

Practical suggestions as to medical study : being the introductory address delivered at the opening of the Medical School, Edinburgh, for the session 1869-70 / by D. Argyll Robertson, M.D.

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PRACTICAL SUGGESTIONS

AS TO

M E D I C A L S T U D Y :

BEING THE

INTRODUCTORY ADDRESS

DELIVERED AT

THE OPENING OF THE MEDICAL SCHOOL, EDINBURGH,
FOR THE SESSION 1869-70.

BY

D. ARGYLL ROBERTSON, M.D., F.R.C.S.E.,

LECTURER ON DISEASES OF THE EYE.

EDINBURGH: OLIVER AND BOYD, TWEEDDALE COURT.

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PRACTICAL SUGGESTIONS

AS TO

M E D I C A L S T U D Y.

GENTLEMEN,—It is not my intention on this occasion, when it has by rotation become my duty to address you from this Chair, to enter upon a philosophic disquisition as to the nature and duties of our profession, or to deliver a learned discourse upon some particular branch of it. It is indeed tempting to one who has the opportunity which has fallen to my lot to-day to enter into matters which, to those of us actually engaged in professional work, possess special interest. But I feel strongly that though this might be interesting to your teachers, and perhaps to a few of the seniors among yourselves, it would not be of practical benefit to those who most need guidance, and for whose advantage I would desire most earnestly to make this lecture available. If, therefore, to those who might be attracted by the more ambitious subject, my remarks should seem too elementary and commonplace, I must ask them to remember, while hearing, as I have endeavoured to do while writing, that this is not so much an occasion for display or self-gratification, as for affording guidance to those who, as junior students, are groping their way through many difficulties. Do I need to remind you of the perplexities which beset you when first you occupied these benches, of the value you would then have attached to a clear indication of the way which you should follow, and of the discouraging effect which an abstruse disquisition would have had upon you in those circumstances? Influenced by such considerations, I have thought it best to direct your attention,—1st, to your present position as students of medicine, and the importance of the lines of study you have pursued; 2d, to the best methods of mastering the subjects required for the qualification to practise; and, 3d, to those subsidiary methods of gaining information, the cultivation of which may entitle you to a higher professional standing. In addition, I may shortly express my views on some points in connexion with medical education, which are engaging the attention of the profession at the present time.

In accordance with recent legislative enactment, it is imperative

on all intending medical students to pass an examination in general education preliminary to commencing their professional studies. This examination is now with most of you a thing of the past, and the preparation for it, if thoroughly done, has been, let me assure you, as useful as its result was pleasant. But I think it right to suggest to you the inquiry—which of the subjects embraced in it are worthy of further study, and which of them may with propriety be thrown aside or neglected.

English Grammar and Composition, I need scarcely say, merit your life-long attention. All other subjects of general education should lead to this, as their great end and object, that our own language should be thoroughly understood and correctly employed. It is mainly from a want of attention to this, the most essential subject of education, that the medical profession in general has for long failed to occupy that place in literature to which, as a learned profession, she was entitled. It is a reproach, not without foundation, that in medical literature, very few works exist conspicuous for the elegance and clearness of their writing, while our medical journals but too often contain communications which, whatever other merit they may possess, certainly do not exhibit any knowledge of correct grammatical composition. I remember a gentleman, apparently well educated, and by no mean an unintelligent member of the profession, who announced in a well-known medical journal, that five theories had been assigned as the cause of cholera. Unfortunate theories! they have done much mischief as well as good, but I was not prepared for the assertion that five of them had caused cholera. Inaccuracies—fatal inaccuracies such as this—can only be avoided by improved early education, and by the devotion of any leisure time to the reading and study of the works of standard English authors.

A knowledge of Arithmetic is of such frequent necessity in the ordinary occurrences of life that there is little fear of its essential rules being forgotten. Latin, on the other hand, the only other *essential* subject of examination, is in my opinion not of such importance as to require any further attention at your hands. I think you may fairly place it on the shelf to be taken down when the spirit moves you, and when your energies are not required for any more important object. I am aware that, in expressing this my conviction, I am venturing on a subject on which a great variety of opinion exists. I quite allow that Latin is admirably adapted for the training of the youthful mind, and should form a part of general education; but that it should occupy so large a share of school instruction as until lately has been the invariable custom, is, I maintain, most injudicious. A similar mental training is undergone in the acquisition of German and French, the value of which in after life—at any rate for members of our profession—is infinitely greater than that of Latin. In former days it was wise to insist on a thorough knowledge of Latin, as then prelections on almost all subjects in our Universities, as well as in those of the Continent, were

delivered in that tongue, and many, if not most, of the valuable works in medicine were written in Latin; but at the present day such things are almost unknown. The works of ancient authors of merit have been translated, and what was most valuable in them incorporated in more recent works, and comparatively little practical advantage can accrue from the perusal of the old Latin folios. In French, on the contrary, and more especially in German, works of the greatest value exist in the different departments of medical science, the study of which is essential to enable us to keep abreast with advancing knowledge. We need not fear that some slight deficiency in what is called classical attainment will lower us in public estimation; for while, in former days, by a well-educated gentleman was understood one who could occasionally make an apposite Latin quotation, construe a few sentences of Greek, or resolve some geometric problems, but who might be utterly ignorant of all the varied branches of science, and have a mere smattering of philosophy, at the present day that title can only be earned by one who possesses a much wider and more extensive range of knowledge. Modern as well as ancient languages must be familiar to him; physics as well as geometry; science as well as philosophy. The time will come when it will indicate as much ignorance to be unacquainted with the works of Moliere and Goethe, as with those of Virgil and Homer; as much ignorance to be uninstructed in the facts of natural philosophy as in the problems of Euclid.

As illustrative of the insufficiency of a classical education as a preparation for the study of medicine, allow me to quote the experience of one who, towards the end of a University career, after having enjoyed all the advantages of education under men distinguished in classics and mathematics, commenced the study of medicine. He thus forcibly depicts the condition in which he found himself:—

“I knew something of French, but of German, which I soon perceived would be of the greatest use to me, I could not even read the alphabet. For anything I had been taught to the contrary, earth, air, fire, and water, were the four elementary bodies. Why the food I swallowed should not enter my lungs, or the air I breathed into my stomach, I had no information. I found myself completely bewildered by strange words, strange ideas, incomprehensible explanations, lost in a new country where I met no friends, where I could recognise no landmarks. At an age when I ought to have gone through the drudgery of elementary work, I had to commence again with the veriest rudiments.”—(Introductory Lecture by Dr Cheadle, at St Mary's Hospital, London, *Lancet*, Oct. 2, 1869.)

I cannot too strongly urge upon you the importance of thoroughly mastering French and German. It is not that you should appreciate the exquisite delicacy and force of Moliere, nor the lofty height and profound depth of Goethe, delightful though these may be, but

it is that you may be able without effort to read the thoughts of those brilliant French and laborious German scientific observers, whose achievements only yield to ours in their practical development. The greatest minds have bitterly mourned over the loss of this advantage; and perhaps it were not unfair to say that some men, by no means great in natural power, have been able to earn a high place by its possession. I feel strongly that no circumstance could more retard the progress of a talented aspirant in our profession than ignorance of these languages.

Botany and Zoology are appropriately placed by the Royal Colleges among the subjects for preliminary examination; but instead of being optional, their study should, in my opinion, be rendered imperative. It is really important that a medical man should not display ignorance when questioned as to points of natural history, such as, for example, was exhibited by a distinguished individual, whom I shall not name, some years ago, who, being interrogated as to his knowledge of fishes, announced that he was familiar with them all from the limpet to the whale, omitting to notice that neither of the extremes he indicated belonged to the class of which he spoke. A knowledge of Natural Philosophy, too, is of very great importance in many ways, but especially in enabling us to take a wide and correct view of the circumstances that influence the health of the individual and the community, and of the means whereby an improved sanitary condition may be established. Apart from its own inherent interest, this science is so closely related to Physiology, to Pathology, and to Hygiene, that no medical man of the present day can afford to be ignorant of it. For example, if I may be allowed to select an illustration from my own department, how essential is a knowledge of Optics for a satisfactory acquaintance with the physiology, pathology, and treatment of diseases of the eye. And, on the other hand, do we not observe that the science of optics is every day contributing more to our knowledge of disease of internal organs? Since the ophthalmoscope, by which we can inspect the interior of the eye, was invented, and that is not many years ago, we have got laryngoscopes and rhinoscopes, as well as endoscopes, in which ingenious optical arrangements enable us directly to inspect several deep-seated structures. Or again, to turn to electrical phenomena, how much light have the investigations of Du Bois-Reymond thrown upon the electrical conditions of muscles and nerves, and of Duchenne of Boulogne upon the changes in these relationships in disease, and the benefit which may be derived from the employment of electricity as a therapeutic agent.

We must now, however, turn from the consideration of the preliminary subjects to those which are required to fit you for the important and arduous duties of the medical practitioner. To this end, it is necessary for you to attend a prescribed course of instruction in various branches of medical science.

Instruction in each of the departments is to be obtained in two ways. First, by attendance on a course of systematic lectures, coupled with the careful study of manuals on the subject; and second, by practical investigation and study. The first method, although decried by some at the present day, is, I think, of great importance, as thus alone can the great leading principles of medical science be thoroughly explained and impressed on the students, and because it is the best method of preparing the student to profit fully by the other, the more practical means of instruction.

You might, for example, take a student to a chemical laboratory, and, placing certain solutions in his hands, point out the reagents whereby their nature might be determined; but unless that student had previously studied the laws of chemical affinity and the chemical nature of the substances he employed, the knowledge thus acquired would be of the crudest and most worthless description. Yet this is very much what some extreme theorists would recommend in the study of disease, maintaining that lectures and systematic instruction generally should be curtailed to the greatest possible degree, and all teaching be made practical. On the contrary, I maintain that systematic and practical instruction should go hand in hand, the correct theory or generalization leading to an adequate appreciation of the features of individual cases observed. To confine the student to practical study, would be as great a mistake as could well be made in the present state of science; for just as surely as the investigator must proceed from the special to the general, must the teacher and the learner proceed from the general to the special.

Allow me now to offer a few remarks on the method of study to be pursued. Anatomy and Chemistry are the classes that should first engage your attention, as they constitute the basis on which many other branches rest. In studying anatomy, you should remember that all parts are not of equal importance; that while, for example, a knowledge of the position and relations of the larger arteries of the body is of vital moment, the exact origin and insertion of the multifidus spinæ or spinalis dorsi muscles need not specially engage your attention. Indeed, for my own part, although what I say may be deemed heresy, I do not consider it of the slightest importance to be acquainted with the names of the anastomotic branches whereby the circulation is carried on when one of the larger arteries is ligatured. Such information appears to me to be a simple burdening of the memory. All that should be required is the knowledge that the collateral circulation so established is sufficient to nourish the parts supplied. I do not however mean to defend such ignorance as was displayed by a candidate who once presented himself for examination at one of the Scottish Universities. He had indicated with some correctness the mode of treatment of aneurisms in various situations; but when asked how he would treat aneurism of the arch of the aorta, he suggested ligature of that vessel near its origin. His examiner inquired how the nutrition of

the body would be carried on, and was promptly assured that that would be cared for by the collateral circulation through the pulmonary artery. A thorough knowledge of *regional* anatomy is what you should strive to obtain, and that is best learnt scalpel in hand. By assiduous work in the dissecting-room, you further acquire that dexterity of hand which is essential to success in surgery, and exercise those powers of observation which qualify for a correct diagnosis of disease.

The study of Chemistry is so vast, as to render anything like a thorough mastery of it out of the question. Here, I think, you should strive to make yourselves familiar with the composition and commercial source of most of the substances employed as medicines, and become acquainted with the different methods of analysis, especially the volumetric, and that by means of the spectrum. To be ignorant of chemistry often places the practitioner in an awkward position; and it is impossible to be an intelligent physiologist or pathologist, or even a respectable therapist, without having earnestly worked at that marvellous science, whose field is the composition of matter.

It has been suggested that chemistry should be placed among the preliminary subjects; but from the intimate connexion that exists between it, and, at any rate, the more advanced departments of medical science, I think chemistry is well entitled to its present position.

Physiology is closely allied to Anatomy. Treating of the appearance and nature of the tissues of the body, and the functions of the different parts of the human frame, it is a most extensive and ever advancing department of science; one in which acuteness of observation and correctness of reasoning are perhaps more required than in any other field of research. Here I would strongly urge you not only to attend lectures on this subject, but also, as far as possible, to study it practically. The minute structure of the various organs and tissues of the body may be described most carefully, and illustrative diagrams and even preparations exhibited; but unless you make the preparations for yourselves—unless, in other words, you, with microscope in hand, examine the tissues for yourselves—the facts are not thoroughly impressed on the memory, and are soon forgotten. We daily read in the newspapers of dreadful accidents, the narration of which may make us shudder, and we picture to ourselves scenes of harassing distress; but still, how soon do other events of varying character absorb our attention and deaden our recollections, so that, perchance, in a month, or it may be a year or two, even the main features of the catastrophe are forgotten. But had we been sufferers in, or even spectators of, the scene, the same events, more vividly portrayed to our minds, would so impress it, that for years to come, perchance to our dying day, they could be readily recalled. Hence the great value of diagrams, experiments before the class, and all of what are called practical

modes of instruction, by which information is conveyed to the brain, not by one, but by several of the senses.

In elucidating the functions of many parts of the body, it is necessary to study those derangements of function which diseased conditions of these parts give rise to. This may be done in the medical and surgical wards; but sufficiently characteristic cases, in which disease affects only one distinct organ or tissue without involving neighbouring parts, are of very rare occurrence, and the reasoning on them so open to the fallacy that the symptoms might have been produced by other unobserved diseased conditions, that physiologists have in many instances been obliged to have recourse to experiments on the lower animals, with the view of determining the exact functions of certain tissues of the body. This has been the occasion of much outcry on the part of the sensitive but ignorant public, who, though they see no harm in the enjoyable pastimes of shooting, where but too often the wounded bird or beast escapes for the time, only to suffer the more in the end; or of fishing, in which the poor captive is kept in a state of torture till its physical energies are exhausted, yet can inveigh against the cruelty of those who, in the interests of science, and for the welfare of their race, find themselves obliged to subject to pain some of the inferior animals. As long as such investigations are pursued in a scientific spirit, and the operations performed with the avoidance of all unnecessary cruelty, I maintain that the end desired to be attained amply vindicates the means employed. It is, however, I admit, a question how far it is advisable to exhibit such experiments before the class, simply with the view of impressing on the students the results obtained by previous experimenters, and without the object of advancing science by new researches. The only advantage of such a procedure is, that the students are thereby instructed in the method of conducting such experiments, and are thus better fitted to institute researches should the opportunity or desire present itself. This, therefore, is a matter that may be safely left to the lecturer.

One of the most important parts of the Practical Physiology Class is instruction in the use of the microscope. This is not only of service in the study of physiology, but is of still greater practical benefit at the bedside as a means of diagnosis and prognosis, more especially by indicating the nature of tumours, and detecting abnormal conditions of the blood and urine. I think I need say nothing further in recommending its study to your careful attention.

The class of *Materia Medica* includes two very different subjects, Pharmacy and Therapeutics. The first, which comprehends the nature and composition of the drugs and preparations of the Pharmacopœia, is best studied practically, either at the laboratory of a dispensary or at any large drug establishment where real practical instruction is afforded. But it has often occurred to me that the teachers of this subject should, like those of anatomy and chemistry, themselves superintend the practical teaching of pharmacy in lab-

oratories attached to the schools. A few lessons thus given would be of more value than many hours spent in the ordinary routine work of the dispensary or the shop. Pharmacy might then be less fully entered upon in the lectures on *materia medica*, and more time be devoted to therapeutics, including dietetics, which is a very wide and difficult subject, sufficient in itself profitably to occupy the whole of the short course allotted to the class.

Having mastered what may be termed the fundamental classes, all your energies should be devoted to the end and object of your studies—the power of recognising and treating disease. Both Surgery and Medicine are taught by systematic lectures, clinical lectures, and practical instruction in the hospital and at a dispensary. All these opportunities of learning should be cultivated to the utmost of your ability; but I need scarcely say that clinical instruction, at the bedside of the patient, is by far the most important. Here you acquire a familiarity with what is hereafter to be your daily occupation. Here alone can you have the means of studying the application of mechanical appliances to the relief or cure of surgical diseases or injuries, of having pointed out to you the characters of various tumours, ulcers, inflammations, etc., whereby their nature is recognised, and whereby a certain method of treatment is indicated. But with this alone you should not rest content. You should, as many as possible, become dressers. The advantages you would thus obtain are very great. The dressing of ulcers and wounds, the bandaging of limbs, the application of splints, the education of the touch, are all matters of daily occurrence, and you get an insight into practical surgery, such as no other instruction can impart. I consider that I am particularly competent to speak on this point, as I neglected this means of instruction while a student, and have often deeply regretted it. Although I regularly attended the wards and sought information, as most of the students did, by attending the visit of one of the surgeons, I completed my studies without ever having seen a fracture set, or having had the opportunity of bandaging a limb. Unfortunately, it is impossible to provide dresserships for all, but during the autumn there is generally no difficulty in getting these posts; and those who fail to obtain them during the sessions, should, rather than neglect so valuable an opportunity of study, be content to sacrifice the autumn vacation for one year. In the medical wards of the Infirmary practical instruction can be more readily afforded to all attending students, and therefore the advantages to be derived from clerkship are not so manifest as in the case of dressership. But still, as clerk, you have to devote more time to the examination of cases; you have more frequent occasion to employ auscultation and percussion; you become familiar with the use of the thermometer, the sphygmograph, and the microscope, as applied to the diagnosis of disease. You thus moreover acquire a practical knowledge of the tests whereby the normal or abnormal condition of the urine can be recognised, and,

above all, a familiarity with the method of examining a patient so as most readily to arrive at the important facts of his case. Some students unfortunately deceive themselves with the notion that such instruction can readily be acquired afterwards when they enter into practice, forgetting that they should be as perfect as possible before undertaking, on their own responsibility, the charge of patients, that practice, as a rule, comes very slowly, and that, as years roll on, the senses become somewhat less acute than they were, and much less amenable to instruction. The earlier the senses are trained, the more acute are they capable of being rendered. While attending hospital instruction, be not content with accepting the dictum of the physician or surgeon; look, and, if possible, examine the cases for yourselves, and consider whether you would, unaided, have arrived at similar conclusions. Practise the use of the stethoscope; acquire facility in percussion; seize every opportunity for laryngoscopic or ophthalmoscopic examination, as, after you have entered into general practice, you will find it difficult to instruct yourselves.

The opportunities of studying Midwifery practically in this school are unfortunately not what they should be, and contrast forcibly with the excellent maternity hospitals that exist in connexion with all the Continental Universities. Obvious difficulties exist in giving public practical instruction in this department, but we look forward with hope to the new Infirmary, in connexion with which (though not under the same roof) we trust a model maternity hospital may be erected. At the present your practical experience in midwifery is best to be obtained in conjunction with outdoor dispensary practice.¹

Pathological or Morbid Anatomy is one of the subjects, a knowledge of which has recently been made imperative by the Royal Colleges. I am strongly of opinion, that attendance on a systematic course of lectures should be made imperative on all students. It is only by a careful consideration of the changes produced by different diseases in various organs that we can hope to arrive at any definite conclusions regarding the treatment and curability of each. It is evident, in the present state of medical science, that to subject any patient to a course of treatment with the view of restoring the function of a part that has been structurally disorganized, would be to excite hopes that could never be realized, and, perhaps, to do positive mischief; while in other cases, knowing from morbid anatomy that the symptoms present arise from and depend upon an inflammatory exudation, our treatment is at once directed to such means as may favour the absorption of the effused matter, and thus cure the disease. Thus alone can scientific medicine stand on a secure basis, and make any real progress. Morbid anatomy, however, which treats of the diseased state of the tissues of the body, should, I think, in all cases be conjoined with general pathology, which includes the causes of disease, a subject which is of itself

¹ I am glad to learn, that this session a course of practical instruction has been instituted at the Royal Maternity Hospital.

of absorbing moment in connexion with the increasingly important question of the means of preventing disease. Morbid anatomy can only be studied by attending the post-mortem examinations at the pathological theatre, and by personally examining the morbid structures as they appear to the naked eye and under the microscope. A very good field of study with regard to the general appearance of morbid structures, is the Museum of the Royal College of Surgeons, to which you have all free access. It is particularly rich in excellent surgical preparations, but almost all medical pathological conditions are also represented. It has always been a matter of astonishment that so valuable a collection should so little attract the attention of the students. Any leisure time, however small, may most profitably be spent there.

The only remaining prescribed class is Medical Jurisprudence, for mastering which a knowledge of all branches of medicine is imperative. This class includes a consideration of all subjects on which the professional opinion of a medical man may be required in a court of law. The majority of the cases in which the general medical practitioner appears in the witness-box, are either cases in which severe injury has been inflicted accidentally, with hostile intent, or suicidally, or cases of sudden or suspicious death. Now, to perform his duty well in such cases, not only is a knowledge of surgery and morbid anatomy necessary, but also a knowledge of the method of procedure to be adopted in performing medico-legal post-mortem examinations. This is more particularly the case with regard to the identification of the body, the precautions with which certain parts should be removed and transmitted to others for further examination, and the forms to be observed in the drawing up of a good medico-legal report. These details, which are of great importance, and upon which very often the life of a suspected person may depend, are most satisfactorily learnt by your actual presence at, and co-operation in, the examination of medico-legal cases—a method of instruction well carried out at this school.

I have now referred shortly to all the subjects, a knowledge of which is imperative; and before proceeding to say a few words respecting certain special branches which are recommended for study, I would like to advert to a few points of practical moment in connexion with your method of working. And first, with regard to the employment of your leisure time during the first year. When you are engaged in dissecting a part, almost the whole of your time will be fully occupied, and any spare hour you may find will be best employed in out-of-door physical exercise. Indeed, I think that, throughout the whole course of study, you should endeavour to keep at any rate one hour in the day apart for the improvement of your health. Thus invigorated, you will, during the first two years, be able to withstand the polluted atmosphere of the dissecting-room; and, during the latter two, ward off infection, or so strengthen your system, as greatly to diminish the inevitable dan-

ger. But when, during your first session, you have mastered the bones, and have no part to dissect, you will have considerable leisure time, and that, I think, may be profitably employed in attending the Surgical Hospital. You will, of course, not learn much, but still what you see will, to some extent, prepare you for the classes before you, and give you an interest in the somewhat dry details of anatomy by the foretaste of practical work.

The propriety of taking notes during the lectures is a subject on which some diversity of opinion exists. It cannot be denied that part of the lecture may be lost to the student while he is engaged in noting down what has been said; but the great advantage of notes, I conceive, is that when read, even after the lapse of a short time, they are not only valuable as regards the information they convey, but also, further, to those who wrote them in recalling circumstances, explanations, etc., connected with the facts narrated; while the very fact of writing down what is said, often serves to impress it on the memory. I would therefore recommend you in most of the classes to practise note-taking. Do not take too many classes at a time: the brain is only capable of a certain amount of work; and while by practice that amount may be considerably increased, if care be not taken gradually to regulate the increase, over-fatigue and exhaustion is apt to occur, productive of weakened mental power. It is a well-known law in physiology, that while gentle stimulation conduces to increased power, excessive or long-continued stimulation induces debility. Thus, gentle and intermittent pressure on one part of the skin causes increased growth; but if the pressure be too severe or too constant, it leads to ulcerative absorption. Combine, therefore, moderate relaxation with your study, and you will find your mind the clearer and apter for your work.

Now, while I have referred to all the compulsory subjects of study, there are many special branches of medicine which it would be advisable for all to apply themselves to who aim at proficiency in their profession. I would first specify diseases of women and children. In the class of Midwifery, part of the course is appropriated to the consideration of the diseases of women, but, without clinical instruction, the knowledge thus acquired is most imperfect. I would recommend you all to devote some time to their study in the special wards of the Royal Infirmary. A separate course of lectures is given on diseases of children, and clinical instruction is afforded at the Sick Children's Hospital. When we reflect on the very large mortality that exists during the first few years of life, and the difficulty not only in recognising the nature, but even the existence, of disease, when the poor patient is unable to express in words the nature of his feelings, we at once perceive the necessity that exists of studying the earliest manifestations of disease in children, and of being acquainted with the most approved means of treatment. The fact of the Sick Children's Hospital being a sep-

arate institution, and at some distance from the Royal Infirmary, is, I believe, one, if not the chief, reason, why so many students neglect to avail themselves of so excellent a field of instruction. But I would urge upon you the importance of acquainting yourselves with these matters, for children will constitute a very considerable proportion of the patients you will be called upon to treat; and there are few departments where skill is more appreciated and ignorance more readily detected.

Affections of the Eye, although forming a part of the lectures on surgery, are also made the subject of special instruction, both systematically by lectures, and clinically by practical instruction at the Infirmary and Eye Dispensary. It is with some diffidence that I refer to this subject, as it is one in which I am personally interested, and I would have suffered it to pass without special remark, did I not feel constrained to advert to the neglect which this department of surgery suffers at the hands of the mass of the students, and the necessary result of this neglect, that even in the simplest cases of external inflammatory affections, a faulty diagnosis and consequent injudicious treatment is the rule. How often do we observe cases in which faulty treatment is visibly imprinted in the form of a dense white leaden opacity of the cornea! How often do cases of glaucoma come for advice after the curable stage is past, the nature and course of the disease having been misunderstood! How often are patients, whose sight is impaired in consequence of faulty accommodation or refraction, startled by the intelligence that theirs is a hopeless case, that they suffer from amaurosis, and that absolute blindness may be before them! Or similar cases may be subjected to a long course of treatment, the patients confined for lengthened periods to darkened chambers, denied all that can make life agreeable, while their minds are racked with anxious forebodings—all with the view of combating an affection for the cure of which the adaptation of the required spectacles is all that is necessary. Now this ignorance is to be ascribed to the neglect of the means of instruction during student life; for, once engaged in practice, they have neither the time nor the opportunity of acquiring the necessary knowledge. Army and Navy medical men home on leave not unfrequently embrace the opportunity then afforded them of studying several of the special branches, of which in student days they had failed to make themselves masters; but as such opportunities of filling up blanks in practical knowledge are not accorded to most practitioners, I would urge upon you *now* to take the trouble of acquiring skill in these matters, the want of which has been deeply felt by many in the daily duties of practice. This is the period for study, do not neglect it.

What I have stated with regard to the neglect of eye diseases, applies with as much or perhaps greater force to diseases of the Ear. How few students are there who, after passing through the whole of their medical studies, have acquired the least knowledge of these

affections. I doubt much if one in a hundred have examined an ear with the speculum, and obtained a view of the membrum tympani. I doubt if as many have ever once employed the otoscope, or even seen it employed. It cannot be denied that diseases of the ear are very intricate, and a large proportion of them incurable; but how can this be otherwise when so little time and attention are devoted to them? The Ear Dispensary is the only place where these affections can be studied. I would strongly recommend you to spend an hour a week there towards the close of your student's career. There are other special studies which are also well worthy of your study, such as Psychology, on which a course of lectures is delivered within the University; Diseases of the Skin and Teeth, which may be studied at the Dispensaries; and Vaccination, a certificate of proficiency in which is now required for the office of Contractor for Vaccination under the English Poor-Law. These are all important subjects, some of which indeed might very properly rank among the prescribed courses of instruction, but time does not permit of my dwelling upon their special claims to your attention.

Scientific investigation and research have of late been very much directed to the discovery of means whereby the occurrence of disease may be warded off. This, the prevention of disease, appears to be best attained by attention to two conditions: *1st*, the removal of everything that may tend to reduce the vitality of the system, such as excessive or long-continued exertion ending in exhaustion, insufficient nourishment or ill-selected articles of diet, deficient clothing or cold housing, the breathing of an atmosphere that has not been sufficiently renewed, etc.; and, *2dly*, the removal of everything absolutely poisonous or pernicious in its effects—for example, the emanations from a sewer, the noxious fumes from chemical or other works, the malarious atmosphere from marshes in certain countries, the poisonous atmosphere engendered by the presence of fever-patients, etc. Much has already been done in this direction, but much still remains to be accomplished; and I doubt not but that, were efficient means taken to isolate completely those labouring under infectious diseases, many, if not all of these deadly plagues, that cut off their thousands annually, might be extirpated.

This subject, which has so much reference to the health of the community, has attracted the attention of the Legislature; and it is now being gravely considered whether a new diploma should not be instituted for proficiency in State Medicine, under which it is proposed to include Legal Medicine (or Medical Jurisprudence) and Preventive Medicine. Now, while I quite admit the great importance of these subjects, I am not prepared to advocate the institution of a new diploma for State Medicine, as I hold that these topics should be studied by all medical men, and should form part of the subjects of examination. In fact, as it is, they are or should be included in the classes of Medical Jurisprudence and General Pathology, and therefore come there under discussion. But as the relations

of medicine to the community are so extensive and can be viewed in so many different lights, it might be advisable either to lengthen the course of lectures on Medical Jurisprudence or General Pathology, or to institute a new course of lectures on State Medicine. But there are no grounds for setting it aside from the other subjects of the curriculum, and giving a diploma for proficiency in it. In like manner separate diplomas might be given in Ophthalmology, Dermatology, Psychology, etc. The result of such legislation would be that the general practitioner who did not intend taking this degree would pay no attention to these subjects, and thus the general attainments of the profession would be lowered. It would not be in the power of all those who might not have studied these subjects to keep in all cases free from circumstances in which a knowledge of them would be looked for, and then when perhaps questioned regarding his views in the witness-box a sad and humiliating spectacle might be presented.

A field so wide and rich cannot be explored without hard work, and in working hard, it is of the utmost importance not to work hastily. I cannot but feel that to accomplish all that you have to accomplish in four years, implies hasty work as well as hard; and this surely indicates the desirability of extending the period of study by another year. This has its obvious disadvantages, but what in that way can outweigh practical efficiency? There is nothing more distressing to a conscientious practitioner than to be called upon to treat a case of which, by his own fault, he is conscious he is not the master. Our eminent Professor-emeritus of Clinical Surgery, being thoroughly convinced that the period of professional study is insufficient to enable the student to get a practical acquaintance with all branches of medicine, sees the only solution of the difficulty in one of two methods of procedure,—either to lengthen the period of medical education to eight or ten years, or to limit the extent of information to be required from candidates in each department of their studies, whether for obtaining a license or degree. The first plan he dismisses as impracticable, while the second he considers, though appearing injurious and retrogressive, to be free from objection, and to promise much advantage. Now, while Professor Syme would curtail the number of subjects to be studied, I would prefer to lengthen the period of study, not certainly to eight or ten, but to five years. It is perhaps natural, that to that veteran observer, whose experience has led him to group together much of what he learnt years ago in detail, it should appear possible to educate medical students in a shorter space than we deem needful; but to those who have studied in these modern days, when the facts of science are so multiplied, and the generalizations so little able to keep pace with their increase, it may well appear that, even out of our short lives, an additional year must be accorded to study, if the student is to excel. But how, you may ask, is the additional year to be best employed? I would answer, By the study of special

subjects either at home or on the Continent. It is important, perhaps, that I should tell you, in connexion with this, that study and living abroad are not more expensive than here, and that the advantages of such study can scarcely be overstated. For, on the Continent, and especially at the larger German Universities, the teaching of special branches is carried to the highest extent. In fact, almost all subjects are divided and subdivided, and each division or subdivision made the subject of abstruse study. Thus, while in Berlin, I attended five separate courses of instruction in different departments of Ophthalmology. This tendency to subdivision and exhaustive study renders the system of teaching in Germany less adapted to requirements of the junior student than the classes at home; but, on the other hand, it is of infinite value to the advanced student, and more particularly to those desirous of thoroughly mastering one branch of the profession.

The formation of some travelling fellowships in connexion with this school, is, in my opinion, a matter much to be desired. In Russia and in Austria, the State is alive to the advantage to be derived from foreign education, and has instituted a system, whereby the most deserving students are sent at the expense of Government to other countries, the only condition required being that they prepare a report on some special department of medicine, embodying what they observed at the various schools they visited. The Government in this country, however, almost invariably refuses to encourage scientific inquiries, which might lead to the alleviation of much suffering, and the saving of many valuable lives, although it spares no expense in the construction of instruments for the destruction of life.

But the variety of the subjects which are included in professional study, and the rapid strides which medical science is making, renders it altogether impossible for the general practitioner—however thoroughly instructed he may originally have been—to keep abreast in all departments of medicine. New facts are continually coming to light, whereby old theories are overturned, and new substituted. New diseases are discovered, new operations introduced, new instruments invented, new remedies brought to light. Besides, few feel themselves equally adapted for the practice of all branches of the profession—some having a natural talent for surgery, some for medicine, some preferring the more abstruse study of mental alienations. Thus has arisen in medicine what has for long existed in most commercial pursuits—a subdivision of labour. Some are specially or purely physicians, some surgeons, some accoucheurs, etc. At the present day there is a tendency to carry the subdivision still further, and, with advancing science, there is no doubt that specialists will multiply. Against the institution of specialists, it has been urged that general physicians and surgeons, surveying diseases from wider and more philosophic points of view, would treat special affections better than specialists. This objection would

have great weight were specialists merely to study one branch of the profession, as was formerly only required for the diploma of the Royal College of Surgeons of London, and is still the case for what is termed the Diploma of Dental Surgery, granted by that College; but this argument falls to the ground when, after studying carefully all branches, one is chosen for special study and practice. Such is the case at the present day—almost all the most learned and celebrated members of the profession being either pure surgeons, or pure physicians, or specialists in some department; and it cannot be denied that it is to specialists that we shall mainly look for medical progress.

I cannot conclude, Gentlemen, without referring to the changes in our staff of Lecturers. To those who recently or at a more distant date belonged to us, and who have been promoted to University Chairs, we heartily wish success, and while we are sorry to see several of our able Lecturers no longer teaching here, we are glad to know that in only one instance have their talents and acquirements been lost to the great Medical School of Edinburgh. On the other hand, we are glad to welcome among us one who has, while officially connected with the University, earned for himself a distinguished position by his original scientific investigations; and not less do we welcome those who, with reputations well earned in their individual departments, propose to supply important wants in our educational system.

I have spoken so much to those who stand on the threshold of medical study, that I cannot but turn now to those of you who have become familiar with what was a few years ago an unknown land. Have you not been struck, let me ask, with the many blanks in our knowledge? Is not the medical field like the chart of Africa or Australia—well defined at some points, in the great majority unexplored? It is never given to one man to make out very much of a country; even the greatest discover comparatively little. That central basin of the Nile, sought for in olden times, and slowly tracked out by Park and Bruce, and Speke and Grant, and Baker and Livingstone, will probably, when more fully made out, only lead to further questions; and these will form the problems to be solved by the heroes of a succeeding age. It is well worth noticing, that some of these individual observers whom I have named were guided in their inquiries by hypothetical considerations; and this affords a further indication of the similarity of these researches to ours. You perceive great blanks in our knowledge. Would you seek to explore them, you must do so by steady work. But how, you will ask, is this work to be accomplished? Learn to know thoroughly the districts already explored. Find out what are the points most important to be discovered. By the light of hypothesis follow out your investigations, and you will almost certainly be led into the discovery of facts which may prove of the utmost importance. Why should we not have more investigations?

Why do we know so little of the exact mode of action of remedies? Why are we so ignorant of the nature of cholera? Why have we so little acquaintance with the morbid conditions which lead to what we term diabetes? What is insanity? What causes epilepsy? What, again, is the nature of fever-poison? What the *materies morbi* of tetanus, of hydrophobia, of chorea (if there be any such)? And, above all, what are the agents by which we are one day to counteract these poisons, and neutralize them as they are generated? I could suggest unnumbered points, many of them of the greatest interest and importance, which you might investigate, and upon which you might found an undying reputation; but let those I have indicated suffice. Any one of them, if properly worked out, would make you remembered while time lasts. Let this be your ambition; but remember, that while all do not achieve such success, there awaits every man the opportunity of quiet, thorough, unostentatious fulfilment of duty, and that these moral things in truth rank higher than the greatest intellectual achievements. So let those who aim at higher things never forget the apparently lesser; and let those who feel themselves constrained to avoid the paths of ambition never forget the dignity of the work they are called to do; and remember, Gentlemen, that in work well done you are not only doing your duty by yourselves, but doing your duty by your neighbour and in the sight of the Supreme Judge who watches over all our careers.



