be daily examined and commented on by the clinical professor.

I would suggest, too, the study of the living model, to use an artist's phrase.* Let an athletic man be trained to exhibit the muscles in all their combinations of action, and the student be taught to recognise them when in action, and to point out their situation when in repose. This would convey most important information as regards the reduction of dislocations and the course of nerves and vessels. Let him be taught to point out the direction of the various arteries from the external surface, and to compress all that are compressible. Such a course of training, faithfully pursued, would impart to the student that wise confidence which is the offspring of familiar knowledge and conscious ability.

But how shall such knowledge and practical skill on the part of the candidate be secured? Simply, by affording to the student adequate opportunities for their acquisition, and then by rendering the examinations practical as well as theoretical and descriptive. Let the candidate be taken to the living man, and directed to arrest the circulation in the various arteries,—to explain how he would reduce dislocations,—what muscles he would bring in, what throw out of action. Let him be taken to the subject, be directed to pass the catheter and probes, to trephine, tie arteries, and perform other operations. Let him be directed to dissect out and demonstrate any region of the body. Take him then to the wards of an hospital, direct him to examine patients, and to state or write his opinion of their diseases and the appropriate mode of treatment; place before him the ordinary medicines, and let him be directed to distinguish them from each other, state their principal applications and ordinary doses. Having shown his practical ability, then examine him on the principles of treatment, hygiene, physiology, obstetrics, materia medica, and medical jurisprudence. Such an examination rigidly enforced would deter the ignorant from applying, and he who could pass it with success would be so efficient in the treatment of disease, and so well prepared for emergencies, that he would stamp the impression of his superiority on the convictions of all around. The charlatan, whether professional or non-professional, would shrink from the sphere of his activity.

* Since writing the above I have been informed, by a distinguished gentleman from Edinburgh, that the living model is actually exhibited in an anatomical school of Edinburgh.

To the practical part of the above mode of examination it may be objected that the time occupied would exceed that required by the present system. This is true; but I answer, that the difference would bear no appreciable ratio to the great object to be accomplished. It may be urged, too, that it would be difficult to find, even in an hospital, a sufficient range of diseases for a full examination. I answer that, even if the best possible means of testing the ability of candidates are not possessed, it is no legitimate reason for neglecting such as are possessed. Besides, it is not meant that each candidate should examine all varieties of disease, or that he should dissect or demonstrate all parts of the body, perform on the subject all the operations, or even any considerable portion; but, as he would be ignorant of what diseases he would be called upon to examine, what parts to demonstrate, what operations to perform, he would necessarily have to prepare himself on all points, that he might be ready for any test that the examiners might apply.

But the question is now suggested. How shall we secure such efficient teaching as has been recommended?

At a period not long past, society, in the least tyrannic governments, was divided into lords and vassals, with an intermediate order, the priesthood. The aristocracy and oligarchy joined palm to palm, and though there were doubtless many good men among them, the system which they worked was a system of stupendous fraud, in which the one controlled the energies of the nine hundred and ninety-nine. Individual honesty and intelligence were trusted in nothing. Men had their political opinions and religious creeds prescribed by law, though, with the making of the law, they had nothing whatever to do. It was deemed sufficient for them to obey, to pay taxes and tithes, and to fight. Enterprise, too, was shackled; men had often to purchase the privilege of following even artizan employments, and of dealing in the most indispensable articles. For a man to express opinions on politics, religion, or even science, differing from the prescribed ones, was to subject himself to bonds, torture, the halter or the fagot; and to follow many employments without a purchased patent or special privilege, was to subject himself to fine and imprisonment. But men could not always be thus soul-bound: despite the threatened chains, torture and death, many choice spirits struggled with their oppressors, snapped one by one the bonds which bound their struggling energies, and finally burst forth disenthralled into the regions of truth and freedom. And what was the great truth which was all the while undergoing demonstration? Simply this; that the less the honest application of individual intelligence, talent, and enterprise is interfered with, the better.

One would suppose that a representative form of government would never have made invidious distinctions between its citizens. But the mischievous itching that legislators have for meddling with everything has been an overmatch for their wisdom; and thus, many like measures to those which once flowed from aristocratic domination, now flow from democratic kindness and meddlesomeness under the specious appellations, protection and fostering care. Thus, among other acts of like nature, they have built around certain medical institutions legislative ramparts, and granted to them the exclusive privilege of teaching medicine, thereby placing a tariff on mind, and screening the privileged professors from the wholesome influence of competition. And this is done under

the pretence of fostering enterprise, talent, and genius! Foster enterprise, talent, and genius? Let them alone; *they* need no fostering. Ignorance, indolence, and imbecility may need their fostering care, but enterprise, talent, and genius need neither wet-nurse nor dry-nurse, cradle nor leading strings; they are no puny hot-house bantlings, but children of the storm,—daring, vigorous, and weather hardened. They ask not protection, but a clear field, fair play, and no favours; grant them these, and they will soon demonstrate what inborn energy can achieve.

Free competition in medical teaching would, I believe, greatly improve the quality of such teaching; and, be it remarked, that this would in no way interfere with legislatures offering to medical students such advantages as would assist them in their pursuits. Such conduct would, indeed, be generous and wise; but to secure the usefulness of whatever institutions they may endow, official stations in them should never be given as reward of political partizanship; but be awarded to superior talent, integrity, and energy; and in no case should legislatures exclude competitors from the field by placing a higher legal value on knowledge obtained at their institutions than on equal knowledge obtained in any other way. If the advantages offered by the public institutions are sufficiently obvious, students will, of course, resort to them; but to *make them* purchase their knowledge at a certain place, under pretence of doing them a favour, is unjust and opppressive. Legislatures have the right to insist that a man shall have obtained certain knowledge and ability before he is allowed a diploma; but they certainly have no right to insist that he shall have obtained his knowledge and ability at a certain place and in a certain way. As the law now stands, however, the student may have attended a dozen courses of lectures and a dozen years' private instruction of men, zealous, learned, and experienced; he may have given his nights to study and his days to observation. No matter, if he has not purchased his tickets at the chartered institution his knowledge and ability are of no avail. Suppose a strong-minded, industrious, and unconquerable son of poverty could present himself to a legislature and medical board to be examined for the degree of *medicinæ doctor*, and that he should be told to withdraw from their presence because he had not attended some chartered institution. But he remonstrates; he tells of his long and assiduous labours, of the avidity with which he seized such advantages as he possessed; "and now," he might exclaim, "shall I not be allowed to practice the profession of my hopes and affections with an honoured name? I respectfully ask you to examine me, to test me in any, in every way. I acknowledge your right to insist upon my having the necessary qualifications, but if I have them, will you, can you reject me? Shall my skill be counted worthless, and my knowledge ignorance, because I obtained them under the weight of difficulties and privations?" What satisfactory negative could be given to such an appeal I cannot even imagine.

I now come to a most important question. How shall such an examination as I have sketched be secured?

In conferring diplomas, feelings of interest, commisseration, and kindness, should have no weight. It is a painful thing to send a young man back to his studies who presents himself for a diploma. The kind and generous feelings rise up and plead in his behalf, and these are more imperative in proportion as the associations have been longer or more close. It is often the case that the

preceptor is a professor, and it would seem like condemning him to reject his pupil. Beside, when a student has paid so much money for office and lecture fees, it really seems hard to refuse the diploma. But the vision should be carried farther, from the one to the many, from the candidate to the community, and it should be recollected that what to him may be kindness, may to his patients be protracted suffering or death. I would save professors from the influence of either kind or interested feelings, by taking from them the right of conferring diplomas. I would do this for another reason. It does not seem appropriate that they should be the sole judges of the quality of their own teaching. The profession and the community should have some better security. I would therefore intrust the conferring of diplomas to a board appointed for that purpose. And how should that board be organized? The present system of county examinations is evidently inadequate, as it is well known that some of the examiners themselves would be unable to pass muster at even a lenient college examination. For examiners, men of great acquirements and abilities, and perfectly disinterested, are required. The former might be secured by making the office of examiner the most honourable in the profession; the latter, by attaching to the office a fixed and liberal salary, no part of which should depend on the graduation fees, and by prescribing that the examiners should not be connected with the business of education in any other way than as examiners, during the time of their appointment. I would have the mere license law abolished. A candidate can either pass the examination which has been described or he cannot; if he can, no just reason for refusing him the diploma can be assigned; if he cannot, there is no good reason for signifying, in any way, that he is worthy of confidence.

It would, indeed, be a glorious consummation, if the medical examinations could be rendered uniform throughout the United States, and all the profession united in one body. This would not be difficult. Present arrangements would need but little extension. Each state medical society might send delegates to meet those from other states at some central part of the country. The body thus convened might be called the Medical University of the United States, and might decide at each meeting the few questions relating to the general interests of the profession, as those relating to the pharmacopœia and to the dispensatory. After this, the delegates might form themselves into boards of examination, consisting of six members each, which, if there were two members from each state, would give three states to each board. These should proceed to various parts of the union, for the purpose of examining candidates and conferring diplomas. The examinations might be held once a year, at two places in each, and always in an hospital. A candidate from any of these three states might attend any of the six examinations which would thus take place, and, if successful, should receive the diploma of medicinæ doctor, in the name of the Medical University of the United States. I think such uniformity and strictness of examination, and such general union of the professional objects worthy of strenuous advocacy and early adoption. But if such general union of the profession be found impracticable, each state might appoint its own examiners and confer its own diplomas.

And what, it may be asked, should be the prerequisite certificates to examination? I answer, after much deliberation, none, absolutely none. If the candidate have the requisite knowledge and ability, he can show it on examination;

and if his knowledge and ability be evident on examination, no other evidence is needed. I would say emphatically, *take care of the doors, and the avenues will take care of themselves.* Nothing should be done to distract attention from this great point. Preliminary lectures and instructions, to a much greater extent than at present, would, in general, be necessary to the candidate, but still the examination itself should be the great, the only test of his learning and ability. And as to fixing an exact time which shall be occupied in preparatory studies, it is, as I have before observed, to destroy the natural distinctions between lassitude and energy, indolence and industry, imbecility, talent, and genius. Precedent, in all the might of authority and venerableness of age, may, indeed, be urged in favour of this iron rule; but though age and custom impart sanctity to whatever is wise and just, they cannot sanctify injustice, nor give to falsehoods the characteristics of truth. Therefore, while I would show to precedent all due deference, I must be allowed, to inquire whether the precedent itself be just and wise ; for it must be allowed by the most profound venerator of ancient usages, that no odious custom was ever abolished, no erroneous practice ever corrected, no abuse ever reformed, but in opposition to precedent; and that no silly or wicked act is now perpetrated, no erroneous practice introduced nor duty neglected, which forms not a precedent for the acts, practices or omissions of like nature which shall succeed. Seeing, then, that this unbending rule of time is sanctioned neither by justice nor nature, I would let candidates be examined whenever they and their instructors deem best. And though a few might present themselves in less than three years from the commencement of their studies, many would have to study and prepare, four, five, or even six years ; and others, such as some of those who now obtain ready admission into the professional ranks, would be forever excluded. But then they would be just such as should be excluded. He who aspires to that for which his talents and industry do not adapt him, should modestly retire to his true place in the social system.*

It may be thought that candidates would be too ready to offer themselves ; but against the frequent occurrence of such a difficulty, there is a sufficient guarantee in the well known elements of human character. Men dread degradation and self abasement, and would avoid them by not offering themselves for examination unprepared.

The plan, then, which I recommend for the reformation of medical education, and the elevation of medical character, may be comprised in a few propositions.

1. Insist on no qualification, as a pre-requisite to a medical diploma, which is not necessary to the practitioner of medicine, and insist on every qualification which is necessary.

2. Regulate the whole course of medical education in accordance with what

* At the close of the last session of Geneva College, a young gentleman of fine talents, a student of one of the professors, having commenced his medical studies eighteen months previously, applied for an examination, on the strength of which he should receive the diploma at the expiration of his three years of studentship. His request was granted, and one of the professors remarked to me that his replies were most satisfactory, far more so, indeed, than those of one half the candidates who received diplomas. But, as this student acknowledged to me, had the tests been practical, he would not have dared to present himself for examination, feeling, as he did, unprepared on all practical points.

should be its objects, namely: to so instruct and train a set of men as to impart to them practical skill to fulfil the duties of physicians and surgeons.

3. To secure such qualification, confer the diploma on no man who does not show, on a rigid examination, that he possesses the necessary ability as well as the necessary learning.

4. To secure zealous and masterly teaching, take from medical colleges the exclusive right of medical instruction, and subject them to the rivalry of individual talent and enterprise.

5. To secure the door of the profession from being opened by kindness, favouritism, or interest, take from medical teachers the power of conferring diplomas, and vest it in a board of examiners appointed for that purpose.

6. To secure examiners of the first ability, let them be appointed by the profession at large, through their representatives, at the state medical societies, and let their office be considered as the most honourable in the profession. To secure disinterestedness in the examiners, allow them to have no connection with the business of education during their term of office, and let no part of their remuneration depend on the number of candidates which they may pass.

7. To secure union among medical men, and uniformity in medical examinations, let the members of the profession throughout the country unite in one body, to be called the Medical University or College of the United States, by sending delegates from each state to a yearly medical congress, the members of which shall first regulate everything relating to the general welfare of the profession, and then form themselves into boards of examination, and proceed to all the states of the Union for the purpose of examining candidates, and conferring diplomas.

Such is the outline of a plan which would, I humbly believe, be found not only perfectly practicable, but perfectly just, and in the highest degree efficacious for the attainment of the desired ends.

ANDREW BOARDMAN.

AN ESSAY

ON THE

MEANS OF IMPROVING MEDICAL EDUCATION

AND

ELEVATING MEDICAL CHARACTER.

BY ANDREW BOARDMAN, M.D.

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