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OBSERVATIONS

ON

MEDICAL EDUCATION

BY

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EDINBURGH

ADAM AND CHARLES BLACK

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PREFACE.

HAVING personally studied the various systems of medical education, not only in this country, but in France, Germany, and Italy, I was led, in the various classes I have taught during the last twenty-six years, to ingraft the practical upon the systematic mode of instruction. It will not, therefore, I trust, be considered either intrusive or unnecessary, if, at this juncture, the following remarks on Medical Education are reprinted with a view to direct the attention of those interested in this subject, and more especially the Members of the Medical Council—

1*st*, To the advantage of urging upon medical students the utility of commencing their education in summer rather than in winter, whereby Botany and Natural History may be made preliminary studies.

2*d*, To the necessity of teaching all the departments of medicine practically as well as systematically.

3*d*, To the propriety of insisting upon every teacher of medicine being specially qualified for the task he undertakes; and

4*th*, To the importance of seeing that examiners also should not only be specially qualified, but that their examinations be written and oral, theoretical and PRACTICAL.

J. HUGHES BENNETT.

EDINBURGH, *May* 1867.

ON MEDICAL EDUCATION.

THE profession is now impatiently waiting for an authoritative deliverance from the Medical Council as to what the professional curriculum shall be. Such, however, are the inherent difficulties of the subject, so various are the opinions which even the most experienced hold regarding it, and so conflicting are the interests involved in the question, that we need not feel surprised that nothing has as yet been effected. Instead of a uniform and national medical education for the country at large, the student is still called upon to consider which out of the multifarious systems put before him he ought to follow, or how he shall so steer his course that, while qualifying himself for examination at one board, he does not disqualify himself for examination at another. As far as the right to practise is concerned, we may congratulate ourselves that all restriction has been removed, and that the diploma of any licensing board, by qualifying the holder to place his name on the general register, enables him to exercise his profession freely in all its branches. The medical man, therefore, may now act as he pleases, and practise where he chooses in any part of the kingdom. But the medical *student* is still hampered by contradictory regulations. Some boards require attendance on subjects thought unnecessary by others. Some attach importance to a study of which others think lightly.

The possession of the highest diploma in one college is no reason for obtaining similar rank in another; so that the student, like the traveller under the old feudal system, finds it impossible to go far without meeting tolls, barriers, and obstructions, causing expense, obstacle, and interdict.

Not only, however, does the regulation of the curriculum imperatively demand a speedy settlement from the Medical Council, but many things connected with the system of teaching and of examination require a thorough revision. It will be my object to show this by directing attention to—1*st*, What a curriculum of medical study ought now to be; 2*d*, By whom medicine should be taught; and 3*d*, The nature of the examinations to which a medical student should be subjected.

1. What a Curriculum of Study ought now to be.

It is admitted that in recent times the science and the art of medicine have undergone extraordinary development; that the advance in the former has led to great improvement in the latter; and that an impulse has been given to both which has carried them far beyond the comprehension of those who have not kept pace with their progress. This state of things, upon which all true lovers of the profession congratulate themselves, and for which we owe an endless debt of gratitude to those by whose genius, researches, and labours it has been effected, is differently regarded by medical men. By some it is thought that it burdens the students' memories with useless details; that it is impossible for any one mind to master the difficult and multifarious subjects presented to it; that the medical curriculum ought to be curtailed; and that, with the exception of two or three fundamental topics, all the rest should be left to private study and individual inclination. By others it is maintained that the utmost development should be given to those modes of research which have lately tended so much to advance our knowledge; that to this end instruction should be made more practical than hitherto; and that a sound medical

education should embrace all that will enable us to advance the science and improve the art. I do not hesitate to declare that I myself am entirely in favour of the latter view of the subject, and believe that those who adopt the former one do so under a complete misconception of, and unacquaintance with, those details and multifarious procedures which they consider so burdensome. Is it true, for example, that modern education has rendered the study of medicine more difficult, whilst causing it to become more exact? I do not think so: indeed, I know the contrary.* But if, while we force upon the student a system of education

* On this point I quite agree with some able observations made by Mr. Callender, *On the Present System of Medical Education in England*, pp. 10 and 11. —He says, "If we now teach a more precise account of certain structures than in times past, it is not in the quantity to be learnt that the supposed embarassment of students can be held to lie. Bichat, for example, wrote at great length of cellular and other systems, and published over seventy pages on the absorbents. Boyer occupies forty pages in descanting *des voies urinaires*. Blumenbach treats in detail of respiration, of animal heat, and of the functions of the skin and of other parts of the body, and Sprengel of the same, even at greater length. A physiological course is at present brief when contrasted with one of times gone by—when, for instance, the mere syllabus alone of Vicq d'Azyr's *Plan d'un Cours d'Anatomie et de Physiologie* filled one hundred and twenty-four closely-printed pages. Students formerly had all this to learn—those, that is to say, who pretended to learn anything of the science and art of their profession; and to master too in most instances without the advantage of explanatory oral discourses. Indeed, so long ago as 1754, Haller's *Handbook of Physiology*, originally prepared for the use of the University of Göttingen, was translated into English, forming two goodly volumes of nearly one thousand pages, so great even then was the quantity of physiology required by the students of medicine. Here is a sample of what in those days had to be learnt, respecting for instance the liver structure: 'The interior fabric of the liver being more minute, is proportionally more obscure. The ultimate small branches of the portal vein, cava, and hepatic artery, are united by cellular substance into a sort of mulberry-like bunches, of an hexagonal shape, in the smaller parts of which there are mutual anastomoses betwixt the portal branches and hepatic artery, with the roots of the vena cava on one side, and of the pori biliarii on the other side; which last demonstrate their inosculations by anatomical injections.' Here follow several pages on the minute structure, and on the functions of the organ, and then I come upon the following passage:—'The fabric of the ductus hepaticus is made up by a strong nervous membrane, like that of the intestines, over which is spread an external and internal cellular membrane, and is internally lined with a loose villous tunic, elegantly reticulated, but asperated with many small spores and sinuses, and continued with that of the intestine itself.' These old descriptions are quite as difficult to remember as those now given of the same parts in any Handbook of General Anatomy and Physiology. But now these and a mass of other matters are displaced by modern progress. In most instances, modern discoveries, especially the

and examination that only appeals to his memory, we neglect the means that are essential for putting him practically upon a level with the actual condition of our knowledge, then it is true we burden his mind to no purpose, and impose upon him a task alike injurious and intolerable.

Practical should be combined with Systematic Teaching.—So far from the modern method of cultivating medicine being difficult, it everywhere renders the study not only more exact, but more easy. In former days a laborious system of inquiry into symptoms was necessary to determine whether an individual had disease of the lungs, and even then the result was mere conjecture. At present, percussion and auscultation of the chest are often sufficient to inform the physician as to the nature of the case, and so far is the conclusion from being doubtful, that the greatest certitude is thus frequently attained. If dropsy occur in an individual, and, on boiling or testing the urine in a glass tube, we find albumen in it, we recognise that the cause of that dropsy is disease of the kidney. If there be an eruption on the skin, and, by examining microscopically a little of the scab, we recognise that it contains the thalli and sporules of a fungus, it is placed among the parasitic diseases of the organ, and treated accordingly. Here, then, are examples of how auscultation, chemical tests, and the use of the microscope, are directly serviceable in enabling us to arrive with certainty and with the greatest rapidity at a knowledge of disease. Can it correctly be said, in either of these cases, that such are useless details, and that the student should not be made acquainted with them? But it may be argued that, in order to arrive at these results, the student must learn auscultation, organic chemistry, and the use of the microscope, and that, according to the curriculum enjoined, there is no provision for teaching him these things.

facts brought to light by microscopic research, have simplified and made easy many a subject, which, when taught as in times past, was often as unintelligible as it was incorrect. And as with anatomy, so with medicine, so with surgery."

Now this is quite correct. According to the present system of education, the student is called upon to attend certain courses of lectures, and follow a certain amount of hospital practice. Whether he knows anything in reality is not required of him, so much as that at his examination he should be able to answer certain questions. Hence the necessity of poring over books—hence the multiplication of all sorts of manuals, in which the necessary information is condensed into the smallest compass—hence the cry against lectures, and the greater amount of time demanded for private reading. The truth is, that whilst every branch of medical study is becoming more practical, and demanding a more intimate acquaintance with things, we still adhere to a system of teaching and of examination that is too much directed to the memory alone. It thus happens that a student who has a thorough knowledge of anatomy or of practical medicine, and who would exhibit real knowledge if examined with the subject before him, or at the bedside of the patient, is often puzzled by questions which his mere memory does not enable him to answer. And it still more frequently occurs, that men who could not cut down in the human body on any one nerve or artery, and who do not know a strong pulse from a weak one, or a moist from a dry rattle in the lung, pass brilliant examinations in consequence of the study of books and of good memories.

As a convincing proof of this state of things, I would quote what was said by Dr. Parkes at the meeting of the Medical Council for 1863. It was argued by some that it was unnecessary for young surgeons or physicians, who had already been examined and held diplomas, that they should be again examined by other medical boards before receiving army and navy appointments. In reply, Dr. Parkes stated that "the medical corporations were admitting men who could not practise with safety; and as long as this was the case, so long must the army medical department examine for itself. One powerful reason for this was, that in civil practice there was a constant check

on incomplete qualification. A practitioner must prove himself worthy of confidence, or break down from incompetency, and every member of the public could choose his own medical attendant; while in the army there was no choice; the soldier *must* go to a particular medical officer." As the result of Dr. Parkes's experience in examining men holding diplomas, he further says:—"Was it possible to admit men who did not know the radius from the ulna, or the os calcis from the astragalus; or who described the œsophagus as lying in front of the arch of the aorta; or who said that the aorta sometimes arose from the right ventricle? Again, in surgery, could we be satisfied with a candidate who, when asked how he would treat a case of wounded artery, replied that he would amputate the limb above the seat of injury; or one who, when required to describe the treatment of acute inflammation of the knee-joint, answered that he would make a free incision? In medicine, also, it would not be possible to allow a man to pass who, with a well-marked case of aneurism of the thoracic aorta before him, and with the name of the disease written on a card over the patient's head, could not describe the symptoms of the disease; nor one who, having been educated both in England and in Scotland, had never heard that 'scabies' meant itch. One candidate, possessing licenses from English boards, when asked to classify the articles of diet, had answered to the following effect: 'Foods are divided into nitrogenous, comprehending vegetables; and non-nitrogenous, comprehending all meats, including the carnivora. The non-nitrogenous articles of food are further divided into—1, albuminous (example, hen's eggs); 2, fibrinous (example, flesh of the ox and pig); 3, caseous (example, cheese); and 4, gaseous (example, soda-water).' These answers, if I understand rightly, were given by men who had already obtained their diplomas from one or other of the corporations."

In regard to examinations, he adds they cannot be satisfactory where men obtained licenses "who could not make a chemical examination of water, or who did not know the skeleton, or who

could not put up a fractured limb, or pass a catheter. Dr. Sharpey also stated that "one of the candidates, on being asked to tie the iliac artery, cut through everything—skin, muscle, and peritoneum; and in stitching up the wound, left portions of omentum protruding through it."

Now, there can be no doubt that much of this practical ignorance depends upon an absence of practical instruction. The student should be encouraged, not only to obtain his knowledge from lectures and from books, but he himself should be made to observe and learn from the direct use of his senses. It follows that every subject of real importance to be known should be learned, not only systematically from lectures and by reading, but also practically by the personal investigation of the student.

Lectures.—It has been said that lectures occasion loss of time to the student, and that better information can be obtained from private reading and reflection. But this cannot with correctness be said of such lectures as are good and well delivered. An able condensation of our existing knowledge, drawn up by one thoroughly acquainted with the subject, delivered orally, with proper emphasis and gesture, and illustrated by well-executed drawings and experiments, must be regarded as amongst the best means of instruction. But if the lecturer knows little of his subject, reads a monotonous compilation incapable of fixing the attention of his class, or has not sufficient means for illustration and experiment, then the lecture can produce little effect. What is required then, is, not the suppression of lectures, but that such as are necessary should be well delivered and sufficiently illustrated. In short, pains should be taken to obtain good instructors; and this point, which has escaped all writers on the subject, is one which primarily demands the attention of the Medical Council.

The great fault of many systematic lectures at present is that they are not sufficiently elementary. Many learned, scien-

tific, and accomplished men get tired of describing, year after year, the first principles or primary facts of their science or art. They forget that their hearers are only beginners; and, instead of adapting their teaching to the comprehension of the learner, they are too fond of assuming that their hearers know more than they really do, and of addressing themselves to the advanced student. A young lad of seventeen or eighteen, who has just left school, where he has been working hard to pass his preliminary examination, is suddenly introduced into the botanical, anatomical, or chemical class-room. He hears terms absolutely strange to his ears used with the greatest familiarity, and is rapidly led to study theories on subjects concerning the elementary facts of which he is profoundly ignorant. What can be more absurd than lecturing to the first year's students of anatomy on the theories of growth by molecules, nuclei, and cells, or to those of chemistry on the relations between digestion and muscular power? Such students, not having studied physiology, are necessarily ignorant of the functions of growth, digestion, and muscular contraction, and cannot be supposed capable of comprehending the theoretical views so elaborately placed before them.

For nothing was I myself more grateful during my own studentship than that considerate and profound knowledge characteristic of all great teachers, which induces them to dwell longest and to be most explicit on those simple and elementary facts which necessarily constitute the basis of every art and science.

Another quality should be considered essential in every good systematic course—viz. that it should include a sketch of the entire subject. I know of nothing so injurious in teaching as that dwelling too minutely on numerous details, that overlengthy description of topics, that too-copious illustration, that unnecessary division and subdivision, which preclude the possibility of completing the course. Some lecturers talk of the great extent of their particular subject, and purposely make it extend

over two or more years. This is most unjust to the student; for there is no branch of medical education concerning which exactly the same thing cannot be said, and if all were to act in this manner, from no one teacher could the student obtain a comprehensive idea of any department. It should, in my opinion, be the aim of the instructor so to condense and balance the various topics he treats of as to give his pupils an idea and general knowledge of the whole, and not to set forth an exhaustive criticism and description of all that has been accomplished or may be imagined. Where further study and more reflection on particular points are required, the student should be referred to monographs or special treatises, where he may obtain the necessary information.

The Subjects to be Taught.—When we come to consider what the subjects enjoined on the student ought to be, four great fundamental topics appear to be necessary, which, so far from being curtailed, ought to be most rigidly insisted on. They are Chemistry, Descriptive Anatomy, General Anatomy and Physiology, and Morbid Anatomy and Pathology. Each of these topics should be taught first systematically in such a comprehensive course as I have referred to, and then practically. Chemistry in the laboratory, descriptive anatomy in the dissecting-room, general anatomy and physiology in a physiological laboratory, and morbid anatomy and pathology in the dead-room of a large hospital. Each of these great subjects should be directed by a professor, having under him one or more skilled assistants, with apartments, museums, apparatus, instruments, and everything necessary for enabling him not only to teach the subject as it exists, but to afford his advanced pupils the means of private research and experiment.

With regard to the necessity of these four fundamental subjects I need say little. That anatomy and chemistry should be taught both systematically and practically is universally admitted; but general anatomy and physiology equally demand a

practical cultivation. For this purpose a microscope should be put into the hands of every student, who should be taught personally how to use and demonstrate with it. A chemical analysis of the organic tissues and fluids should be also enjoined on each, and an acquaintance with those inquiries connected with the digestive, circulatory, respiratory, nervous, muscular, and other functions of the economy, such as actual experiment can alone communicate. In 1862 it was stated by Dr. Sharpey, in his address on Physiology to the British Association, "that the great advancement on this subject is mainly owing to the establishment of schools of practical physiology in various parts of Europe. Opportunities for the practical pursuit of anatomy have long been deemed an indispensable requisite for that study. Chemical laboratories, where young men are trained to chemical research, have powerfully contributed to promote the science of chemistry. To these are now added, in various schools on the Continent, and especially in Germany and Holland, physiological laboratories, in which opportunities are offered for the practical study of structural anatomy, physiological chemistry, and experimental physiology. In these establishments encouragement is given, and facilities are offered, for original research; and all the requisite arrangements, with the best instrumental appliances, are provided for that purpose. Accordingly, many valuable physiological memoirs have emanated from the practical schools of Berlin, Dorpat, Würzburg, Utrecht, and elsewhere; and accomplished young professors and assistants have been supplied to the various German universities, there to carry on their independent researches."

But morbid anatomy and pathology are by far too much neglected in many of our medical schools. The recent advances in medicine have shown us the necessity of endeavouring by every means in our power to discover in the living body morbid states, and especially the actual morbid condition of various organs. The old system of nosologies and attention to functional symptoms are in themselves wholly incapable of deter-

mining, in many cases, the lesions which constitute disease ; but when a knowledge of these is conjoined with that of physical signs and of morbid anatomy, we are then frequently capable of speaking with a precision which would have astonished our forefathers. This especially holds in cases of diseased lungs, heart, and kidneys. What exactitude, for example, has not been thrown over the whole class of cardiac diseases by the conjunction of physical signs and of morbid anatomy! But it too frequently happens that this latter subject is put off for consideration till the last year of a student's study, whereas it should obviously precede it. Clinically, our object is to discover the morbid state ; but if we have no idea of that morbid state, how can we expect to find it? Hence in every medical school there should be a teacher of morbid anatomy and special pathology, in possession of all those facilities for teaching his subjects which a large hospital only can give.

I say nothing of botany and natural history, because I think they should be made altogether preliminary to professional education. I have had frequent opportunities of seeing how the dread of a botanical examination has so influenced the mind of the student during the two first years of his studies, as—in order to prepare for it—to have induced great neglect of anatomy and physiology. Every facility, therefore, should be given to him for passing an early examination in botany and natural history. Insisting that this should be done at the end of the second winter session, is, in my opinion, a mistake. A great improvement would be effected by the medical student commencing his studies everywhere in summer and attending these classes. In such a case he is allowed in Edinburgh to present himself for his first examination at the conclusion of his first winter, but second medical session. This plan, which has received every support from my colleague, the Professor of Botany, has been found most advantageous to the student.

The other topics which require to be learned are materia

medica and pharmacy, medical jurisprudence, and the three great subjects of midwifery, surgery, and medicine. Each of these subjects should also be taught systematically and practically. The Professor of Materia Medica should superintend the students in their attempts to prepare medicines and put up prescriptions, and have the control of a pharmaceutical laboratory with a skilled assistant for that purpose. The Professor of Medical Jurisprudence should be the adviser of the police and of the law, as indeed is the case in many continental cities; so that not only may his students in the laboratory be enabled to exercise themselves in the art of detecting poisons, but be made familiar with criminal procedures, draw up reports, investigate medico-legal cases, etc.

The three great branches of surgery, medicine, and midwifery, I need scarcely say, have long been taught practically or clinically, as well as systematically. There can be little doubt that what is now required is to give greater extension to the former mode of instruction. And here I would observe that true clinical instruction does not consist in giving lectures in a class-room, however able they may be; but in seeing that the students really learn and exercise themselves at the bed-side in all that is necessary for rendering themselves efficient practitioners. I have known very intelligent young men who have followed courses of so-called clinical surgery, and even obtained prizes in that department, who, at the termination of their studies, did not know how to apply a bandage, set a fractured limb, or perform the simplest operation. In the same way, so-called clinical medical students have never examined a case, formed a diagnosis, written a prescription, or known the difference between a dry or moist sound in the lung. It has been alleged, indeed, that making patients serviceable for the teaching of students in an hospital is opposed to humanity. But this and similar objections are urged by persons who do not teach clinically as now explained, and who are apparently unacquainted with the fact that, not only have I practised this

plan in the Royal Infirmary of Edinburgh for the last twenty years without inconvenience of any kind, but that at this moment clinical teaching is carried out in the distinguished schools of France, Germany, and Italy in the same manner.

It will be seen, therefore, that I consider every subject should be taught *practically* as well as systematically; that greater extension should be given to the first kind of instruction, whilst a repetition of systematic courses would then be unnecessary. Several of these even—more especially materia medica and midwifery—might in all schools be curtailed to three months. I am happy to say that in the University of Edinburgh practical may now be combined with systematic teaching in all the essential departments of medical education except morbid anatomy and pharmacy. If the Chair of General Pathology were converted into one of Morbid Anatomy and Special Pathology, and connected more intimately with the pathological department of the Royal Infirmary, I am not aware that a better distribution of subjects necessary for teaching the art and science of medicine could be made.

The Subjects to be taught under each Department should be defined.—One thing, however, is still needed to save the student from much repetition and loss of time. A central authority, such as the Medical Council, ought to define or cause to be understood from time to time what in the existing state of our knowledge should be comprehended under each department. In many schools the same subject is taught under various names, whilst in others the name does not prevent the teacher from lecturing upon any subject he pleases, however foreign it may be to his proper course. It has been contended by some that every instructor should be left to himself; that his genius should be unconfined, and that it would be impracticable and unadvisable to attempt drawing lines of demarcation where no natural boundaries really exist. This reasoning may seem very convenient for the teacher, but is, I apprehend, injurious to the student.

The object of a medical school is to impart such a knowledge of the science and art of medicine that after a sufficient time the student may be qualified to practise his profession, not only without danger to, but for the benefit of, the community. As the whole subject is too extensive to be taught by one person, it is divided amongst several, each taking separate departments. But if it should happen, from a want of understanding amongst themselves, from a feeling of rivalry with one another, or from a desire to attract students, that any one not only entrenches upon, but assumes the proper functions of another, it is clear some superior authority should interfere for the student's sake to prevent disorder. In old institutions where there are large endowments, the necessary duty may not be performed, or it may be handed over to an assistant. Or, with a view of increasing fees, unnecessary classes may be instituted, and what ought to be communicated in the essential course is, in truth, taught in a subordinate one. Or again, the elementary knowledge so necessary for the student may become so wearisome to the teacher, that he omits or hurries over it, or gets an assistant to teach it, while he enlarges on favourite speculative subjects, which his hearers are not prepared to understand. Such a mode of procedure is, as we have seen, most injurious to students, and is also unjust to his colleagues; for not only do the former not obtain what they require, but the novelty and freshness of some other essential course is taken away from them, when in proper time they have to attend it. Again, there are some teachers who maintain, because they have been appointed to teach—say anatomy or chemistry—that everything anatomical or chemical belongs to them and to no one else. For example, anatomy, strictly speaking, comprehends a knowledge of the form, relative position, and connections of the various parts of organised beings, as determined by dissection. In a wider sense, it has been used to exhibit the structure of tissues and the analogies existing between different parts of animals; hence the terms general and comparative anatomy. Other terms have been introduced in refer-

ence to particular subjects of study; such as regional or topographical, medical, surgical, obstetrical, physiological, and pathological anatomy. There is also an anatomy of plants. So with chemistry, it may be mineral or organic, vegetable or animal, technological as applied to arts and manufactures, physiological or pathological. Now one teacher cannot communicate all the aspects of either anatomy or chemistry, and a desire to do so, or its being dependent upon caprice or individual inclination, can only give rise to confusion in medical study. I trust, therefore, that amongst the matters to be regulated by the Medical Council will be a clear statement of what each particular professor should embrace in his course.

The necessity of this is rendered more evident when it is considered how frequently students study in different schools, and the questions which constantly arise as to what class in this place shall be received as equivalent to another in that. For several years the University of Edinburgh received the class of General Anatomy and Physiology in the London schools as equivalent to the course of the Institutes of Medicine in the Scotch schools; but the former refused to regard the Institutes as equivalent to that of General Anatomy and Physiology. Even at present constant confusion arises from the different names given to similar kinds of instruction, or to classes which have been unnecessarily instituted and forced into the curriculum. Thus anatomical demonstrations in London mean the assistance given to the student in the dissecting-room; while in Edinburgh they have been made to mean an extra complete course of anatomy given in the theatre daily, during the winter and summer sessions, by the demonstrator.

The topics now considered necessary in the most advanced schools, including botany and natural history, consist of eleven subjects, which might readily be followed by the student during four winter and four summer sessions without the slightest fatigue. In fact, I have ascertained that the attendance on all these branches, systematic and practical, need never occupy him

more than three or four hours daily; so that the whole science and art of medicine would easily be taught in four years, giving ample time and opportunity to every student for perfecting himself in each branch before assuming the serious responsibilities of medical practice. (See Appendix.)

II. By whom Medicine should be taught.

The framing curricula and regulations as to the teaching of medicine will be of little advantage unless means be taken to ensure that those who instruct are qualified for the duties they undertake. Much of the complaint that is made against this or that mode of teaching will be found on inquiry to originate, not so much in the form, as in the manner of teaching. I have previously stated that to ensure, as far as possible, proper instructors, is one of those tasks to which the Medical Council should give its best attention. No one, it seems to me, ought to become a lecturer in medicine unless he can show that, by previous studies both at home and abroad, he possesses — first, an extensive knowledge of his subject; and, secondly, the power and means of communicating what he knows to others. In France and Germany this is sufficiently secured, but in this country lectureships in medicine are distributed in schools irrespective of any knowledge or aptitude for teaching special subjects. Appointments in our public hospitals are dependent upon the private interest of candidates among the governors or managers, and seldom conferred on account of special qualification for practice or teaching. Well may students complain of lectures delivered by persons who know little more than themselves, and who hurriedly compile the previous night, from the various manuals, the discourses they deliver the following morning. The late Professor E. Forbes informed me that, on one occasion seeing a student very busy taking notes of his lectures, he spoke to him on the subject, and was frankly informed that, having been appointed a lecturer on botany, of which he knew nothing, in one of the London schools, this gentleman thought his best

plan would be to deliver in the afternoon to his pupils the lecture he heard Professor Forbes give in the morning. The influence of such a system on the education of students must be obvious.

The only method of avoiding the evils here referred to, is to subject all commencing lecturers on medicine to an examination capable of testing their qualities. For this purpose he should be examined in the science or art he professes to teach by five persons, all of whom are recognised as being eminent teachers or persons thoroughly conversant with the special subject. His means of illustration—such as the possession of, or access to, a museum containing the necessary preparations, the amount of diagrams, instruments, or apparatus required—should be investigated ; and lastly, he should be requested to give a lecture in public, as he would do it before a class, and his oratorical powers thus directly determined. There should also be some method of depriving him of his license to teach, if his course be not well conducted, or if, instead of lecturing on the subject prescribed to him, that is neglected, while some other is substituted in its place.

There can be little doubt that it is the absence of such regulations that has caused so much dissatisfaction among students, as it obliges them to attend lecturers in no way distinguished in their various departments. The facility also with which individuals are allowed to teach, creates feelings of rivalry and a spirit of opposition, which, so far from being beneficial to education, is too often the reverse. What we require is a legislation which, instead of maintaining a system of rival institutions and opposing schools, perpetuating disunion and retarding the cause of scientific progress amongst us, will draw these discordant elements together, for the purpose of co-operation and mutual support. Nor is this impracticable, as such a constitution exists in most continental nations, and has been found to work admirably. To this end the various universities and corporations, instead of independent and contradictory action, should be

empowered to carry out one system of education and privilege in the three divisions of the kingdom, subordinate to a uniform direction. Instead of numerous schools acting as rivals to and injuring one another, a machinery ought to be devised by which the talent now diffused and wasted should be concentrated under a wise administration, so as to strengthen instead of to weaken our great educational establishments. In this manner the strongest stimulus would be given to successful exertion, while ability and scientific merit might hope to meet something like adequate reward.

III. The Nature of the Examinations to which a Student should be subjected.

With examinations, as with teaching, the first point is to secure that the examiners thoroughly know the subjects upon which they examine, and are capable of eliciting from the student the amount of his knowledge. On looking over the list of our examining boards, it will too often be seen that the gentlemen who compose them have never taught or especially studied the matters on which they examine. How can it be expected that medical practitioners engaged in the daily business of their profession, and conscientiously striving to cure and alleviate disease from morning to night among their patients, can keep themselves acquainted with the advanced scientific departments of medicine? Even in practical details they are often in arrear of the clinical schools. These, like the inexperienced lecturers, have recourse the night previous to an examination of the various manuals of the day, which if the student do not happen to be familiar with he runs great risk of rejection. The only sound rule to be followed on this subject is that the only parties capable of examining are experienced teachers, who, in consequence of annually reviewing their special subjects, must be cognisant of details. It is easy for boards or for the Medical Council to regulate on paper what may appear to be an effective examination; but unless they secure good examiners, who will conscientiously perform their duty, all such regulations must be vain.

It is supposed by some that every member of the profession is qualified to examine on any branch of medicine whatever. I know at least one corporation which has pertinaciously adhered to this doctrine for many years. Those who are acquainted with the actual condition of the various branches of medical knowledge, as now taught in the schools, will readily see how the carrying out of such a view accounts for the numbers introduced into the profession, who, as Dr. Parkes pointed out, cannot practise with safety.

For the same reasons that teaching should be practical, so should examinations. Thus the candidate should be made to show his knowledge by naming objects placed before him, by performing chemical analyses or experiments himself, in displaying parts by dissection or objects under a microscope, and, above all, by showing at the bedside a sufficient knowledge of disease, of diagnosis, and of aptitude for treatment. It is only in this manner that the parrot-system of repetition and of grinding can be got rid of, and the student's mind directed to the true objects of study. I am also satisfied that, in this manner, both teaching and examination would be rendered not only more interesting and satisfactory, but would be attended with far less fatigue and mental distress to the student.

To those, however, who look upon examinations from the old point of view, it appears to be a most difficult thing for the student to show any ability in art or practice. They urge that *that* must be the work of his after professional life, and that nothing more should be expected from him than a general knowledge of medicine derived from books and lectures. But considerable experience in this matter has convinced me that nothing can be more laborious, wearisome, and in many cases useless, than this attempt to burden his memory. Surely a man who has carefully watched a case of heart-disease, listened to the morbid sounds produced, formed his own diagnosis or opinion of it, assisted in its treatment, and perhaps examined the heart after death, will know more of such heart-disease, and remember it better, than

one who has tried to get it up from lectures and books only; and the same reasoning applies to the acquirement of every other branch of medical study. Instead of a clinical teacher interrogating a student in a private room as to what he would do under such and such circumstances, would it not be better for the candidate not to answer questions like a parrot, but to *show* what he could do at the bed-side—first in the way of diagnosis, and then in the way of treatment; whether it be by bandaging a limb, dressing an ulcer, distinguishing phthisis from bronchitis, or writing a prescription? These things must be learned sooner or later; and would it not be wise to see that they are acquired properly before the candidate proceeds to practise on the public? Until ideas of this kind are more extensively adopted, improvement in the teaching and examination of students is not to be expected.

On the other hand, if through a patriotic act on the part of the Medical Council a proper curriculum be established in this country, directed solely to benefit the student, and should both teaching and examination be made more practical, the educated youth will commence his career in a very different position, and be animated by a higher spirit than has hitherto prevailed. Medical science and practice, being familiar to him, will command more of his respect, and he will possess more real power of advancing its claims to public confidence. At least, I think it must be admitted that when the diploma which gives him the right to practise is put into his hand, he will by such a system be better qualified to act up to its statements, and commit fewer mistakes at the outset. If so, a great impulse must be communicated to medical education.

What our profession now requires, is that elevation of sentiment and regard for the welfare of the whole body which will lead it onward in the scientific and practical improvements which everywhere characterise its rapid advancement. Some indeed, incapable of appreciating this advancement, see only contradiction in progress, and discordance in what really is

greater harmony than has ever yet been effected by medical men. The Medical Council would vindicate its claim to public confidence by an endeavour to merge the conflicting interests of licensing boards and universities into the catholic desire of elevating the education of the profession to the same standard throughout the length and breadth of the land. That in a profession such as that of medicine there should exist, not only in the same country, but in the same city, various examining boards, so managed that the candidate incapable of passing one should rush to another, with almost the certainty of obtaining his license, is a scandal to the community. Such should be abolished, and little jealousies and sneers as to the value of this or that qualification ought to cease. It is by a like education, a like examination, and a like qualification, we shall learn to respect each other, diminish the petty feelings which opposing legislation and regulations have fostered, and by union and a combined effort seek not only to solve those problems which agitate our science, but place the whole body of its cultivators in just relation to the government on the one hand, and to the public on the other.

APPENDIX.

PLAN OF MEDICAL STUDY TO BE DIFFUSED OVER FOUR YEARS.

THE essential branches of medical study are eleven in number, each of which should be taught systematically and practically. They are—1. Botany; 2. Natural History; 3. Chemistry; 4. Anatomy; 5. General Anatomy and Physiology; 6. Morbid Anatomy and Pathology; 7. Materia Medica; 8. Medical Jurisprudence; 9. Surgery; 10. Medicine; 11. Midwifery. They may be diffused over the four years as follows, it being understood that modifications may be made to meet particular cases. This, indeed, will be necessary in schools where Materia Medica and Midwifery are taught in courses of three months during summer :—

1st Summer Session.

Botany . . } Systematic
Natural History } and Practical.

1st Winter Session.

Systematic Anatomy.
„ Chemistry.
Practical Anatomy.

2d Summer Session.

Practical Anatomy.
„ Chemistry.

2d Winter Session.

Systematic Surgery.
„ General Anatomy and Physiology.
„ Materia Medica and Pharmacy.
Practical Anatomy.

3d Summer Session.

Practical Physiology.
„ or Clinical Surgery.
„ Pharmacy.
„ Anatomy.

3d Winter Session.

Systematic Morbid Anatomy and Pathology.
„ Medicine.
Practical or Clinical Surgery.

4th Summer Session.

Systematic and Practical Medical Jurisprudence.
Practical or Clinical Medicine.
Dispensary Practice.

4th Winter Session.

Systematic and Practical Midwifery.
Practical or Clinical Medicine.
„ Morbid Anatomy.

By such an arrangement all the imperative branches of a good medical education, including the eleven subjects, each taught systematically and practically, may be diffused throughout the four summer and winter sessions, without the slightest fatigue to the student. At no time will he be called upon to attend more than four lectures in the day at once, even when repetitions are necessary, so that there will be ample time for reading and reflection. These repetitions of systematic or practical lectures may be regulated by the wants of the student. As a general rule, two systematic courses of Anatomy, and of General Anatomy and Physiology, will be required. Practical Anatomy should be prosecuted in the dissecting-room for at least two and in some cases three years. Clinical instruction in Surgery and Medicine will require at least nine months each—that is, a winter and summer session. It will be wise, also, to enter to the Hospital perpetually at the commencement of the first winter session, and ever after devote a portion of the day to the observation of cases. There will be also ample time to follow such special and extra classes as a particular direction of study or of practice may suggest—such as Ophthalmology, Insanity with visits to an asylum, Syphilitic Diseases, Operative Surgery, etc. etc., attendance on which should be encouraged in every great school of medicine.