

**Introductory address delivered at the opening of the Medical School,
Surgeons' Hall, Edinburgh, November 6th, 1850 / by George Wilson.**

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Wilson, George, 1818-1859.

Publication/Creation

Edinburgh : Sutherland and Knox, 1850.

Persistent URL

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INTRODUCTORY ADDRESS

DELIVERED AT

THE OPENING OF THE MEDICAL SCHOOL,
SURGEONS' HALL, EDINBURGH,

NOVEMBER 6TH, 1850.

BY

GEORGE WILSON, M.D., F.R.S.E.,
LECTURER ON CHEMISTRY.

EDINBURGH:
SUTHERLAND AND KNOX, GEORGE STREET.

M D C C C L.

INTRODUCTION ADDRESS
THE OPENING OF THE MEDICAL SCHOOL
SUGGESTIONS FOR THE IMPROVEMENT OF THE
COURSE OF STUDY

[FROM THE MONTHLY JOURNAL OF MEDICAL SCIENCE FOR DECEMBER, 1850.]



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INTRODUCTORY ADDRESS.

[WITH the exception of the notes, and a few trifling verbal alterations, this address is published exactly as it was delivered. I must ask those, accordingly, who read it, to consider it as a nearly improvised discourse, which I should not have consented to publish, had I had any prospect of leisure and opportunity to rewrite it. The subject is one with which I am scarcely entitled to meddle; for only a medical man, experienced as a practitioner as well as a teacher, is qualified to do it justice. I may state, however, in extenuation of any assumption of the former character, that I spent the greater part of each day, for four years, in the Infirmary here, and witnessed its medical and surgical practice for that period. I can thus claim experience enough to entitle me to address beginners, especially as I have, for the last sixteen years, spent a large part of my time, first as student, and then as teacher, among students of medicine, both in Edinburgh and London.]

In rising to address you on this occasion, I have to crave your very special indulgence. It was not till last Friday night that I was requested, by my colleagues around me, to follow Dr Wood's example of last year, and open this session of the school by an introductory prelection. It has been impossible for me, in the short space of three days, and these greatly interrupted, to prepare an address worthy of this occasion. The practice, however, of delivering such addresses, is one so excellent, that, when I found that my refusal to appear here to-day would lead to the omission, for this year, of a general address altogether, I thought it better to trust to your forbearance and kindly judgment, on which I throw myself, than to stay away.

I have chosen for this address, a consideration of the temper or spirit in which the study of medicine should be entered on and prosecuted. It will allow me, without, I trust, seeming to be presumptuously dogmatic, or disposed to pronounce judgment *ex cathedra*, to offer you some remarks which may not be without service. You will not expect from a merely nominal member of the profession, like myself, who has learned more of its true nature as a patient than as a practitioner, any advices as to the mode in which, *after* you are surgeons or physicians, you should practise it; and, on the other hand, I shall be careful to abstain from giving undue importance to that branch of professional knowledge of which I am one of the teachers in this school. Into detailed references, indeed, to any of the branches of knowledge taught here, I shall not enter; for, although there are few subjects more tempting for an occasion like this, than an inquiry into the mutual dependence of the various sciences, and the mode in which they contribute to the extension of medicine, this question, or any similar one, is after all inadmissible for discussion, as those who are only on the threshold of their medical studies, or have advanced but a short way in prosecuting them, could not, with either interest or profit, follow an

inquiry which instituted a comparison between all the branches of medical knowledge. Medicine, in truth, is the sum or complement of so many sciences, and so many arts, that were it necessary that every medical man should become a proficient in them, the profession must soon become extinct; for art is long, and life short, and every science is widening its horizon faster than it can be followed. And even if we had it in our power to arrest the sciences at their present stage of progress, and forbid that any more discoveries should be made, we should find what the students of a single science have already achieved more than sufficient to overtask us. Fortunately for us, something very far short of universal knowledge will avail for our professional requirements; nor is it necessary that I should consider how far short of omniscience we may safely be. This question has been practically decided for us, by the seniors of the profession; and the courses of study which they have laid down, for the guidance of students and their teachers, represent not the minimum, and still less the maximum, but the well considered medium amount of training in science and art which, according to the judgment of the profession, is needed to make a man a trustworthy medical practitioner. I shall not, therefore, say one word as to whether or not it is well, that a student of medicine is required to attend chemistry, surgery, midwifery, or the like. The probabilities are all in favour of the belief, that the course of study laid down for us is a wise and well-chosen one, since it is the scheme of medical education constructed for us by the wisest members of the profession; and in this spirit you should enter on it. It may not be the best, but at least it is good; and its laws are not those of the Medes and Persians, which cannot be changed. It has proved its ability to train up to efficiency and eminence, hundreds of medical practitioners, and that ability it still possesses. With this we may all be content. There are few follies greater than that common one, of refusing what is good, because it is not the best. There is a well-known class of painters, who are constantly changing their studios, seeking for a good light. I have known chemists who were all their lifetime in search of a *better* balance; anatomists, who were constantly exchanging their microscopes for new ones; and doctors, who could never discover a stethoscope that exactly fitted their ears,—whilst other men were painting, and analysing, and microscopising, and stethoscopising to purpose, with the instruments they could not use.

Our course of study is, in like manner, an organon or instrument for advancing us in medical knowledge. It is excellent for the purpose, and that may surely suffice us, without querulously asking, Is it the best? I will add, however, that a student of medicine must have gone the whole round of prescribed study, before he can be in a condition to determine whether that course was a wise one, and he can do himself no service by doubting its wisdom before he has tried it. The beginning of all knowledge is faith. You must trust the medical authorities and teachers. You may afterwards lose confidence in them, and be justified in your distrust; but the study of no profession can begin with scepticism. The spirit of docility is a spirit of belief, nor is it incompatible with due caution and a wise scepticism.

It thus appears, then, that you are required to learn certain things, and we are required to teach them; and I desire now to offer you some suggestions as to how you may profit most by their study. I would begin by observing, that to medicine, more I believe than to any other profession, belongs the peculiarity, that, from first to last, it teaches, side by side, science and art,—the theory of knowledge, and the application of knowledge. It teaches you, for example, that there are great laws of physics, of pneumatics, of mechanics, of hydraulics, without which, the theory of the circulation of the blood, of the respiratory murmurs, of the movements of the joints, and much else important to the science of your profession cannot be understood; and at the same time it desires you, so far as circumstances will permit, to take into your hands the saw, the plane, and the chisel, and so to educate your fingers, and learn to handle tools; for you are to be surgeons or chirurgeons,

literally, hand-workers. So, also, it teaches you a science of anatomy, full of elaborate details concerning form and structure ; and it simultaneously gives you a scalpel, and bids you learn for yourselves an art of anatomy on the dead body. It requires of you a knowledge of the science of chemistry, with its atomic theories, electrical hypotheses, doctrines of compound radicals, and the like ; and it also puts into your hands a specimen of blood, and some pieces of apparatus, and says, Tell me if there be sugar or urea there ?

I need not multiply examples. It would be easy to do so ; but it is unnecessary. I have purposely chosen those given from the earlier studies which engage the student, because it is needless to proclaim that surgery, practice of physic, and midwifery, involve, on the one hand, the recognition of very refined and subtle theories which constitute their science ; and on the other profess, as arts founded on experience, to furnish the practitioner with methods and instruments of cure, which, within peculiar limits, may be called *certain* ; for true science, and honest art, would both object to the term infallible.

The course of study, then, through which you will pass, in obeying the requirements of any of our surgical or medical examining bodies (which differ from each other as to what they demand, only so far as comparatively unimportant details are concerned), is one which may be pronounced excellent, in proportion as it exhibits the peculiarity referred to. A student of medicine has this advantage over the students of most, if not all, other professions, that he is as carefully trained to the law as to the fact, to the theory as to the practice, to the reason as to the rule, in every branch of his calling.

He undergoes, moreover, a training which, if wisely submitted to, secures a more equable and systematic education and cultivation of his nature, than the training of any other calling accomplishes. The study of the law will quicken certain intellectual faculties, more than the study of medicine will. The study of theology will cultivate the moral sympathies, in a way our studies cannot. The cultivation of the fine arts, music, painting, poetry, will refine the taste, and educate the æsthetical feeling or sense of beauty, to a degree unattainable by those who are only our votaries. The practice of the mechanical arts, will give the eye and the hand a precision, a delicacy, and a strength, which our exercises will not develop. Law, however, and theology, as well as art, whether æsthetical or economic, as studied professionally, cultivate but parts of a man. Medicine can claim to herself that she (though not, certainly in equal degree) educates simultaneously the intellect and the senses ; the head, the heart, and the hand ; nay, I may say, the whole body and the whole soul.¹

¹ I am anxious to guard against seeming to recommend those who seek to educate themselves in the full sense of that word, to be content with the round of study which medicine prescribes. It is plainly desirable, for example, to take one case, that psychology, which can throw so much light on mental diseases, should be studied by members of our profession, who have opportunity, capacity, and relish for following that branch of knowledge, to a greater extent than is required by any medical examining board. It is still more desirable, that the morality of the profession should be based upon Christianity, which has its own great Text Book profitable for the members of all callings. Medicine does not completely educate a man, either intellectually or morally, not to say æsthetically. Nevertheless, as discussing so many of the physical sciences, besides communicating some information concerning psychology, and affording great exercise in the use of logic, as well as opportunity for acquiring skill in the practice of various arts, it simultaneously disciplines and informs the intellect and the external senses, to a greater extent than the *merely imperative* studies of any other profession do ; whilst the solemnising effect of the scenes to which it summons the student, and the appeals to his integrity, sense of responsibility, benevolence, and sympathy, which it constantly makes, furnish a most wholesome moral atmosphere, in which his character may expand. Even a student, accordingly, who passes at once from the schoolroom to the hospital, and from the examining board to a field of practice, has undergone, though limited to the narrowest circle of imperative study, an amount of instruction and training, intellectual and moral, which the medium curriculum of no other calling can supply.

Let me offer you, then, a few remarks on the spirit in which this great circle of study should be traversed, especially in reference to the motives which should most influence us in traversing it. I prefer this to any attempt to lay down rules as to taking or not taking notes, rising early, or going to bed late; if we can secure the right spirit, these matters will arrange themselves.

I take for granted that the majority of those I address, are not amateur or dilettante students of medicine, but have taken it up as a vocation or calling, by following which, they are to save themselves from disobeying the command (including the penalty) of St Paul, that "he who does not work shall not eat."

This motive to professional study does not call for much reference. It can plead its own cause, and does so twice or thrice every day with each of us. It is as much moral as intellectual, and more physical perhaps than either. Its seat is in that important organ, which some of the ancient philosophers thought was the residence of the soul, namely, the Stomach, and it has two active prompters—Hunger and Thirst—who quicken its demands, and at short intervals keep always renewing them. The Germans, with their flexible expressive tongue, have devised a very happy phrase for this motive to work. They call a man's labours for sustenance, "brodwerke"—breadwork—the work or labour by which he procures his share of that daily bread, which we ask each day from our Father in Heaven. This motive to professional study, as it is perennially renewing itself, wears better, than perhaps any other which influences us. It is common to us with all other craftsmen and honest workers, and is based upon the equitable and divinely sanctioned principle, that "the labourer is worthy of his hire." Robert Southey the poet, who was neither a wealthy nor a sordid man, declares, in his curious and delightful book "The Doctor," that there are few more innocent ways of spending time than making money! There is a world of truth in the remark, if you will only understand it in the sense in which the genial poet intended it. He had no purpose of recommending doctors to think only of their pecuniary gains. A medical man who has an eye only to fees, is not considered an ornament to his profession. Avarice, however, or greed, is not the vice of our calling. A greater amount of gratuitous labour is exacted, and often quite thanklessly, from physicians and surgeons, than from any other class of professional men. If, therefore, you are bent upon a pecuniary recognition of all your services, you will find other professions more promising and more fruitful than ours. This mere need to work, which lies upon us all, is, however, to be highly valued, apart from the money or the bread it brings us. It anchors us down to our duties, by bonds which we cannot escape; it keeps us working at investigations, which otherwise we should have foresworn, but in which our compulsory study reveals to us things more precious than food or raiment. And apart from this, it procures us the natural and salutary pleasure of feeling, that by sweat of hand or brain, and honest toil, we have secured our own independence, and provided for those dear to us. I do not know whether the botanists have ever tried to determine, what plant Adam cultivated when he first fell to work outside of Paradise; but I think it must have been *Dulcamara*, *Bitter-Sweet*. To practise medicine, then, with a view to pecuniary recompense, may, as Southey taught, be a very innocent and most laudable thing. But this motive is probably never the only one at work, nor can it be trusted alone; and, considering the early age at which so many begin the study of medicine in this country, it seems certain, that this, which in later life is so powerful a motive, is by no means the most prominent in the mind of a student, as it ought not assuredly to be. Of it I think I may justly say, that whilst the necessity for adopting a calling, may be a main motive to the selection and prosecution of medicine, it cannot be the one which most frequently recurs to the student, as from day to day he studies a particular branch of professional learning. Neither can it be the determining one to that profession, rather than to another. Something over and above the perception of the necessity of a profession, must have been felt. Some powerful secondary motive must have determined the choice of

medicine, rather than law, or theology, a mercantile, an artist, a military, or a naval life.

I take for granted, accordingly, that those of you who are not students of medicine by compulsion, but have intelligently selected it as a profession, have been influenced more or less by the following, besides other less prominent motives. First, The expectation that it will prove a congenial occupation, as falling in with your tastes, and afford a welcome exercise to your faculties. Secondly, That it will enable you to gratify your desire of distinction, and to obtain an honourable name among men ; and, Thirdly, That it will gratify that love of truth, that desire of knowledge for its own sake, apart from its beauty or its uses, which is inherent, in larger or smaller proportion, in us all. The very unequal success with which different students prosecute medicine, or any other liberal profession, is so greatly dependent upon the extent to which they are consciously or unconsciously swayed by these motives, that I will offer you a word upon each.

As to the first of these impulses, it is perhaps the most important of all, in reference at least to your professional happiness, if not also to your success. The synonymes in our language for profession, viz., *vocation* or *calling*, imply that a man should feel some call or summons to the work he undertakes,—some inward prompting, that he has a relish and a fitness for the department of labour on which he enters. We have another word at the present day : we speak of a man's "mission." I do not know that it is better than the older terms ; but its employment shows how universal is the acknowledgment of the wisdom of suiting men to their callings. Few things, certainly, are more unfortunate for any one, than to discover too late that he has mistaken his calling or profession. A sense of duty may induce a man to do task-work, and habit can reconcile us to a great deal, and the receipt of fees may gild the whole over. Many a worthy doctor has probably gone through life happily, with no other motives than those just referred to. It is an immense addition, however, to a medical man's happiness and to his success, if he has an intellectual relish for the study of those laws and phenomena which medicine as a science considers, and for the performance of the various duties which, as an art, it demands. I am sure there never has been a zealous, not to say a great surgeon or physician, to whom his profession was not a source of intellectual pleasure. In this pleasure, the two chief elements probably are,—the sense of gratification which attends the intelligent apprehension of striking phenomena ; and the sense of power which accompanies the conviction, that we can interpret what we witness in spite of its intricacy, and can interfere to change the nature and order of the phenomena occurring in a living body, so as to arrest disease and restore health.

Now, many among those I address, can as yet have no means of judging whether they have acted wisely in selecting medicine as a profession ; neither will they be able to decide this for months, nay for years, to come. They can do a great deal, however, towards giving themselves a fair chance of liking their profession, so far as it occupies the intellect ; and considering through how wide a range of subjects your medical education conducts you, it is likely that the greater number of those present, even if quite neutral or indifferent as yet, may have a relish for professional studies begotten or strengthened in them. In connection with this point, I would urge upon you, what is too much forgotten, that the branches of knowledge you are required to study are not only intended to store your minds with truths, which are essential to the discharge of your professional duties ; but are likewise designed to exercise, to educate, to discipline, and to strengthen all the bodily and mental faculties which, as surgeons or physicians, you will be called upon to employ. This character of study, as an intellectual gymnastic, is often neglected ; and certain of the branches of knowledge you are required to cultivate are disrelished, because they are looked upon only as storehouses of facts, but a small number of which can be recollected, or will be needed in after-life, whilst their value as discip-

lining and strengthening the faculties is overlooked. Let me give you an example. A student at the commencement of his medical career, has the inlets and apparatus of knowledge of all kinds less perfect than they afterwards become. The external senses, for example, are much less acute,—or rather, perhaps, I should say, less accurate—than they may be rendered, and than they ought to be, in those who learn so much by the eye, the ear, and the touch, as the surgeon and physician do. I have been struck by observing how specially defective in beginners the sense of smell is. Some time after the eye can readily distinguish shades of colour, the nose is still at fault in distinguishing odours. Now, chemistry can educate this organ, in a way other sciences cannot. The chemist has no other method of identifying many substances, but the differences in their odours, and educates his sense of smell to appreciate them even when they are faint, and very like each other; so that, like a trained pointer, he may never miss his game. When you remember that poisoning with opium and with prussic acid, is often discovered solely by their odour, you will have a direct example of the value of an educated olfactory organ to a medical man. But I refer to these examples only to impress upon you the gymnastic value of all your studies, and the desirableness of allowing each to exercise its full disciplining, as well as instructing, influence on your minds, if you wish to secure that most important and desirable result, that your daily professional labour shall be intellectually a labour of love. Nothing will more conduce to this, I am sure, than your discovering, as you proceed with your studies, that they are not only adding to your knowledge, but that they are rendering your intellects clearer, your memories stronger, your senses more acute, your fingers more expert; and all this they can effect, if justice be done them.

The second of the motives which I have supposed chiefly to influence you, is the love of fame or desire of distinction. There is probably no man uninfluenced by this motive, even among those whose career least brings them before the public; and it cannot but be strong in early life, and especially at the age when we first become conscious of our powers, and revel in the exercise of them. It is an impulse to action which many will disown—in some cases exactly in proportion to the extent to which they are secretly conscious of being influenced by it,—from the dread of exposing themselves to the charge of vanity; in others, because they prefer to stifle the promptings of ambition, and conceal, under the plea of modesty and contentment with the faithful discharge of their duties, the gratification of indifference and indolence. They are willing enough to be distinguished, provided they could, like Byron, awake some morning and “find themselves famous;” but, since they have not been born great, and are too lazy to achieve greatness, they are minded to wait till, like Malvolio, “greatness is thrust upon them.” Let us be above these follies. By nature we are both vain and ambitious, and our business is not to deny that we are so, but to seek to shape to useful ends and wise purposes that desire of distinction which we cannot repress.

This desire seems of two kinds, the one, a restless craving for distinction, founded on vanity; the other, a rational wish for the acknowledgment of talents or performances, founded on a consciousness of original power or acquired energy. Of the former, which is sister or cousin to “envy, hatred, malice, and all uncharitableness,” it may be said, that it is the most unworthy motive that can influence a student,—he cannot be called a lover of science or art. A worker, influenced by it, does not consider what is noble, or hard to be overcome, or strive to estimate his own powers, and what they are fitted for; but knowing, as his earliest and chief motive, a keen longing for the praises of others, gratifies this at the expense of every nobler desire. This vanity readily and frequently becomes morbid, being haunted, or else alternating with, a secret sense or dread of inferiority, which begets jealousy, caprice, and fretfulness,—alien alike to manly independence, intellectual quiet, and moral repose. Further, as its reward is not in itself, but wholly derived from an

external tribunal,—its goal being *praise*, not performance,—it is ever a vague and uncertain motive, which will keep a man at study only so long as it promises him distinction, and tempt him away to whatever else seems most likely to insure large, and above all speedy reward.

A rational and well-regulated desire of reputation, on the other hand, is truly a sense of justice felt subjectively, or in relation to one's self. It is a consciousness that the gifts of intellect which God has conferred on us, and the cultivation and extension of them, which time and education have brought, give us a power to work for our own good and that of our fellow-creatures, which entitles us to a higher place than the ungifted and uncultivated around us.

A rational ambition like this, recognises the great principle, that the most gifted and cultivated mind shall stand at the summit of the republic of science, of art, and of letters; and that lesser minds shall take their places according to their deserts, measured by this standard. And it differs from the vanity before spoken of in this, that its aim is not to *obtain* reward, but to *deserve* it. The vain man's wishes concern none but himself, and he takes praise whether he deserves it or no; whereas the honestly ambitious man is as willing to obey as to command, as anxious to see those more noble and more worthy than himself above him, as to see the less noble below him. This ambition can work ill to none, and must benefit all; since it is not, when we analyse it, a striving to be above this man or that man, but only an earnest desire to see every man in his own place, accompanied by an exhortation to each, but especially to ourselves, to aim at deserving the highest place. It is your duty, then, to train wisely not to deny, far less to repress, that desire of honourable distinction, which is, or ought to be, in all our hearts. We are the worst judges of our own merits, and probably always over-estimate our deserts. Our wisdom will be, in lowliness to esteem others better than ourselves; but so long as we feel, that we humbly and cheerfully acknowledge the superiority of others, and rejoice to dwell upon the greatness of the great dead, and still more (for that tries our sincerity further), on the greatness of the great living, we may safely, I am sure, aim at being great ourselves. Were it morally wrong for one man to wish to be more thought of than his brethren, it would be the duty of all of us sternly to repress it. So far, however, is it from being wrong, that we are to blame for not sufficiently encouraging each other to good and to great works. I say this in the name of the whole profession. Ours is an honourable and an ambitious calling. We have in all ages, and among all civilised peoples, claimed and received a high place in the esteem of our non-professional brethren. And woe to the day when we shall forfeit this; when the members of other callings shall despise us, and say that we, who once were famous, have become a reproach and a byword. It is for you to save us from this. Our profession is as ancient as suffering is, and our pedigree and genealogy are older than any enrolled upon parchments, or recorded by heralds. We shall be needed also, and, unless we are to blame, will be honoured, so long as there are sufferers upon earth. And as thus we look back on all the forgotten past, and forward on all the unimaginable future, there lies upon us and upon you the deepest obligation to see that in these restless, progressive days, our profession is not outstripped by others, or the high place which has hitherto been granted to us exchanged for a lower.

The third motive referred to was, the Love of Truth for its own sake, apart from its beauty or its utility. I speak here of truth as apprehended intellectually—in other words, of knowledge or science. My object is not to urge you to avoid falsehood, or the perversion of moral truth; but to avoid false science, or the perversion of intellectual truth. This is a matter of more importance to successful study than many of you, perhaps, are aware. It is a much less easy thing to observe accurately than we are apt to imagine. In a court of justice you may any day hear a dozen witnesses reporting the same occurrence which they have all seen, but of which each gives a different account.

Sir Walter Raleigh is said to have burned a large part of the MS. of his "History of the World," on finding one day, that of some trifling occurrence which had happened at his prison door in the Tower of London, he could not obtain two accounts that agreed. It seemed to him folly to pretend to write the history of the world, if the truth could not be ascertained concerning a single simple event that had transpired at his own door.

Lord Bacon occupies a large portion of his "Novum Organon" with an exposition of the "idols," as he names them, which hinder men from observing the truth, even where they desire and intend to be honest observers. The history of all the sciences illustrates this on the largest scale. The ancient astronomers held, that the earth stood still, whilst the sun went round it. The older anatomists taught, that the blood did not circulate. The chemists of the seventeenth and eighteenth centuries, made chemistry retrograde for a century, by misinterpreting what happens when a candle burns. Yet these astronomers had the same skies; these anatomists the same bodies; these chemists the same combustibles, as we have before us, and were men of as great intellect and capacity as their successors.

Nor is this an obsolete error, which, in these wise days of ours, we can count upon escaping. If you will only consider how widely quackeries of all kinds flourish among us, and with what avidity any rumour about the sea-serpent, about a brilliant gas costing nothing which can be made from water, about magnets which discover silver and gold, or about any other similar wonder, is received, you will feel that the intellectual atmosphere of the nineteenth century is certain to give its own tinge to truths seen through it, and keep us from observing them by that "Lumen Siccum," as Bacon called it,—that pure untinted light of reason, which allows truth to be seen without giving it a colour.

I press this upon you, because in your studies accurate observation is more than half the battle. The common belief of mankind seems to be, that it is difficult to reason well, but easy to observe well; and men think they have settled a dispute when they tell you, that they saw so and so with their own eyes, or heard it with their own ears. Yet these same eyes of theirs have, in the majority of cases, been looking through the spectacles of some prejudice, or prepossession, or expectation; some fear, or hope, or other blinding or colouring motive, of which they have taken no heed. They tell you truly enough what *they* have seen; but this may be very different from what they should have seen,—from what was actually before their eyes. I am inclined, indeed, to think that men reason better than they observe—at least that educated men do.

Whether this be the case or not, you must remember, in studying anatomy, chemistry, physiology, surgery, and the like, that it is necessary to keep a watchful eye against the risk you run of mistaking the actual nature of what is before you. A chemist probably never analyses a substance without some prepossession as to what it will prove to be. An anatomist, looking through the microscope at some structure new to him, unconsciously expects it to have a certain molecular arrangement. A physician or surgeon examining a patient, does so with some theory, however slight, formed at the first glance of the sufferer, of the nature of his disease. In this way we often see what we wish to see, and do not see what we wish to leave unseen. This is but one cause of the deceit which we are constantly, though unconsciously, practising on ourselves. I cannot enumerate all the causes of our failure to discover truth, nor is it necessary. Thus much may be said,—We are often at fault, through the imperfection of our instruments of observation or experiment; our hands are awkward and we dissect ill, or weigh inaccurately; our eyes are uneducated to discriminate colours or forms; our ear is dull to the more delicate gradations of sound; our touch is not an erudite touch; we are misled by optical phenomena in our microscopes; by impurities in our chemical tests; by misconstruction of our instruments and apparatus. We are untrained to think; unaccustomed to reason logically, and to balance conflicting evidence. Even

when phenomena are presented to us in all their fulness, we do not understand their significance.

Again, we are careless and indifferent observers. Many things escape us. Think how long it was before men discovered that water consisted of two gases, or that electricity moved a compass needle, or that steam was a motive power. We might have had steam engines and electric telegraphs, a printing press, vaccination, anæsthetics, the tying of arteries in aneurism, and much else, centuries ago, had men only opened their eyes and observed what was staring broadly in their faces. How many discoveries we miss every day, our successors will point out.

Further, we are hasty and impatient observers. We often witness but a part of a phenomenon, and then reason as if we had witnessed the whole. The famous tale of the chameleon and the travellers is a case in point. The false direction in which chemistry, and with it medicine, was turned by the chemists of the Phlogiston School, arose from this. They observed that a burning body evolves light and heat; but they did not wait to observe, that in so doing it becomes heavier. The history of science abounds in similar examples.

It is, then, no easy thing to be an honest observer; and it is an essential part of all education to beget in our minds a conviction of this, and to train us to be patient, earnest, full, and accurate in all our investigations. My present object is not to suggest the discipline by which a student may become a truthful investigator. On that point it is enough to say, that the course of study prescribed by the medical boards is such, that if faithfully and intelligently pursued, it will go a great way towards teaching those who pursue it how to become accurate observers and honest workers. What I am anxious to insist upon is this, that it would be most perilous to our profession if the worship of knowledge for its own sake were to die out amongst us. To nothing else can we trust for the full conservation of what truth our forefathers have handed down to us, or for the extension of what is in our own hands.

The other motives to labour which have been referred to, are narrow in their aim and limited in their influence, compared with this. If a man take up medicine as a profession solely to make bread by it, he will consider himself excused from all studies, except those which have a money-value attached to them, and perhaps will count it better to invent some infallible pill, or tincture, or ointment, than to make laborious searches after truth, which is said to lie at the bottom of a well.

If, again, he choose it because it pleurably occupies his faculties, and interests him, he will carefully avoid all its distasteful departments, and limit himself to those which yield him gratification, so that he will narrow himself to some small corner of the great territory which medicine claims and cultivates.

If, further, his chief object be to win himself a name, he will select those branches of professional study which are least difficult or most popular,—and these are exactly the departments of medicine which may be most safely left to themselves.

Nor will moral motives, such as the study of medicine with a view to enable one to succour the distressed, so as to become a gratuitous practitioner or medical missionary, avail.

All those motives are good, whether considered singly or together, but every one of them can find enough in the present state of medicine to satisfy it, and has in it no promise of extension of our calling, or need to care for that. We must seek to cultivate, in every medical student's mind, reverence for truth as truth, even though it should seem barren of all result; nay, should appear destined to overturn all that he has been accustomed to believe. Some few, the more the better, we may expect to make this their great aim, and to them we shall chiefly look for the elevation and improvement of medicine.

I would remind you, therefore, that you should despise none of the studies prescribed to you. You should honour all of them, The surgeon who knows

the laws of mechanics, the different orders of levers, and the principles of action of the mechanical powers, will be, *cæteris paribus*, a better surgeon than he who does not. The physician who understands the conditions of a vacuum, the law of diffusion of gases, the nature of gaseous transpiration, the composition of inspired and expired air, of arterial and venous blood, will learn more from the revelations of the stethoscope than his fellow physician, to whom that instrument is only a hearing horn. All the sciences are indebted to each other, and often where they are least conscious of the obligation. I remember a very clever physician once interrupting me among my laboratory pupils, to ask me why I took up the time of students of medicine teaching them the properties of the metal copper? I ought, he said, "to be instructing them how to analyse tubercle." And yet, had my demonstration been on the very matter this doctor demanded, I must have begun with teaching that tubercle could not be analysed without the employment of oxide of copper. Some years ago, Dumas and Liebig were busy in their laboratories with certain researches. I can imagine a *practical* medical man who visited either whilst at work, saying to him,—Here is medicine admitting of the greatest improvement from the application of chemistry to it, and here are you, an acknowledged chief in that science, caring nothing about medicine, but busy with lime, and chlorine, and spirits of wine, only anxious to add another to those endless organic compounds, of which we have more already than we know the very names of, far less know anything about. And yet, out of these same unprofitable researches, proceeded the discovery of that chloroform, which our surgeons now rejoice to have in their hands.

We must not stop the natural philosopher, the botanist, the anatomist, the chemist, the physiologist, the metaphysician, or the student of any other science which can profit medicine, with the idle question, *Cui Bono?* of what good is this? Or the still more idle taunt—this is not practical. No great advance can be made in natural history by which medicine will not be a gainer. We have an interest, as medical men, in every wild beast show and zoological garden in the country. Vegetable and animal physiology cannot progress without greatly adding to the resources of organic chemistry. Chemistry cannot go forward without improving physiology and pathology, and adding to the therapeutic stores of the *materia medica*; or any one science make progress and not give assistance and an impulse to the rest.

In this you should have faith. You cannot all be accomplished anatomists, botanists, chemists, physiologists, natural philosophers, or psychologists, but you should despise none of those investigations; you should heartily wish well to them all. Science, gentlemen, is another word for the works of God. To have faith in it is to have faith in Him. We should reverently believe that all knowledge is precious, worth knowing, worth encouraging. If we cannot each add to it, let at least *Anathema Maranatha* be pronounced on him who hinders its progress.

And now allow me to offer you a few words on the moral spirit in which medicine should be studied.

This is not the place nor the occasion for a homily on the subject. It is too important, however, to be altogether passed over. The study of medicine has been declared to have a strong tendency to make men materialists and atheists. If it really deserved this charge, it could not but be warily approached by those who had a choice of occupation. As for the declaration, that it makes men infidels, which once found expression in the assertion, that wherever three doctors were together, you might be certain there were two atheists, it was so extravagant a libel, that the wonder is it ever found the slightest currency. "The fool hath said in his heart, there is no God," but I cannot believe that the members of a *wise* profession like ours, can in any age or any country have been to a great extent, guilty of that folly. So far as regards materialism, there is thus much of truth in the declaration:—medicine necessarily brings before the student the physical apparatus and visible organs connected with sensational,

emotional, and intellectual acts much more prominently than it does the purely mental or psychical agencies, which are, or are assumed to be, also at work. Those, therefore, who forget that medicine has no concern, as a practical art, to pronounce upon the true theory of mind, or soul, or spirit, and who do not observe that she deals only with so much of the problem as affects her own position as the minister of healing, are liable to be misled into the belief, that anatomy, physiology, and pathology have undertaken to decide the question between the materialist and the immaterialist. It may be well, therefore, to remind you, that these branches of medical science do not pretend to pass judgment on the matter in dispute, and that they would err if they did. If, therefore, you are interested in questions of psychology, you must not forget that you have but half the means for coming to a just conclusion concerning the nature of mind in your hands ; and that *your* studies have a certain tendency to make you materialists, as the tendency of the preliminary studies of theologians and lawyers is to make them immaterialists or idealists. This tendency, I think, should be kept in view, and guarded against, for the exclusive study of the physical sciences is liable to beget a one-sided judgment on all questions where there is room for referring an effect entirely to physical or entirely to non-physical forces. The corrective must be found in studies of an opposite class ; but I do not conceive it needful to enlarge on this, for ours is a practical, not a speculative calling ; and it is but a very small section of mankind who will be found, in any circumstances, taking sides on such a point as the one we have been considering.

Every profession has some evil tendencies as well as some good. In ours the latter preponderate, but the former are important, and must not be overlooked. Allow me to refer to some of them very briefly.

The sciences which make up medicine are so much and so necessarily occupied with the exposition of secondary causes, that they are apt to make us forget that what we call laws and forces—physical, chemical, physiological—are but the modes of working of Him who is uncaused, and the author and director of all. I have heard wonder expressed by non-professional persons, that medical students should be so indifferent to the evidences of design which their studies so amply supply. In this, I think, they have done you, in some respects, considerable wrong. They have forgotten the engrossing nature of your occupations, and the necessity under which every diligent student lies, of mastering the mere facts of various sciences, which are by no means very easy of apprehension.

They have forgotten, also, that the accompaniments of a dissecting-room are not exactly such as conduce most to moral meditations, like those in which Paley or the authors of our “Bridgewater Treatises” loved to indulge.

And, further, they have forgotten what, when I was a student, used very much to strike me,—viz., that in the wards of the hospital, all the goodly design of which so much was said, *seems* to fail. Instead of gazing eyes, hearing ears, moving joints, lungs gently breathing, hearts quietly pulsating, brains actively working, we go round an hospital and witness blindness, deafness, palsy, madness, every variety of torture, and the end of all—death. We want a chapter added to our “Bridgewater Treatises” to reconcile this with what they declare.

Some of you may have felt as I have felt, or will yet feel, the perplexity alluded to. Let me remind you, then, that even in disease there is exquisite evidence of design,—that it is not doctors who cure the sick body, but the body that cures itself. The surgeon will whip you off a limb fast enough, and so save torture and prevent death ; but he does not pretend to make the bleeding vessels hermetically seal their mouths, the rough bone granulate into smoothness, the muscles form new attachments, and the skin close over all. Kindly nature does this. The diseased body proclaims to the last, that it was intended to be healthy, and is struggling against all odds to be so, and dies, as it were, facing

Death with arms in its hands. I would therefore say, let not the striking moral lesson thus taught be overlooked, but rather seek out for it,—it will add interest to your daily duties, and invest them with a high moral meaning.¹

There is another tendency of medical study to which I must refer, however shortly. Your studies compel you to deal with the human body, both dead and living, in a way which tends to blunt that delicacy which is a cardinal virtue in the surgeon and physician. It is impossible for us to treat the dead body as mere carrion, as we are compelled to do, to cut it and saw it, to macerate it, and put bits of it into glass bottles, to distil it in retorts, and burn it in crucibles, or to medicine it as we must when alive, and retain that feeling of respect or reverence for it which is natural to us, and which we feel so strongly when we gaze on the remains of those we have loved. You must guard, gentlemen, against giving way to this perversion of one of our noblest instincts. For your own sakes, you must fight against it. Apart from all other considerations, you owe it to yourselves, to keep your hearts from contamination, and to remember "*Mundis omnia munda*,"—to the pure, *all* things are pure.

And in connection with this, I have to warn you against everything that tends to harden your hearts, to lessen your sympathy with suffering, or, however slightly, to brutalise your natures. There would be something terrible in a cruel surgeon; in the spectacle of a man who delighted to witness and to inflict suffering. I cannot believe that there ever was a great surgeon who had not a kind heart; and I am sure that the coolness and case-hardening which every practitioner needs, are quite compatible with an affectionate,—though not, perhaps, an expressed—sympathy for an agonising patient. John Wesley, the founder of the Methodists, a shrewd observer of human nature, reports, that he knew a surgeon who gave this account of himself,—“I would not hurt a fly, but I could scrape all the flesh off a man’s bones if it were necessary.” And in the same spirit a foreign surgeon, whose life I recently read, in recounting a formidable case which called for his interference, simply says, “I commended my soul to God, and cut deep.” This is the spirit required.

I should be very sorry if you imagined that I thought students of medicine had acquired a character for cruelty. I believe the very opposite. You are hardly judged by those among whom you first practise. A “young doctor,” which each of you will be after his first year, is in popular estimation, at least in Scotland, an ogre who tries experiments on his patients, does not “understand the trouble,” in the majority of cases he is called to, and is the cause of many deaths. But for all this, you are credited with kindness, and have even been commended for it.

In truth, I could wish that some one would write an essay on the Cruelty of Patients towards their Surgeons. Let a sick man have but some trifling ailment, some everyday malady, nevertheless he expects that his medical attendant shall condole with him, as a man marked out by misfortune. He does not consider that his surgeon has many other patients to condole with, has formidable operations to perform, and critical cases haunting his memory. Each patient appraises his own sweet flesh still more highly than Portia did that of Antonio;

¹ I greatly wish that some thoughtful physiologist would take up the subject referred to in the text, and supply, for the sake of the student of medicine, the blank which occurs in most, if not all, our natural theologies on this point. It is the dark, not the bright, side of the argument from design for an all-wise and all-merciful Creator, which demands elucidation at the hands of our natural theologians, but it seldom receives it. I may refer the reader, in the meanwhile, to a paper contributed to the “British Quarterly Review,” for February 1848 (p. 204), where he will find some discussion of the question touched on in the text, in a paper entitled “Chemistry and Natural Theology.” There are some admirable remarks on a kindred subject, in Professor Owen’s work “On the Nature of Limbs.”

and when the surgeon comes, like Shylock with his knife, demanding his pound of flesh, he is refused not only that, but grudged even "the division of the twentieth part of one poor scruple," which Portia would more than have allowed him.

This is true; but you must bear with the exactions of the sick and suffering; you must compassionate and excuse them. You must aim at preserving a spirit of benevolence and mercy. It has always characterised medicine. It has increasingly tinctured it, as the modern practice of our lunatic asylums, more, perhaps, than anything else, illustrates. You must, therefore, be watchful against its decay; and, in particular, I would warn you against allowing your craving for distinction, and your longing to be prize essayists, to tempt you unnecessarily into cruel experiments on the lower animals. They are not at our mercy to torture as we please. Their lives are assuredly of much smaller account than ours. If by their suffering, human suffering may be prevented, we are justified in torturing them. But pain should be inflicted on them thoughtfully and considerately. We should scrupulously avoid all needless infliction or prolongation of agony, and be certain before we begin that we have a reasonable prospect of bettering mankind, and of giving more emphasis to the declaration, that ours is the healing art.

I close with one remark. There is, in addition to all that has been said, a triple peculiarity about the moral character of the medical man. Ours is a very responsible profession, which requires its youngest members to take charge of most difficult cases; and, therefore, gravity becomes our calling. But that gravity must not be allowed to become gloom, for we are to console and comfort, not to terrify the suffering. Therefore, cheerfulness becomes our calling. And lastly, ours is a perilous profession—more so, perhaps, than any other in times of peace; and, therefore, courage becomes our calling.

In short, a strong, clear head—a bold, kind heart—and a dexterous pair of hands, are what each of you must do his best to procure, and wisely to employ.

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