

**Addresses delivered in the University of Glasgow at the opening and close of the medical session / by John Young, M.D., L.R.C.S., Professor of Natural History.**

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Young, John, 1835-1902.  
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**Publication/Creation**

Glasgow : James MacLehose & Sons, 1884.

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# ADDRESSES

DELIVERED IN THE

## UNIVERSITY OF GLASGOW

AT THE OPENING AND CLOSE OF THE  
MEDICAL SESSION ;

I.—ON THE AIMS AND DUTIES OF THE MEDICAL  
PRACTITIONER,

AT THE GRADUATION CEREMONY, JULY, 1884.

II.—ON THE GERM THEORY OF DISEASE,

AT THE OPENING OF THE SESSION, OCTOBER, 1883.

BY JOHN YOUNG, M.D., L.R.C.S.,

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LECTURER ON GEOLOGY.

GLASGOW :

JAMES MACLEHOSE & SONS, ST. VINCENT ST.

Publishers to the University.

1884.



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I.  
ON THE AIMS AND  
DUTIES OF THE MEDICAL PRACTITIONER.  
DELIVERED AT THE  
GRADUATION CEREMONY, JULY 1884.

*J'ecrirai ici mes pensées sans ordre, et non pas peut-être dans une confusion sans dessein: c'est le véritable ordre, et qui marquera toujours mon objet par le désordre même.—*

Pascal.

THE ceremony of to-day, gentlemen, has brought to a close your hard labours in acquiring the elements of Medicine. Henceforth you are students in another and higher sense.

You have passed through a curriculum which, initiating you at first into the mysteries of the structural and chemical components of the normal human body, at the last familiarized you with diseases so grave as to pervert normal functions and obliterate normal structures. In the lecture-room you have heard the symptoms of grave lesions described, their origin canvassed, their treatment reasoned out, and hints given which would enable you to foretell the ultimate issue. In the wards of the Infirmary you have seen patients under treatment who would not have been brought under your notice had not their maladies been grave enough to unfit them for their ordinary avocations and duties.

It is right that such institutions should confine their attention to the graver cases. It is wrong that the word



“charity” should be used in reference to them. They are not private efforts of sentimental philanthropy—they are organizations forced on the public by two distinct considerations. The one is, that the many who have small incomes cannot procure the needful attendance and attention in their own homes during serious and, especially, prolonged illness. The other is, that if, in consequence of defective attendance, prolonged inactivity, even death, results, the poor family is forced into the pauper class, the burden on the community is increased, and, what is more important, the minister to the public well-being is taken away from his usefulness. The selfishness as much as the kindness of the people is concerned in the maintenance of public hospitals. The time is fast approaching when such institutions will become a public trust, and the sooner it comes the better. We pay for protection by the police, for water supply and for the inspection which (such is the theory) shall prevent waste; we pay for cleansing and for a staff which looks after infectious diseases. But we do not pay for institutions which protect the public against loss by disease: they are left to the chances of voluntary contributions or of the high tax which workmen impose on themselves. Meanwhile our Infirmarys accumulate large reserves, which are not available when there is need for the erection of a new hospital. If there was a chance of the Infirmarys becoming self-supporting less exception might be taken. But so far is this from being the case, the demands for hospital extension are increasing, and the appeals to the public grow yearly in urgency and pathos. Bear in mind that the wards are filled with cases of such gravity as would pauperize a family by the incapacity of its head, impoverish them by the protracted illness of a member, and conduce to further disease by a mother’s inability to look after her children. We do not grudge the tax which obviates these disasters in the



case of infectious diseases, but no one will press for a rate for general hospitals, though many are willing to make speeches in support of its theoretical propriety. Yet I am confident that if our two Infirmaries were closed for six months the public loss would be greater than if a severe epidemic ravaged the city.

The advantage which these institutions confer by giving you the opportunity of studying grave diseases in the clinical wards has its disadvantage. You come to know a few of the commoner and many of the less common ailments of men and women. Of the special affections of the latter you have seen little; there is too scanty provision for them in our wards. Of the diseases of children you know little, notwithstanding the number of children admitted to hospital. Taking the most liberal view of what you have done, you have only learned to recognise and treat pronounced disease; you know nothing of it under the ordinary conditions, social and domestic. With good nurses, well-aired rooms, scrupulous cleanliness, appliances of all sorts, and the regularity of treatment only to be procured when those in charge of the sick are free from personal anxiety as to the sufferer—however great, however keen may be their interest in his welfare—free also from anxiety as to the source of the next meal or as to the safety and comfort of those excluded from the sick-room; with all these favouring circumstances you know what the course of a malady is likely to be. But you have had no trial of the difficulties of practice where one or more, where for the most part all, of these favouring conditions are absent. Still less experience have you had in watching the initiatory stages of these serious lesions which have occupied your thoughts for the last three years; at least there is no organized means of giving this experience. The only part of your hospital experience which fully illustrates the exigencies of practice is the accident ward, for there you



see what you may be called on at any moment to deal with. But let us take a more ordinary illustration. You are called in to find the head of a house with a hot skin, loaded tongue, high pulse, high temperature, headache and restlessness. That is a summary which only informs you that too rapid combustion is in progress, but what is the exciting cause? Your experience is as yet only with things pronounced. You feel like the candidate, prior to 1815, who, when asked what he would do with a specified case, replied that he would call in the nearest practitioner. This being out of the question, what will you do? I shall not recapitulate the possibilities which the vague outline above given might foreshadow. Suffice it that two or three days may elapse before you have made up your mind whether it is an influenza, or a pneumonia, or a cerebral disorder with which you have to deal; or it may turn out to be a surgical affection, a deep-seated abscess, or, *crede experto*, a fit of the gout looming in the not distant future. In any of these cases your inexperience and natural hesitation to pronounce a definite opinion will tempt you to postpone your decision as to diagnosis, prognosis, and any but the simplest treatment, and your hesitation will be in proportion to your knowledge of Medicine from reading and clinical study. What is the result? You are expected to do something, and under excitement you may act unwisely or delay unwisely. On the one hand you may injure your reputation as a prudent physician, on the other you may condemn a bread-winner to needless idleness or send him out to his work prematurely with evil consequences as to his ultimate usefulness. There are cases in which even wide experience may be at fault, but these are not the rule.

Your aim in treatment is twofold: to see your patient get better, or, failing that, to alleviate his symptoms, and to



facilitate your work by gaining his confidence. The latter is a very important branch of your duty. It may be accomplished by the paltry chicanery said to be the speciality of the genteel practitioner — the man whom Du Maurier makes a lady recommend not because she knows him to be a good doctor, but because he has “a good bed-side manner.” The walker in a shop has this knack: your aim is a higher one. If all your patients were sensible, of well balanced minds, how easy would your task be, but they are not. You cannot even look for common sense from able men of business or affairs, or even your medical brethren, when they are ill. Quackery lives because it numbers among its friends men in high places, and there is scarcely a fad, however absurd, which men eminent in the State, in Science, in Law, in the Church, will not be found to support in view of sickness. Consider that every man or woman who enters your consulting room is wrong-headed concerning himself or herself, that the information you need is the very last you will get in a great deal too many cases: unless you know how to get it. Indiscretions of a few years back are forgotten or deemed unimportant, yet these may be the key to the present situation. Habits of such antiquity as to have become unheeded are concealed, or at best not mentioned. Cares which the business man dare not reveal even to his intimate friend, lest his affairs should suffer, are withheld. Anxieties are kept out of sight by a woman just because her waning affection for a husband intensifies her fear of betraying or being unjust to him. Ill-treatment is ignored, though it is the direct cause of ailment, because the revelation of it would be the admission to another of her injured self-respect. In short, you are in the condition of the doctor who has been consulted regarding a member of the harem: between you and your patient there is a veil; worst of all is it when the veil is of your own making;



when a woman, reluctantly forced to consult you, sees from your hesitating questions that you do not know your ground, and makes of your ignorance an excuse for silence. To a woman she would be candid, and many a life will be more useful, many a home happier, when competent, well trained women shall be available to their suffering sisters. However kindly meaning men may be who command ready obedience and entire confidence in a pneumonia or surgical affection, they are apt to fail in treating women, whose feelings must be respected: men are not of infallible tact. How are you to deal with these difficulties? They exist in all classes; they are not the monopoly of the rich, though there is usually more reticence among them than among the ill-educated, whose copious irrelevance, on the other hand, is sometimes equally perplexing.

You have as yet had no experience in the domestic treatment of disease, still less in its prevention. I regret, and am by no means alone in my regret, that you have had no opportunity of visiting the sick in their own houses. The out-door practice of a dispensary is the best text-book of medicine, or, if that be thought too strong, it is certainly the best possible examination to which a student can be subjected. A medical writer of great ability and courage thinks that the order of medical study ought to be reversed; that practical ward work should precede systematic pre-lection, and of the latter the less the better. Theoretically this is the proper plan, and it is that which historically we know to have been formerly adopted when the members of Corporations or Medical Guilds were the sole teachers, each neglecting his apprentices more or less, according to his zeal or want of conscience, their intelligence or laziness. I recall this in the true spirit of the *laudator temporis acti*, for these were the days when the zealous man achieved success, not of the pecuniary sort always, nor of the social



(for these then, as now, went often to the society man or courtier who might or might not be a competent man), but the success of the discoverer, the author who built a reputation. Now-a-days there are too many pupils for such individual instruction, and the craze for an unattainable phantom of uniformity, worthless were it attainable, which has for so many years cast its spell over successive Presidents and Vice-presidents of Council, has compelled the preparation of multitudinous measures of Medical Reform, till at last, when Scotland is proved to have already secured the alteration aimed at, the official for the time being says, "No matter, I must pass a bill." All the bills hitherto introduced deal with boards and examinations: plans of study are left to the medical authorities, and these perpetuate existing arrangements, for there is no power to compel the uniform adoption of such a rational reform as the replacement of systematic lectures by practical teaching. Even clinical teaching, the most important of all, is allowed a disproportionately small space when we compare the time allotted with the two sessions of systematic lecturing now customary. Regretfully adhering to the present, because it is the method ordained by Act of Parliament or ordinance having the same effect, and because the substitution of a practical for a systematic course would be illegal on the part of the teacher, and would, if accepted by the pupil, bar him from his degree, we can do nothing but make the best of it.

Domestic visitation under the auspices of a dispensary is the natural complement of clinical teaching. Time was when in Glasgow the shop doctors constituted an important body with whom it would have been difficult to interfere. But that day is past; the Faculty of Physicians and Surgeons forbids the keeping of a shop by its Fellows, so that no vested interest is now involved. Anderson's College



at least thinks so, for a dispensary has existed in connection with that school for some years, an admirable example which it is not competent for the University to follow of its own authority ; but for which I earnestly hope provision may yet be made. The precedent already exists ; the poor are gratuitously attended in child-bed, because attendance on such cases is required by ordinance, and can only be secured by being given gratuitously. Much talk has been made about the pauperizing influence of gratuitous advice, and even the existence of the hospital dispensaries or consulting rooms has been threatened, because a handful of shabby people have wrongfully taken advantage of the aid which they offer. As well suppress private consulting rooms, for men in large practice will tell you these same folks cheat them even in their own houses. The benefit to the many ought to countervail the infinitesimal meanness which exists. If dispensary visitation is—and there can be no doubt of the fact—a very valuable means of education for the future practitioner, it ought to be provided. I go the length of saying it ought to be enforced by ordinance, as is attendance on midwifery cases. It is a public duty, a duty which the public ought to undertake in its own defence, to see that no one is forced into the pauper class by the accident of disease. The workman who can ill afford the time to attend at the hospital dispensary struggles on in spite of his sickness till it is too late ; he then enters a hospital for a prolonged residence, if fortunately his disease is not yet beyond successful treatment. To such a man the visit of a senior student might make all the difference ; a serious illness might be arrested at its commencement, or at the worst its timely treatment in hospital might be secured. People whose pence are few cannot afford to call in a doctor to a sick child when a fee has to be forthcoming somehow. But a croup or a scarlet fever would be earlier detected



and easier managed if the anxious mother could get advice at the cost of sending a message to the dispensary. In such a field, were it open to them, students would learn more than the routine of practice, they would learn how to treat men and women. They would acquire confidence and readiness, and I undertake to say that the final examination would be easier to candidates and examiners.

In defect of such early initiation into the methods of the practitioner you have to acquire the art of investigating a case for yourselves, of interpreting obscure symptoms, and of wringing from the patient the truth as to his history. It is not enough to say with Polonius,

If circumstances lead me, I will find  
Where truth is hid, though it were hid, indeed,  
Within the centre.

You have to seek or make the circumstances. Polonius' advice is more astute when instructing Reynaldo to search out the character of Laertes; it is in the spirit of the Spanish proverb, "Tell a lie, and find the truth."

See you now ;  
Your bait of falsehood takes this carp of truth ;  
And thus do we, of wisdom and of reach,  
With windlaces and with assayes of bias,  
By indirections find directions out.

My teacher, the late Professor Laycock, in his admirable lectures on Medical Observation and Research has summed up your duty in the following passage: "Man, but especially a sick man, is a poor creature, easily swayed by his hopes and fears: often looking wildly on every side for help and succour; now with a superstitious faith in a bold empiricism, now with an envious dread of science. You must not appear too wise, nor too elevated above your fellow-man—he will be envious of you and fear you; you must not be too familiar—he will contemn you. It is not



within my plan to treat of the moral management of the patient. I will therefore only remark that a quiet self-confidence will generate confidence, a kind sedulous attention to the case, even to devotedness, will win your patient's affection by indicating the warm and sympathizing interest you take in his sufferings; a calm firmness will secure respect. It is by this three-fold influence, the confidence, respect, and affection of your patients, that you will be able to carry out to your utmost wishes the plan of treatment you may think right to adopt." The volume is well worth your perusal, and its brevity permits you to read it through easily. You will not so readily master the condensed thought it contains, but a careful study of it will teach you the way of looking at sickness and the sick from the naturalist's point of view, and this, if properly mastered, will guide in many a difficulty. The extremes against which Laycock warns us are so admirably summed up by Bacon in his essay on "Regiment of Health," that I cannot help quoting the passage. "Physicians are some of them so pleasing and comfortable to the Humour of the Patient, as they presse not the true Cure of the Disease: And some others are so Regular in proceeding according to Art for the Disease as they respect not sufficiently the Condition of the Patient. Take one of a Middle Temper: Or if it may not be found in one Man, combine two of either sort: And forget not to call, as well the best acquainted with your Body, as the best reputed of for his Faculty." For the extremes, substitute genteel practitioner and fashionable specialist, and you have characteristics applicable at the present day. I do not advise the Baconian compromise: it would be two to one against the patient.

You have to investigate a case without the aid which you might receive from the common-sense and candour of the patient and his friends. You must learn to note the most



trifling facts and collate them with what you are told. Your cross-examination has to be conducted without your patient's knowledge, and your verdict must often be withheld from him, for prudent reserve is not only good in itself, but useful to your patient who, for the most part justly, suspects a talkative person. "An overspeaking judge is no well-tuned cymbal." Unconsciously you form a judgment of the probabilities in each case from his appearance and manner. This rough physiognomical diagnosis becomes more definite as you proceed. The pressure of a hand, the quiver of a lip, the movement in response to a question, or to the interference of a relative or friend, may reveal to you the seat of the disease, or give you the clue to a tissue of falsehoods and suppressions. The heat of the skin, the colour of the iris, a tortuous temporal artery will indicate deadly disease when the patient has to tell of what he thinks only a trifling ailment. Much of this physiognomical diagnosis you have learnt during your clinical studies, but, as I have said, you have learned it only after the morbid condition has become pronounced. You will now have to re-learn it; you will have to recognise at an early stage what you have hitherto seen at a late one, and in many instances you will find your account in anticipating what is to come. How easy would be the physician's task if disease, like Pallas, sprang into existence fully matured. Free of anxiety, unconscious of responsibility, he would enjoy the idyllic existence of one of Moliere's doctors, and earn his living by the steady application of certain prescribed rules. But how hopeless would be the prospects of the patient. With no resting-place between health and disease, his fate would be largely predetermined, and the element of hope being wanting at the beginning of his illness, the end would be death in a vastly larger number of cases. It is your duty and your privilege to anticipate disease, to



recognise its first warnings, and to help nature in her resistance. George Eliot has said that we fail as anglers because we are ignorant of the subjectivity of fishes. It is far easier to learn the tricks, the empirical methods of catching fish, by seeming to know their subjectivity, than by a skilful use of the imagination to follow a morbid process to its cause. In the latter case you have two subjectivities to deal with, that of the patient and that of the disease. I use this phrase perhaps prematurely, as relevant to the autonomous theory of disease, according to which a morbid product is held to acquire, as regards its further development, independence of the body in which it is found.<sup>1</sup>

We have happily outlived the period when it was witty to caricature the physician as habitually addicted to imposture or manslaughter. It is the fashion now to talk of the uncertainty of medicine, the fashion even among lawyers and clergymen, the former of whom agree on principles, but not on their application to particular cases, while the latter reverse the process, and agree on practice but differ widely as to doctrine. Leave to them their cheap amusement while they are well, for you know that when ailing the scoffers are the first to treat your art with superstitious trust. The jests have their origin in the fact, for it is an undoubted one, that there are many cases in which Protean symptoms baffle treatment, and disappear before some slight remedy suggested, perhaps at random, by a layman. For such *contretemps* you must be prepared, and if possible pick up a therapeutic wrinkle from the result. As time goes on, and you have learned how to treat safely and tentatively what you do not fully understand, you will find that your practice, especially in towns, deals largely with small ailments, uneasy sensations, not rising to the dignity of illness, yet impairing enjoyment of

<sup>1</sup> See page 60, and *Brit. Med. Journal*, Aug. 1883.



life and rendering work burdensome. The sufferers are neither well nor ill, and if it is your misfortune to be robust, "never to have known a day's illness," you may at first find it hard to imagine the feelings of those whom you will be disposed to regard as hypochondriacs, and put off with the fatuous advice to take more exercise, or do less work, or more work, as the case may be. You will learn in the long run, speedily, if you have served an apprenticeship to illness, to be more sympathetic and less suspicious of being taken in; you will find that if you cannot lay your finger on the disorder and treat it promptly, you secure a good result by kind words of encouragement and a show of interest. Many a man finds as great relief in detailing his sufferings to a good listener as a woman's over-strung nervous system finds in "a good cry." But the practice of trustfulness will bring to your knowledge a great deal that you never learnt nor could learn in hospital. I remember my embarrassment with cases in which "pains" were the chief symptom; these did not group themselves under anything described in books; what could I do? Hysteria and imposture were the only categories open to me. Had I to go through that experience now I should find my way smoothed by Clifford Allbutt, whose Gulstonian Lectures on Visceral Neuroses are a significant sign of the times. The experience of a physician not practising in the metropolis, but in a large provincial town, has furnished a valuable treatise on the class of ailments to which I have referred. But to understand fully what Allbutt teaches, you should read Beard's "American Nervousness." This work is as entertaining as it is instructive; written by a practitioner of wide observation, much travel, and great literary skill, it is thoroughly American, so much so that the increasing neurotic tendencies of people on this side of the Atlantic are said to be proof that the Old World is getting Americanized. With this amiable patriotism



we need not quarrel; it pleases our friends to be the leaders in physical decadence, and it does not alter the fact that, apart from the climatic influences which doubtless accelerate and intensify neuroses in North America, modern civilization multiplies at every possible point the waste of nerve energy in the individual, and so impairs the common stock held by the race in all parts of the world; in this unchecked squandering the English-speaking countries take the lead, the State as well as private efforts uniting to draw bills on the vitality of school children which their maturity can barely meet, and this, not through the intellect merely, but through the emotions also. School cramming does not furnish, towards the age of puberty, any natural outlet for overcharged emotion; on the contrary, the object is to repress these—

“They were dangerous guides the feelings.”

That is the maxim which, long the practical guide of “Society,” is now yielding bitter fruit in the form of congenital artificialness. Sydney Smith said children were graceful till they had learnt to dance. La Bruyere had, long before, elaborated the thesis: “Combien d’art pour rentrer dans la nature! combien de temps, des règles, d’attention et de travail pour danser avec la même liberté et la même grâce que l’on sait marcher; pour chanter comme on parle; parler et s’exprimer comme l’on pense; jeter autant de force, de vivacité, de passion et de persuasion dans un discours étudié et que l’on prononce dans le public, qu’on a quelquefois naturellement et sans préparation dans les entretiens les plus familiers.” That is the petty maxim which, if not avowed, underlies British feeling in reference to Art education. So far as is possible the school teaching in Music and Drawing is of the worst, and the condition of the latter is elaborately kept down by the State, which pays largely for bad work. As a



consequence children are trained to copy and admire worthless subjects, the production of artists deficient, fundamentally deficient in form, and the bad taste is fomented, by the imitation of nudities, brutalities and general haziness, into the production of indecency without elegance, of cruelty without the dignity which is conferred by earnestness, and of scamped work where obvious carelessness seeks in obscurity an excuse for bad drawing and colour. What lies beyond is the production of pretty coloured drawings, harmless but not artistic save in the decorative way. It is the same of music: even the great schools patronized by Royalty or subsidized by wealthy corporations for the most part turn out mechanical musicians, not artists; people whom Maskelyne and Cook may yet supersede with an Euterpe, younger sister of Psycho and Zœe. Our Academies produce no works of lasting character, for there is no real musical taste cultivated. Against this is to be set the allegation of modern writers that the typical neurotic is æsthetic. I have no objection if by that term is merely meant sensuous perception of what is agreeable; but this so-called æstheticism is at present limited to a small group among whom there is not enough, either by nature or education, of staying power to allow the perception to translate itself into creation; it is wholly imitative. Far less is there such body, such vigour as shall excite the imagination of youth and supply other thoughts than morbid introspections which are perhaps even worse than idleness at the period when manhood and womanhood is assumed.

The neurotic condition and the neuroses thereof symptomatic are, the former vaguely, the latter more definitely, grasped by such monograph writers as Anstie, Spender, Allbutt, Beard. But when one compares the statements of these writers, even checks off the successive pages of the same book, the tentative character of the work becomes



apparent. Allbutt fails to separate the "true neuralgias" from the neuroses he proposes to deal with; and as he seems to accept Anstie's views it is not surprising. The distinction is a convenient one in practice; it is one which experience has devised for therapeutic purposes, but it is not one which admits of scientific definition. It would carry me too far out of my way to discuss the term Neuralgia, or to show its identity with neuroses of which pain is an indication. At the foundation lies the definition of pain; if pain is truly an alteration of function due to mal-nutrition, whether by anæmia or hyperæmia, the interval between neuroses breaks down, and there seems to be a greater possibility of a single classification instead of two parallel arrangements under the heads Neuralgia and diseases resembling Neuralgia.

This brings me to the question of Diathesis. Beard contrasts the nervous diathesis with the tuberculous diathesis; but the former is not depositive, and the latter not merely does not originate neoplasms, but is in its essence the tendency to the degradation of plasms normally or abnormally arising. I have looked up Ziemmsen's Dictionary only to find Diathesis used to indicate tendencies of tissues, not of the ensemble of the organism. Dyscrases or cachexiæ are similarly isolated, and hereditary transmission of physical characters thus dropt out of sight. It is as if, in Natural History, the fact that the felines and dogs are the hosts of tapeworms, while sheep, cows, pigs are the seat of the cystic form, were held sufficient without an attempt to bracket these together under the generalization that the former are carnivores and the latter herbivores, thus acquiring their parasitic enemies by natural sequences, not accidentally.

Fothergill has adopted the diatheses which Laycock codified. The five are the gouty, lymphatic, bilious,



nervous, strumous. Of these the first three are, to my mind, ethnic; the strumous are, with the nervous, products of modern civilization, the former or strumous, representing the tendency to tissue degradation in ill-nourished members of the three ethnic groups, the latter, or nervous, illustrating asthenic states of the gouty and bilious. Allbutt, in contradiction to Anstie, says the neurotic *nascitur non fit*; overwork does not create him; he gives, however, no theory of his origin. From my experience in the South of Scotland I have been led to form a very distinct opinion as to neurotics in modern phrase, the members of the nervous diathesis in the earlier terminology. They seem to represent the better family types in a state of social decadence; descendants of Scotts or Dalgleishes, Frasers, Tweedies, Armstrongs, once dominant then forfeited; their status was, however, kept alive by the respect of clanship, and the feeling of superiority long survived the reality in mere money matters or land possession. But the respect tendered served to keep alive the feeling *noblesse oblige*, and thus to prevent the fallen families from sinking into the common with the same speed of gravitation as their poorer neighbours. Hence you shall find the shepherd a finer gentleman than his rich master, and looking it too, his stature, fine hands, small ears, mobile, neat features, giving the shadow of breeding. The southern forms are of the neuro-arthritic or neuro-lymphatic,<sup>1</sup> but in the East of Scotland as far as Aberdeen you find the neurotics of the bilious or Celtic ethnic strain. These are the people with whom Allbutt seems most familiar and therein coincides with Laségue. It

<sup>1</sup> This term has been branded as self-contradictory: you might as well say that Travers' "irritation" is applied only to some patients. The unstable equilibrium of the neuro-lymphatic may be displaced to one or other side, according to the prevailing heredity. Hence the alternation of tuberculosis and insanity in some families.



is from this imported population that the Leeds physician has formulated his experience in a district which, historically, should not have furnished him with such types among its native population. Perhaps among his case books he may find some persons who do not fulfil the charming sketch he gives of his typical neurotic, but rather are to be recognised as neurasthenic Saxons, both in their ways and neuroses.

Of late years several important monographs have appeared whose aim it is to inculcate due attention to small ailments. They are specially valuable as a protest against over-medication. In Hospital you run the risk of acquiring a too great respect for drugs. You see powerful agents aptly used and producing the desired effects. If you are proficient in the *Materia Medica*, and especially if it is your evil fate to have to dispense your own prescriptions, your knowledge of and familiarity with drugs may be a snare, as they will supply you too readily with a list of remedies which you may be tempted to fire off one after the other, only to find after all that it would have been better to regulate diet, work, and exercise, and trust more to Nature. Let me, by way of parenthesis, remind you that to medication some curious functions have been ascribed. Not at the period when the soul was deemed a secretion of the small intestine, but in the seventeenth century, glorious John Dryden took a course of medicine as a preparation for literary composition. Later, Byron regretted that he could not drink salts as freely as champagne, for a dose of the former gave him the highest spirits. Hear Bayes, "When I have a grand design I ever take physic and let blood, for when you would have pure swiftness of thought and fiery flights of fancy you must have a care of the pensive part; in fine, you must purge the belly." Cotton Mather reports a more valuable function of medicine: "I have heard of a gentleman who



had an humour of making singular and fanciful expositions of Scripture ; but one Dr. Sim gave him a dose of physic which when it had wrought, the gentlemen became orthodox immediately and expounded at the old rate no more."

From the perusal of these monographs you will learn the importance of trivial symptoms, because they often suggest treatment founded on a slight modification of the patient's habits, treatment so easy to be carried out that you have difficulty in persuading your patient he is being thereby guided away from danger. He comes to you seeking to be cured, and you make him give himself the chance of getting well. The proud leader in sacred history despised the simple prescription that he should wash in the river Jordan and be clean : he deemed the prophet a trifler ; yet he found his words true. A hesitating confidence in the authority whom he consulted induced him after all to follow his advice. This confidence, not hesitating but entire, you must secure. Many a brilliant reputation has been won by medical men who have succeeded in inspiring confidence such as secured implicit obedience to the simplest dietetic rules. Not merely are these rules of the simplest ; they are enforced with a minuteness which, as if dictated by the most assured prophetic instinct, regulates procedure for several months to come, the forecast oft times emphasized with the statement that this noble, that eminent, or the other distinguished person has benefited by and still follows such instructions ; and on inquiry you will probably find that all the documents, for all ages, sexes, and conditions, are in substance identical. Do not undervalue the work done by these men ; do not call it quackery, though the men are themselves quacks. The conditions of civilization are steadily increasing the minor evils which hamper work and render life a burden. The busy man has anomalous symptoms which seem to forewarn of mental breakdown, and which suggest



a sea-voyage or a trip to the Continent as urgently needed. But, the journey over, the symptoms recur. A chop and a glass of wine in the middle of the day might have saved time, money, and strength, as well as the discouragement which a fruitless journey has created. Or it may be that a glass or two less of wine or spirits might have brought about the same good effect. The Hospital is not the place in which you can learn much as to the dietetic use of alcohol under normal conditions ; it rarely gives you the opportunity of seeing the class of cases in which the amount of the dose makes all the difference between good and bad health. In books like those of Murchison, Fothergill, and Spender, you will find hints of the highest value on the subject, and these writers are entitled to attention because they give just and temperate estimates of the good and evil attending the use of this drug, whose unqualified condemnation is as unscientific as would be that of opium or strychnine. With these drugs alcohol has this in common, that its use must be carefully regulated both as to quantity and duration. It is easy, dangerously easy, to advise a glass of wine or a little spirits and water ; but such a general order may be fraught with the most disastrous results. I recently saw a man near middle age who had got from a physician such an off-hand advice during convalescence from a surgical accident. But after years, the physician, to restrict the excess to which he had negligently opened the way, had, with equal indiscretion, alarmed the man as to his having reached the borders of dipsomania, and there is now risk of the border being passed, for the man has lost confidence in himself. Especially is laxity in this respect to be deprecated in the case of young women. It is not perhaps too much to say that Medicine is leaning steadily more and more to the side of total abstinence. At least it is certain that medical men are moving in that direction themselves. Thirty years



ago a teetotal student was, if he existed, a person of some courage or of solitary habits. To-day, there is a very large number of total abstainers in the classes, and their numerical increase of late years is to me very striking and significant. These men at any rate are not likely to be lax in their advice as to alcohol, and, commencing thus early, they are not open to the charge too often justly brought against the uncompromising apostles of total abstinence, that they are thus atoning for former indiscretions. Understand me rightly on this point; it is not the quantity taken which makes a man intemperate. A man may merit this reproach who takes two glasses of sherry daily; from the medical point of view he may be more intemperate than he who takes a larger quantity. Nor is intoxication the test, for many a man dies of drinking who was never seen drunk. But if the quantity, however small, is in excess of what the liver and lungs can deal with, if the small quantity impairs appetite, disturbs sleep, and renders work irritating or irksome, it is time to consider whether the small quantity should not be further diminished or, better, given up. Formerly a man would have been insulted by your interference with his dinner or drink unless he happened to be seriously ill, when strong measures were thought justifiable. Now, diet is more important than drugs, but, unfortunately, it is far more difficult to deal with than the contents of the Pharmacopeia. Look into Edward Smith's book on Foods, then turn to Murchison's Functional Diseases of the Liver, to Fothergill, to Wood, to Spender. You will then understand how much may be effected without physic, and how needful that you should know something of cookery. I suppose Sir Henry Thompson is an authority on Gastronomy, but his book on Food and Feeding shows that, though an eminent surgeon, he sanctions most unphysiological behaviour. He insists on the service of wine during a meal,



not after it; so that the albumen is acted on by alcohol before the gastric fluids can get at it. Our ancestors lived better, and, though they drank more, suffered less, for they began to drink after the solids had been disposed of. It is not easy to carry out a thorough reform, but if you try the old fashion (you need not drink as much as did our ancestors) you will find that what drink you take will be less burdensome. We eat far too much as a rule, and if to much doubtfully digestible food you add a variety of wines, not all pure and some very rich in ethers, what wonder if a visit to Carlsbad or to a hydropathic establishment is needed after the season's gastric labour, to give the overburdened liver a chance of making up its arrears! Imagine the condition of a man who, after a hard day's mental work, dines after the modern fashion which medical men do not use their authority sufficiently to denounce, and next day resumes his work to repeat in the evening a similar performance. Contrast his case with that of one who has studied the advice of John Walker, worthy magistrate and still worthier gastronome. His *Aristology* was reprinted by Sir Henry Cole, and deserves to be more widely known than it is. By his precepts you and your patients will enjoy your dinners and be well. If, however, you sanction the modern procedure you will not lack practice; you will make patients—curing them is another matter.

If intemperance in the sense above indicated (and perhaps indiscretion might be a less aggressive term) is an important factor in the frequent complaint of overwork among grown-up people, idleness is an equally potent source of mischief. The number of men is very small, that of women fearfully large, who suffer in this way, and it is among these women that the unconscientious gynæcologist plies his vilely prosperous trade, ruining the body, weakening the mind, and



too often blighting the moral character. Medical men have not yet taken a sufficiently pronounced position on this question, have not, as a profession, sufficiently supported asylum physicians in their urgent and reiterated complaints that idle women, women without rational occupation, people asylums, and even more extensively pester their families without bringing themselves within the range of two medical certificates. Hear Bucknill's emphatic opinion:—  
 “What, in this country, can a single woman do, with an energetic brain weighing more than three pounds, but get into some trouble or other?”

It is unfortunate that, though the study of insanity is required of candidates for the army, no corner has been found for it in the curriculum. Perhaps if we had fewer examinations time might be found for it. I am glad to find the veteran teacher, Professor Redfern, lending the weight of his authority to the protest against Examinations. He said (*Brit. Med. Journal*, 1884, p. 1176) the system of having frequent medical examinations during the curriculum was highly injurious and radically bad; that a continued preparation for examination was not medical training; and that the student who spent his time in preparing for competitive examinations, instead of devoting himself to the study of his profession, would be obliged to obtain medical training after receiving his degree. The asylum clinique, besides teaching you much that will be of profit in the treatment of patients whom courtesy obliges you to assume to be sane, would make you better understand the evil that may flow from the waste of good natural abilities or the neglect of propensities or passions needing restraint. Occupation, useful and healthy, must be provided as well as pills and draughts, and if the former is secured, the latter will seldom be needed. Your task as advisers of the public in this matter is the easier that the



healthy common sense of the community is prescribing for itself, and it will be ere long more needful to regulate than to stimulate the movement.

We hear much of overwork among young people, but it is rather ill-directed work that is to blame. Official declarations notwithstanding, the Revised Code is in part to blame; the pressure is too heavy. The Education Department says payment by results is essential to equality. Alas! for this craze for uniformity! One would imagine a foolish or an incompetent inspector never did, never could have existed. But how did educational uniformity fare in Scotland before the payments by results began? Did the uniformity do harm or good? Teachers of that epoch have a ready answer, but at present the method of testing by individual results is productive of much harm to the teachers as well as the pupils, and in the long run the general education of the country will not be found to improve, while teachers are condemned, for the money's sake, to push forward clever and dull children, the swift and the slow, in a uniform line. You may have it in your power to help the adoption of the more rational inspection advocated by Matthew Arnold, which encourages efficient teaching without tempting the teacher to force into a small brain more than it can well hold even till the day of inspection. You will be consulted often as to the condition of school children and will find two errors at work jointly or severally. The one is that children are allowed to waste time and are then compelled to atone by severe toil: this is the parent's error. The other is that even if their work hours are properly managed, they have too much to do: this is the error of the teachers, and one often thrust on them in public as well as voluntary schools. You are for the most part only called in when the mischief is done, but let me point out a method by which the



mischievous may be guarded against. Those who know the working of American insurance companies are aware of the precision with which height and weight have been tabulated and of the importance attached to weight as an indication of health. If the weight of school children were taken at regular intervals, a diminution would be the danger signal, the sign that waste is in excess, whatever the cause of the waste may be. This latter point is immaterial, for if the lessons do not cause the impairment of nutrition they aggravate it, and in either case work should be stopped. The suspension coming into force after the first indication of something being wrong, would in the end be a gain to the school; for general loss of weight in a class or classes is an index that cannot be tampered with. If a teacher cannot get along without literally "taking it out of" his pupils, another should be tried. My former colleague at Morningside Asylum takes the weight of his children, he tells us, with the regularity of Mr. Shandy. In a large school it is not necessary that all should be weighed simultaneously, provided that comparison is rendered possible by an equality of interval between each operation. The first weighing would doubtless be tedious, but the register once made, and the children classified according to their weight, very little trouble would thereafter be required, especially if the chair is used, and its accuracy tested from time to time. Medically the community would benefit and valuable results would be rapidly accumulated for the physiologist and physician. Of course it would be well if weight-taking were more extensively applied, as it is in America, and particularly in the case of children under the protection of the Factory Acts, but there are practical difficulties in the way. The supervision of schools is the first and most urgent need, and this test of work is one from which theory, prejudice, and chance are excluded. It was with satisfaction that I



read Mr. Mundella's recent remarks on overwork. Officially he could not recognise any fault in school education, but he insisted on what really constitutes a source of future danger, namely, the underfeeding of school children. I, some years ago, urged the importance of giving a daily meal to Board School children, so that they might have strength to learn. People who had more classical lore than common sense pointed out that this was an old experiment which worked badly in Rome. But the danger has got to be faced, and there is a chance of this now that the Vice-President of the Council has spoken out. Our Free Church and United Presbyterian friends exercise a wisely paternal rule over their students. Knowing that, however able and willing young men may be to keep themselves well nourished, the domestic cooking of the lodging-house is not conducive to sound digestion and clearness of head, they have taken care to induce them to dine on well-cooked food, and thus have admirably restored the old "commons."

The process of stock-taking is indispensable to the merchant who would know his position. It is equally so in medicine, though it can now be overtaken only in departments.

In one department the process is much needed, viz., the influence on health of the occupation of men and women. Much and of great value has been written on this subject, but it is time that the stock should be overhauled. The character of many trades has altered; processes once dangerous are now innocuous, but there are cases in which new dangers accompany new methods. The seamstress who injured her health by stooping over her seam, now injures her pelvic organs by the muscular strain of the sewing machine, and her spine by the shocks it receives at each cast of the treadle. Reaping was a laborious but not unhealthy work; it is now exhausting to the worker, who is



jarred by the vibration of the machine, and the same is true of harrowing. Even our amusements are dangerous; setting aside football, which is a barbarous occupation, and cricket, which modern bowling has made as risky as a battlefield, the "lawn tennis leg" shows that even a ladies' game is not perfectly safe. Bicycles and tricycles, healthy as amusements, and useful too, as many medical men find, have been ingeniously made mischievous by those who erect athletics into a cult. Gymnastics are now a feature in many educational establishments, and in some replace with advantage the old play-hour. Physical training, whether in the gymnasium or swimming bath, is most desirable, but most difficult to regulate. This is a medical question concerning which some misapprehension exists. Old-fashioned prejudice looks with doubt on the elevation of play into a business: it is the same feeling which makes some worthy people think, and what is worse, say that students would be better occupied with their books than with the choral society. But in the matter of gymnastics prejudice has something to say for itself so long as accurate information is wanting. There are many cases in which mischief has followed so close on over-exertion that no doubt could exist as to the relation between them. But there is good reason to fear that in too many cases the evil is not immediately obvious, but appears long after when the over-exertion has been forgotten. A spinal concussion may record itself in paralysis long after the accident, and in the same way the frequent concussions necessarily sustained in many kinds of exercise tend in the long run to impair muscular activity through spinal disturbance. Still more are repeated shocks and severe efforts apt to affect the respiratory and circulatory organs. The carpenter suffers a curious disturbance after long use of the plane as in "flogging" floors, increased subclavian and, later, aortic pulsation being



the most prominent and annoying symptom. This in the paviour is accompanied by emphysema. The two kinds of disturbance affect the gymnast, and often to a serious extent. The gymnastic craze needs regulation, especially in schools which try to copy English models. At this University the instruction is given by a qualified instructor who has young men to deal with, but from cases which have come under my notice I must emphatically warn you against allowing the exercises of girls to be directed by men. An apology might seem due to you for offering so obvious a warning, but when you find women who ought to know better agreeing to the arrangement, it is not uncalled for. This is a piece of practical physiology which is attended to in America and on the Continent, but neglected in this practical, common-sense country by loquacious educationists.

I have endeavoured to point out three directions in which preventive medicine has ample field, dietetics, studies and occupations, and amusements. Sanitation is now so well appreciated that little need be said regarding it, save that in some directions conclusions have outrun observation and verification, and the precision with which some *veræ causæ* of disease seem to have been determined has led to their being credited with more potence than they are entitled to. Of this passing phase of pathological speculation I spoke at the beginning of the session.

It is matter of regret to my colleagues and myself that owing to some misapprehension as to the regulation published in the Calendar, so few have taken advantage of the opportunity to possess themselves of the qualification in State Medicine. It is true that you cannot by the prescribed course be converted into full-blown officers of health; but it is of the highest consequence that you shall know the many points at which common-sense fails, and the results of the experience of others may save you from repeating



their errors. The course should be taken before graduation, so that you may start possessed of the many suggestive hints supplied to you in the course. Of course sanitarians are now specialists in one sense at least ; but you are not to be frightened by a legitimate designation which has come to be used as a term of reproach. You must all specialize in your work unless you are machines of very equal balance, medically simple organisms not yet differentiated. Some of you have already given particular attention to one or other section of the profession, medicine or surgery ; under each of these you have taken more interest in one type of lesion or in a group of correlated types. Circumstances may hereafter modify or emphasize your interest, but I should be sorry to anticipate a neutral tinted career for any one of you. A musician, recently dead, who started in life with the promise of taking high rank in his art, and of adding one to the too scanty list of English composers, ended by being so great a slave to teaching that the close of the day found him thankful at being free not to hear music, and he made full use of his freedom. Avoid by all means in your power such a dreary fate, the fate of one who was as the stony ground on which high talent had been sown in vain. It is not necessary that you should have great genius ; some of the greatest names in Medicine have not been those of men of genius ; many who had what in another department is termed a "call" to our profession have been men of enthusiasm and ability, with a fair share of imagination, but none of that over-mastering instinct which enabled men like Hippocrates, Paracelsus, Guy Patin, Paré, Louis, Laennec, Trousseau, or in our country, Whytt, Sydenham, the Hunters, Cullen, Stokes, J. Y. Simpson, to create new departments of the profession, or reconstruct old departments of it by grouping anew facts formerly held to be uncon-



nected. Of such men as these it is right to say that their greatness was their own, the profession in which it was asserted an accident. As the majority of you have entered medicine by preference and of free choice, I assume that you are interested in your profession as a whole, but may have unconsciously adopted a bias in favour of some particular subject. A specialist devotes himself to one thing, to the exclusion of others; but he is so useful a person in some lines of practice that his narrowness is condoned. In London an orthopaedist has good reason to put forward for his existence: that county of pavement contains enough of such malformations to absorb a man's whole time, and, besides, the acquired dexterity which gives its possessor a metropolitan reputation, attracts consultants from the country. But the eye, the ear, the throat, the skin, the uterus, do not justify narrow concentration; he is not a commendable practitioner who, for these organs, allows himself to drop out of general practice, so that he loses his tact for the detection of any disease in his favourite organ unless it is of structural character, and the laryngologist would, unless properly looked after, seek that relief by the knife (in the hands of another, for the specialist protects himself by the creation of an imbecile etiquette), which an unbiassed common-sense man would first seek by means of an anti-spasmodic. Yet the specialists are sometimes audacious enough in the assertion of their claims. A dentist, lodging for a few weeks at a coast watering-place, actually took the resident practitioner to task for drawing teeth while he was at hand. Omitting the misplaced religious language, the answer was to the effect that if Tomes, Toynbee, Simpson, Adams, Morell Mackenzie, Carter, and all the rest were in the village, he would not consult one of them, unless he found that the case needed knowledge or skill which his own experience did not supply, nor would then consult till



he had made sure of having mastered the facts to the utmost of his ability.

But, on the other hand, you are not to be admired if you have to "call in the nearest practitioner" whenever an eye or an ear is submitted to your inspection, or a doubt as to the condition of an uterus suggests itself. The general principles of medicine and surgery apply to these organs when they are disturbed, but this disturbance may record itself in ways which special experience is necessary to understand. So much you may gain without difficulty as shall enable you to say when you have come to the limit of your knowledge and skill. But even then you are in a position to criticise the opinion or procedure of the authority you consult. You will also find quiet amusement in the technicalities assumed by the *rusé* specialist, who often thinks, with Lord Angelo,

"For my authority bears a credent bulk,  
That no particular scandal once can touch  
But it confounds the breather."

Again, you may find your oracle to be of the order of Master Elbow, the constable, who explains his official position, in reply to the question, "Are there not men in your ward sufficient to serve it?" "Faith, sir, few of any wit in such matters: as they are chosen, they are glad to choose me for them; I do it for some piece of money, and go through with all." It is, therefore, much to be able to distinguish the specialist whose object it is to cure, from him whose desire it is to treat cases. Beware of such an one: for among your friends you may happen to know some whose lives are miserable, because of the unknown mischief which holds or threatens an important organ. There is a host of the wretched who would be saved from thralldom if modesty and self-repression (which modern society sets up as woman's duty, and does



not think itself selfish in so doing) did not seal their tongues. An unseen malady to which they cannot refer lest to speak should be deemed to complain, ever present, kept present to their minds by the constant applications and not encouraging talk of the specialist, presses on their spirits and increases the need to seek again the medication which is, in fact, the chief part of their disease. Even the conscientious physician who makes gynæcology part of his study, not the whole of his trade, may err by giving undue importance to a condition which is, in truth, only symptomatic of constitutional disturbance, and which should properly be met by constitutional treatment. If such an error is possible to a well-trained man, what may not be done by one who knows only the manual exercise of uterine inspection ?

It is in fact laziness, or negligence, or both, on the part of ordinary practitioners, which leaves room for aggression. The specialities have occupied the attention of few of you ; like the insanity, the eye and ear have no time allowed them. Make up now, I pray, for negligence during your student days ; do it before the exigencies of practice end your chances of study. You have a duty to your patients not to subject them to impairment of sense or to deformity because of your ignorance, nor to allow another to injure them by the *nimia diligentia*, which the idolatry of a speciality sometimes excites in an ill-trained medical man. Contrary to the advice I have given you, there will be quoted the Italian proverb,

“ Chi duo lepri caccia,  
Uno perde, l' altro lascia.”

But this is not of universal application. It only fits impostors who pretend to equal proficiency in several things any one of which would occupy the leisure of a lifetime. Mac-Lintock in his *Life of Smellie* records the epitaph of the accoucheur whose reputation entitled him to the designation



*Liberator Patriæ.* Even in obstetrics strive for a higher honour than such a doubtful one.

There is a limit to your prudent devotion to a variety of medical studies, because there is danger in spreading your energies over too wide a range of details. But there is a wide field open to you beyond your profession, by attention to which your professional work will gain rather than lose; to it my parting words shall be given. Yearly I see and hear of your predecessors on these benches who have gone to practise in various rural and urban districts. It is not difficult for me to know who have made themselves independent of that society which is so often a snare. Many of our graduates owe their successful start to the going wrong of some practitioner who has, by his indiscretion, left an opportunity to a careful, self-respecting man. In almost every instance the plan of waiting in a district where a man has no previous acquaintance, and where his neighbours are not, socially or by the nature of their pursuits, likely to interest him, has proved fatal to him who had no intellectual resources, neither in books nor in science. When the practice came sufficient to fill up the time, it was too late; the habits had been formed and only an iron will could have broken through the spell, while nothing but the very rarest skill and ability could have induced the district to condone a weakness which even boon companions despised in one whom they ought to have regarded as their superior.

It is customary to address to men at the critical period of their lives, at such a crisis as that which you have just passed through, words of advice and warning, a superfluous form of literary effort in any case, but especially so when reasons for or against matrimony are included in the oracular deliverance. On that head I can only cite to you the case of Dr. Daniel Dove, who fell in love with a Dutch maiden at Leyden to whom he had never spoken, and



married, forty years after, a Yorkshire lass, without intending it. You may imitate either or both of his proceedings: nothing here said would help or hinder, but if you elect his later example, see that your good fortune be as great as his. I cannot resist the temptation to remind you of one respect in which marriage gives a man an advantage: "Certainly wife and children are a kinde of Discipline of Humanity; and single Men, though they be many times more charitable, because their Meanes are less exhaust: yet on the other side they are more cruell, and hard-hearted (good to make severe Inquisitors), because their tenderness is not so often called on."

The direction of your lives might be a matter of counsel to each of you, and with benefit, but you must seek aid when and as you need it; when you do so, lay bare your thoughts with all honesty. Meanwhile let me beg of you that, whatever you do outside of your medical duties, whether you devote your thoughts to literature or science, or concern yourselves with politics or seek to exercise social influence, do not sacrifice your lives to epigrams nor be dominated by quaint sayings. Lucy Ashton is the weakest of Sir Walter Scott's heroines, a splendid study of a girl cursed by the possession of a clever mother, and a father whose rule ceases at the threshold of his door. In the lips of such a cypher, whose weakness you would call criminal but that she could hardly be expected to resist a woman whom her father thought best to obey, in such lips are most appropriately put the song of negatives—

“ Look not thou on Beauty's charming—  
 Sit thou still when kings are arming—  
 Taste not when the wine cup glistens—  
 Speak not when the people listens—  
 Stop thine ear against the singer—  
 From the red gold keep thy finger—



Vacant heart and hand and eye—  
Easy live and quiet die.”

Such are counsels of cowardice; heed them not if by them only can safety be purchased. Better, nobler advice is that of the comic poet. *Virtue* is his theme: bear in mind that it is manliness which the Roman extols, the assured strength of him who, having considered well, acts from deliberation, not impulse.

“ *Virtus omnibus rebus anteit profecto.*

*Virtus omnia in se habet : omnia adsunt  
Bona, quem pene'st virtus.*”

What Bacon says of judges applies equally to doctors. “Judges ought to be more Learned than Wittie; more Reverend than Plausible; and more Advised than Confident. Above all Things Integritie is their Portion and Proper Vertue.”

And if seeming failure, it may be too real failure, repays your steady effort, if your *virtus* is sorely tried, do not deem your decision wrong—success is not always the sign of wisdom. In that analogue of human life, whist, in which skill may fail to conquer chance, it is a golden rule to be borne in mind that winning tricks is not the proof of good play. The heathen philosopher, rather let us say the Roman philosopher—for it is not given to us to fix a man's Christianity save by chronology—furnishes you with a source of strength in his reflection—*Nil mihi infelicius videtur, eo, cui nihil unquam evenit adversi; male enim de eo judicaverunt Dii; indignus visus est a quo vinceretur fortuna.* Upheld by such lofty thoughts you may go on your course, satisfied that at least your failure is not ignoble, hopeful that you may yet win your reward. And if after all neither fame nor fortune attends your efforts, medicine



can boast of a long line of martyrs, worthy of a nobler cross than many a one who, goaded by tyranny into obstinacy, sealed a faith which he did not understand on an altar built up by his own vanity. The Gideon Grays are a noble army whose ranks are ever recruited, as if such failures were necessary to the well-being of a country. Your hopes this day are higher; to you the cloud gives promise of a silver lining; to each and all of you may the promise be redeemed.

The wealth amassed by William Hunter, whose collections it is my duty and privilege to look after on behalf of the Senate, was the just reward of a carefully cultivated speciality. The preparations in the Anatomical Museum testify to assiduous well-planned study, testify to his possession of the medical conscience which allowed no opportunity to pass unused of refreshing his knowledge by observation of the human body. But contemporary records and the fly leaves of many a book in the Hunterian Library tell also of various tastes, of much accurate knowledge, in short, of a culture such as is now very rare in our profession, indeed in any profession. The friend of Sir Joshua Reynolds, so much the friend of artists that he appears the only layman in the picture of the Royal Academy. Hunter was not a random collector, else his gallery would have been rich in unhappy selections. His private papers show his keen personal interest in the formation of his numismatic series, which is a very remarkable one as having been formed by a private collector. When the catalogue of his library is completed, it will appear that it was not gathered by chance; the purchases were made in particular lines, and his notes show that he was well aware of the literary and bibliographic value of many choice volumes. He was not a classical scholar in the technical sense, but his culture was more extensive and genuine than classical lore alone can



impart. This man began life in no way favoured by fortune, but the son of the Lanarkshire "laird" ended his career as the adviser of princes, the friend of the great artists and scholars of his day, and the founder of a noble collection whose value is not yet half known.

It is not given to every one to accomplish such a career. The circumstances no longer exist which permit a stranger to do in London what William Hunter or even Smellie did. Men do not often happen on so fortunate an epoch as that in last century when the midwives and midmen or surgeon accoucheurs were fighting, the former to keep their ground, the latter to conquer the foolish prejudice which preferred the aid of midwives without caring to demand that these should be skilled. But though not destined for a career so distinguished, you can follow Hunter's steps. The Latin proverb, *Cave ab homine unius libri*, applies to more than books, and though brilliant exceptions might be cited, the brilliancy was in spite of the exclusiveness, I will not say narrowness.

Provided you never forget the duty of cultivating your minds by all the means in your power, it is immaterial what means you adopt, though to most of you books will be the chief if not the only available means. It is perhaps better to put my demand in this way: You men of busy lives who are apt to get hide-bound in routine as your minds get weary of the repetition of nearly identical cases such as make up the bulk of rural practice, should cultivate some hobby, and not be ashamed or afraid to ride it hard. Geology led Dr. Wright, of Cheltenham, to the study of the fossil echinoderms, and he is now one of the leading authorities in that section of Zoology. The Bradys have earned fame by their study of microscopic organisms. Kitchen Parker is a hard-worked practitioner. The lists of the London societies bristle with the names of medical practitioners



in all parts of the country who neglect no duty, under-estimate no interest, and yet find by well-planned labour the leisure to study with success and reputation in some department of natural knowledge. Of literary doctors the number is not now great; there is not much time at the command of the student or practitioner. Oh! for the days when an M.D. was successively Professor of Logic, Mathematics, and Medicine. I do not know if Logic or Mathematics have extended their domain in any formidable way in those departments which occupy the teachers of an ordinary university class, for the Calculus, Quaternions, &c., do not affect the class routine. But the constant steady inflow of discovery in biology and medicine affects the elementary teaching, so that the reading of an efficient Professor of Medicine must be closely kept up if he is to give his students the best, ripest knowledge and thoughts of the time. Two practical personal arguments may be urged in favour of self-cultivation, the one that you provide resources against the time when your minds, heavily taxed with daily anxiety, need rest not in idleness but in change of occupation. The other is that you are qualifying yourselves for a better influence over your patients of all degrees than can be gained by one who is superior to the average people he meets only in his better knowledge of medicine. This is a lowly aim, but if it results in your greater happiness and better power to exercise a difficult calling, your labour will not have been misspent.

Ever bear in mind that on you rests the reputation of your Alma Mater; it is for you to show that from these halls are sent out not well-drilled tradesmen, but cultivated, thoughtful men, worthy to follow a noble Art.



## II.

### ON THE GERM THEORY OF DISEASE.

DELIVERED AT THE

OPENING OF THE SESSION, OCTOBER, 1883.

GENTLEMEN,

When it was last my duty, now thirteen years ago, to welcome a former generation of students to this University, to this building, it was to what we then deemed spacious halls. We had just left the venerable building in the High Street—a noble specimen of Caroline architecture, and Caroline oblivion of promises to pay. It seemed as if we were to be for some time at ease and in comfort, but our hopes did not long endure. We are now groaning over defective accommodation, and realising the fact that the Scottish baronial style is singularly inelastic even among stone buildings. It is not merely that our numbers have increased with unexpected rapidity; the development of new methods of teaching and new branches of study is on a scale and demands an amount of space not anticipated fifteen years ago. Do not deem our predecessors to have been deficient in foresight. The recently extended medical school of a sister University is barely finished before there, too, signs of overcrowding are apparent; and still the number increases of entrants to the medical profession. It is not for me to find fault with this steadily increasing influx, of which I confess my inability to understand the reason. But be the profession overstocked or not, whether the num-



bers are too great or only badly distributed, the competition is yearly keener, the struggle greater, whether to achieve the lowest qualifications or to earn a living which shall be something more than a bare pittance.

You have selected the profession of medicine from a variety of motives, into which I need not inquire, certain that none of you possessed of an ordinary share of modesty has been tempted by the speedy prospect of wealth. But whatever your motive, let me impress on you the saying of James Syme, the revered teacher of more than one on this platform—"There are some persons born deficient in honesty; if there is any gentleman here who happens to have this misfortune I would advise him not to be a surgeon." To you who are at the threshold of the profession I would put this question, for the discipline which Syme expressed by honesty, the self-control which should keep you to your duty as it kept him, must be exercised by you now, must accompany your daily life as students and as practitioners, wherever and under however unpleasant conditions you may have to live. Nathaniel Hawthorne, in his strange story of Dr. Rapucini's Daughter, suggests an ordeal to which each one of you must submit, though the world may not exact it. A physician, one of those Italian followers of Paracelsus, who, still alchemists, trusted to the potency of drugs over unknown conditions of mind and body, of health and disease, and who were therefore ever in quest of new preparations and of subjects whereon to experiment, is thus spoken of by his rival Baglioni, an orthodox Professor of Padua—"That the signor doctor does less mischief than might be expected with such dangerous substances is undeniable. Now and then it must be owned he has effected, or seemed to effect, a marvellous cure; but, to tell you my private mind, Signor Giovanni, he should receive little credit for such instances



of success—they being probably the work of chance ; but should be held strictly accountable for his failures, which may be justly considered his own work." Somehow this strict account of failures has to be taken, and the result of the reckoning will depend in great measure on the way in which you spend the next few years of your student life. Much public misapprehension exists as to the medical student and his doings, but the popular hero is as extinct as his contemporary Mrs. Gamp. In the thirty odd years which, alas, include my medical life, studies, hard studies have grown up around the student's path with a speed which has cut him off from all possibility of reckless roystering ; he has no time for it, barely time for the legitimate recreation which is indispensable to health. If one of your number breaks with his surroundings, and seeks to rival the imaginary prodigals of St. Bartholomew's, he will assuredly mark his tardy progress to a degree by unsuccessful examinations, the saddest memorials of misused opportunities.

I propose to lay before you, as briefly as may be, a sketch of your work so that you may understand how wide is the scope of the subjects to be looked into in the short time at your disposal, and that those who are not conversant with the business of a medical school may learn what provision the University ought to make so as to facilitate as much as possible the hard labours of its medical students. Formerly, when the medical men were few and the knowledge needed proportionately small, apprenticeship gave all the instruction required. The profession admitted its pupils at proper intervals to their own grade, safe against overcrowding and competition, because they had a trade monopoly and a territorial monopoly protected by strict penal regulations. Teachers scarcely even in the same sense as the great artists whose studios were frequented by watchful disciples, patterns rather for their apprentices



to copy in the most literal way, their functions have been modified, their monopoly gradually abolished, till now the Corporations stand in contrast to the Universities. There has arisen, not much encouraged by either, a third group, the extra-academical teachers, men who, in most instances, would be on the strength of a German University. Let me explain for the benefit of those who are more familiar with the methods adopted elsewhere than in Scotland, that the body of men to whom I refer—men who voluntarily add the function of teachers to their heavy work as practitioners—is vastly different from the tutors or coaches with whom a London lecturer thinks it necessary to reckon. The coach's calling is an unsuccessful one in Scotland; no one here, if advocating the propriety of allowing students to come up for examination in some subjects at an earlier date than is permitted by our fixed examination periods—and I personally am not averse to the plan—would think of urging it on the ground that the tutor and his pupil would find it their interest to time the period of examination so as to secure the best prospect of passing. Such an argument, recently adduced at a London gathering, is based on the theory that a student's business is to get through rather than that he should acquire the knowledge which will entitle him to get through. The majority of you will be called on, in your future lives, to act on your own responsibility, away from the comforting but not always useful consultation of a fellow-practitioner. You must be prepared to deal with diseases and injuries which your hospital and dispensary attendance has not made you familiar with. For such surprises he is best prepared who has accurate anatomy, sound general principles, and presence of mind. The last cannot be acquired, though it may be cultivated; but he who lacks it will never practice either with comfort or



success. The acquisition of sound principles is only open to him who has not merely accepted the teaching of the authorities, but accepted them intelligently, because he knows and can follow the reasoning by which the conclusion has been arrived at. Unless he can do this, the future medical practitioner is a handicraft worker who follows the rules of the Faculty as they did in Moliere's time, and, let us hope, "does far less mischief than might have been expected." A few years ago we heard a great deal about the impropriety, nay the evil, of burdening the medical student with the elementary sciences. The suggestion was made by a prominent man of science ; immediately a host of people less known to fame took up the cry. A distinguished physiologist shortly after went so far as to grudge the time spent on Anatomy ; and just the other day a pathologist said physiology had no interest except in its relation to pathology. It seemed odd to attempt to curtail the studies of the universities because someone had invented a grievance against them. When the anti-science cry was raised the number of the medical students at Universities was increasing, as they assuredly would not have done on the hypothesis of general dissatisfaction, for there were and are plenty of places where licenses can be obtained without a preliminary scientific training. But medical reformers are somewhat variable ; those who formerly denounced science now vie with each other in urging its advantages to the study of medicine, and we who have quietly gone on with our work are almost made to appear as if we were kept up to the mark by our vacillating critics. I shall in the sequel point out how biology and chemistry are essential to him who would form just views of modern pathology, above all if he wishes to verify or advance the researches on which the presently dominant opinions are based. But let me first speak of anatomy, the basis of



practice. Far too little time is given to it now-a-days. It is not enough to dissect the body once and fancy that you have done all that is necessary ; books, plates, casts, and spirit-sodden preparations sufficing thereafter to maintain the knowledge you deem adequate. This has not been the opinion or the practice of surgeons of the highest standing, some of whom, albeit they kept up a practical acquaintance with human anatomy as nearly as possible under the aspect which the parts would present in the living subject, have thought it right to prepare specially for important operations by rehearsing the region with which they were about to deal. The too brief time given to this groundwork of medicine and surgery might be advantageously extended at the cost of that premature hospital attendance to which junior students are prone. There is no more use for a student of painting to sit and watch a greater painter at work before he has learned to draw and to use his colours and brushes than there is for a second-year student who has just entered on a course of systematic surgery to go into the hospital after one course of anatomy and stare at what he can neither understand nor recall. Mr. Spence, afterwards Professor of Surgery in Edinburgh, insisted on us, his dressers, continuing in the dissecting room in our third year of study, and in our fourth employed some of us on dissections in which he himself shared. The importance of subsequent work cannot be pleaded as justifying neglect of anatomy. The diagnosis of a case of obscure nervous disease demands from physician or physiologist intimate anatomical knowledge, without which he might as well write conjectures on slips of paper and draw them out of a hat. It is most satisfactory to find some of the London teachers urging the importance to physiology of more careful anatomical study. But to remove all excuse from students for further neglect, additional accommodation is



needed for the anatomical department, a need to which I shall again refer.

Belonging, as I do, to the pre-reformation epoch, I must confess that much of modern Physiology is beyond me; even the apparatus so largely used to enforce biological principles is unfamiliar. The chemical aspect of the science has an extent and precision undreamt of even a short time ago, and the single test which sufficed the clinical clerk to estimate chlorides in the urine is as antiquated as the practice of sending that fluid "to the wise woman." Nor does the need of chemical knowledge end here. Pathological Chemistry has rightly acquired much prominence, and is provided for, as far as may be, in the Western Infirmary. But a serious difficulty arises of which no solution has as yet been devised. Every one admits the importance of Chemistry except those who think the Universities should compete with the Corporations by granting licenses on the same number of subjects; and, strange to say, some who think well of this injurious uniformity are very strong opponents of that uniformity which medical reformers think can be secured by Act of Parliament. But it is forgotten that necessarily this difficult subject is presented at the threshold of the curriculum to young men who have had no previous acquaintance with it. The regulations are based on the hypothesis that six months' systematic lectures, and three months of a practical class, include a time in which sufficient Chemistry can be learned. It is obvious that the greater part of the six months must be taken up by the average student in familiarizing himself with elementary matters, and that it is impossible for him to follow intelligently a teacher who attempts to discharge his duty by going over the leading points of inorganic and organic Chemistry, the latter dealing with most complicated changes going on inside as well as outside the body under



very dissimilar conditions. If before entering the medical classes a pupil could acquire a knowledge of chemical terminology, knew the meaning of acids and bases, and could work out a question of combining proportions, he would be in a position to profit by even a brief systematic course, after which his attention would be specially directed to the methods of Physiological Chemistry. The schools, however, do not give much science teaching of the kind needed, unless in large towns where a few institutions are properly equipped, and the Examiners for the Science and Art Department put the matter very clearly a few years ago when they practically said that there was no science teaching worthy of the name. Perhaps the short service men who annually take small doses of science at South Kensington may have inaugurated a new era, but their influence has not yet become apparent. Failing this preparatory teaching, the work inside of the University would be advantaged if the teaching were extended by the addition of a specially qualified demonstrator, who should act under the professor, for it seems a mistake to share the teaching of one subject between two independent and equal teachers. If such a post assumed the form of a Fellowship, of a reward to a medical graduate, the assistance rendered would be great to the Fellow and to the University. Here is a field in which a medical reformer might by success make a name as a benefactor. It would surely be a worthier object of ambition to strive for such regulations or endowments as shall secure to students the best possible opportunities of learning matters germane to their daily duties than to intrigue for seats at a board. But Chemistry is not the only quarter in which, if our imaginary reformer is anxious to do good, he may find scope for his energies. The Anatomy department needs expansion, if more prolonged attention is to be given to the subject, as every surgeon and, I think, most



physicians here present will support me in declaring necessary. If a professorship of Pathology is endowed—and I hope some old pupil will emulate the noble example of Sir Erasmus Wilson, who regarded infirmary teaching of this subject, however excellent, as a makeshift from the University point of view—if, I say, such a chair should be created, for that too museum and laboratory accommodation will be needed. Other studies which must be followed out practically, whether by the more ambitious students of medicine or by the students of Biology, lack that completeness of accommodation enjoyed elsewhere, in buildings more recently erected and therefore arranged with special reference to the present phase of medical and scientific research. Even some of the classes have overflowed their limits, and must either be divided or find some larger hall. Even that it is difficult to find. The new buildings, the completion of which we owe to the liberality of the citizens, the Marquis of Bute, and Mr. Randolph, whose generosity has enabled us to connect the central building with the north and south blocks, include a hall, which, now completed, should not be profaned by a lesser ceremony than an inaugural one. The Lower Hall of the Museum has been taken in part (let us hope only for a time, since the Upper Hall is already overcrowded) to provide a reading room in connection with the library. Our meeting to-day is only possible by the temporary lodgement of an important examination in another chamber. But much has been done with the space at our disposal, and remembering that the best work in the past was not done in laboratories fitted up like the man's coat in "Happy Thoughts," with a pocket for everything, remembering that Darwin, E. Forbes, and Huxley, not to speak of their predecessors, did excellent zoological work at sea in accommodation as like that of the "Challenger" as the galley in a Mediterranean orange brig is



to the space given in a P. and O. steamer to the cook—bearing this in mind, I say, let me explain that whatever else is added, *space* is the first requirement for the health and work of our numerous students. It is not necessary that all I speak of should be done at once, but all has to be provided sooner or later if Glasgow is to maintain its present reputation. But more than space is needed. I have said that a Professor of Pathology is still lacking, though the teaching in both infirmaries provides means of fulfilling the Ordinance. Other departments, too, besides chemistry, require additional teaching aid. A great deal has been said about a scheme of General Council bursaries. So far as the Medical Faculty is concerned I, speaking for myself, strongly object to it. If these bursaries are to be limited to the Arts Faculty, good and well; my colleagues will doubtless have good reason for accepting them. But in Medicine we need no baits for entrants. I think it a bad, doubtful policy to provide such baits in the case of an open profession. It may be advisable in the Church, for there it is an object to have a large choice of the best possible candidates. Not every one who passes a satisfactory examination is allowed to practice; he has to be selected by some body or other before he is fully commissioned. But it is obviously wrong to invite all sorts into a profession already crowded. The few medical bursaries we have are now rewards for work done in college. Of such rewards we need more; only let them assume the form of fellowships or scholarships tenable for a term of years, and held on condition of teaching within the University after graduation. These are the posts which men would work hard for, and which they would gladly hold on a tenure of hard work. Such *privatdocenten* would become a strength to the Medical School. Some such posts there are, the Black, the Clarkes, the Arnott and Thomson, the Muirhead; an increase in their number would benefit



not the holders merely, but the University and the profession, while the memory of the founder would be gratefully associated with the advance of the subjects of which their generosity had provided means for more careful study.

I need say nothing, in resuming my sketch, of the curriculum of Surgery, Physic, and the other technical subjects which have been spoken of unwisely as practical in contradistinction to the scientific studies. The form of these courses is stereotyped, though learning, eloquence, and fertility of illustration may skilfully keep the student abreast of the latest work, especially when a gifted teacher supplements his prelections by the laboratory work, the clinical study of disease. But in addition to this clinical work, something more is needed. The future practitioner who, immediately after passing, may have the responsibility of a varied practice in his hands, should have an opportunity of learning what it is to act on his own account. In connection with Anderson's College, house-visiting was arranged for to be conducted by students under control of the Andersonian dispensary officers. I only speak from my own experience, and as Dr. Gairdner, though then a systematic and clinical lecturer with a large following, was not one of my teachers, I may say that I learned my Practice of Physic, Surgery, and gynæcology better by visiting the sick poor in their homes than by clinical ward work or reading. It is true that we were not then so constantly under the examination harrow, and did not grudge the time for such daily visits and the relative reading. I mention this, however, only incidentally. The University, as such, cannot provide dispensary visitation, but some of the charities outside may yet perhaps be induced to secure this; for, looking back to those old days, I affirm it was a boon to the very poor. Even if a student visitor was not very skilful, there was a



human sympathy in the visit of a stranger from another sphere which soothed the helpless poor.

It is of Pathology I would like to speak somewhat more fully, as by it I may best impress on you the range of study which must be compassed by your teachers or by you, before that fascinating subject can be fairly within your grasp. The aspect of Pathology has greatly altered within the last twenty years: it is now passing through a phase, *pari passu* with Biology, in which speculation has somewhat out-run observation. Formerly lesions not traumatic were held to be normal functions misdirected, perversions of function, while even the disturbances following traumatic lesions were assigned to the products formed in the wound which caused disturbance by chemical change or by the abnormal cell-growth they established wherever they were carried by the blood. Now the list is large and is daily increasing of epidemic and endemic diseases said to be due to the presence in the body of germs whose growth and decline coincide with those of the disease. Pasteur, the distinguished French chemist, has shown in his inquiries into the diseases of wine, silk worms, and the domestic animals what may be accomplished by that infinite power of taking pains which is the essence of genius. Without a commercial object in view, unaided moreover by that State endowment of whose indispensableness we hear so much, Lister experimentally established the share which atmospheric impurities of the organic kind take in the disorganization of albuminous fluids. Whatever be the ultimate fate of the great surgeon's application of his hard-won results, it is a matter of congratulation to us that the most important enunciation of his views dates from this University. These are the names most familiar to the general public, but Chauveaux, Tousant, Galtier, Lewis, Cunningham, Koch, Klein, Paul Bert, are entitled to recognition as observers whose untiring



assiduity and marvellous resource have given an enormous importance to the methods they have after many failures developed. But failure is not always loss, and though the conclusions arrived at by these observers should undergo extensive modification before they are translated into practice, their memory will remain as benefactors to Biology by the methods they have elaborated. Far be it from me to suggest a comparison between the methods and the aims of the earlier and later works; but the analogy, remote though it be, has to be kept in mind. The alchemists are now-a-days laughed at; in their own day they dominated science, and ruled with no gentle hand. Yet their errors were the quarry out of which Chemistry as it now is was constructed; without their nostrums modern therapeutics would not now be so far advanced. It is true that those fathers of chemistry and medicine were learned, but their learning was not that of the closet merely. In those days a scholar had to know clearly not only what he thought about the classical authors he studied, but also how his thoughts crossed or coincided with the opinions of his day. No mere textual critics or speculative historians or philosophers, they fought in an arena which at times might be the scene of gratifying triumphs, at other times the altar on which the unpopular disputant might be sacrificed to the erroneous but dominant opinions of the day. Our lines are fortunately cast in pleasanter places, and if the profession can no longer be called learned in the strict sense of the term, we at least enjoy immunity from the personal risks which learning entailed on its earlier possessors.

Microscopists have run the gamut of diseases and have found germs well-nigh everywhere—even distilled water contains them. The wonder is, not that we die, but that we live. But these germs are not all of the same properties, however they may resemble each other, yet it is not given



to every one to distinguish them. Cohn, says one of his admirers, is the only person who can recognise the difference of the germs. The most important results arrived at may be briefly summed up—1. The specific germs of certain specific diseases might, it was said, be artificially cultivated, so that small doses of disease, or rather doses of mild disease, might be administered to healthy cattle with the result of giving immunity from that disease, just as vaccinia protects against smallpox; 2. The importation of disease, it was alleged, could be stopped, and the progress of an epidemic arrested by stamping out; 3. Wounds, it was promised, would heal if germs were excluded. Alas for the stability of human hopes and beliefs! Recent statistics show that the full antiseptic precautions are a source of danger in ovariectomy; they have therefore been abandoned by the most careful and successful operator in this country, an American writer having even some time ago denounced the carbolic spray as a brush for sweeping germs into the peritoneal cavity. Quarantine has proved futile in the prevention of cholera. Stamping out is merely a temporary protection, successful only with a declining epidemic. Klein has thrown at least doubt on Pasteur's promised vaccination. You thus start on a sea of doubts and conflicting opinions which even begin at the recognition of the alleged germs. Yet so keen is the passion for speculation that Dr. Carpenter, at the recent meeting of the British Association at Southport, elaborately discussed the variation of disease as a consequence of the specific variations of the germs. Two botanists whose authority on such matters is considerable, and whose acquaintance with recent research is exhaustive, indicated the want of evidence for believing in such variations so far as the lower vegetables are concerned, whatever might be the case with bacteria. No one knows better than Dr.



Carpenter the difficulty of microscopic inquiry, even where the objects are colossal, as compared with the bacilli; he found himself wrong in the identification of the so-called fossil Eozoon, which he believed he recognised in the inorganic graphic granite of Islay. How much more difficult must it be to observe and understand the life history of organisms sparsely scattered and varying from 1-15,000th to 1-25,000th of an inch—objects so small that several may be contained in a blood corpuscle. The identification of these objects is effected by staining the tissues in which they are looked for with aniline colour, treating them with acetic acid, then alcohol, then oil of cloves, finally mounting in Canada balsam, a considerable series of chemical changes being thus induced in the tissue examined, independently of those due to impurities in the re-agents. But death, the necessary preliminary of these investigations, is not in this country followed by immediate inspection of the body. We cannot tell how short an interval may suffice for the generation of these bacilli, because we do not know the relation of the bacilli to the decomposition of the fluids. A fungus grows upon dead horse hoofs—we do not see it on the living. A fungus grows on corrosive sublimate solutions, an anomaly as great as the presence of insects in the cupric sulphate solutions of Swansea; while moulds may be luxuriant on a thin slice of cork floating in a jar of strong carbolic acid. Mould forms upon man, even in his life, but never unless, by starvation and confinement in vitiated air under depressing circumstances, he has been brought so low that decomposition of the surface has begun. It is true that the bacilli are found in the blood of sufferers from specific fevers, but before the diagnosis has been made the fever has gone so far as to have seriously invaded the nervous centres whose functional integrity is essential to the conservative power of the tissues, the power to maintain



repair which shall balance waste. It is not easy to say when a man is dead; in the explosion on board the Great Eastern an engineer walked about asking attention to the other sufferers, unconscious of his own state: he fell dead, and it was found that he had been boiled over the greater part of the body, though the limits of the boiled layer barely exceeded that of the true skin. An answer to these difficulties might be found if our way was clear to the acceptance of the doctrine that a particular bacillus was *the* cause, say, of tubercle. But so far is this from being the case that, as I pointed out two years ago,\* the *prima facie* difficulty exists,—Is it possible to separate the bacillus from the nitrogenous substance by whose decomposition it lives? The bacilli accompanied by a nitrogenous fluid in a state of decomposition are introduced into a nitrogenous fluid protected against atmospheric contact; are the subsequent changes due to the bacilli, or to the decomposed fluid by which they are accompanied? If the bacilli had been artificially cultivated on nitrogenous substances, the query applies equally to them. To this query no answer has yet been given; the fallacy has not been excluded yet. The matter would be simple if all nitrogenous substances were alike; but it is not so. Analysts are now aware that two waters may contain equal quantities of organic nitrogen, yet the one shall be innocuous, the other justly credited with the origination of typhoid fever. Chemically, the two are identical; physiologically, they are quite unlike; and both contain apparently identical germs.

The spontaneous origin of specific disease has been spoken of as if it were heterogeny or another form of spontaneous generation. The suppression of a pathological notion, fatal

\* Address at the opening of the Glasgow Veterinary College, 1881. *Veterinary Journal*, January, 1882.



to a particular doctrine, has been attempted by affixing to it this nickname, just as the good man in the story, who would not kill an animal, secured his purpose by raising the cry, "Mad dog." Those who call names are implicit believers in germs, but is spontaneous origin of disease impossible? As a matter of fact, the recent outbreak of Egyptian cholera seems to have been independent of importation. The disease has occurred from time to time for years past—though the anti-English party and the believers in quarantine deny it; and its recrudescence after intervals rather suggests chemical than organic intervention. A kindred instance is furnished by the typhoid of this country. A proprietor, ashamed that a much-valued shepherd should with his family live in a thatched cottage destitute of sanitary arrangements, though within sight of his own house, kindly built a cottage with all the equipments of modern civilization. No cottage was near, no strangers came into the district, and the proprietor thought himself a good landlord and a self-sacrificing one; but he began to doubt when his shepherd and a child died of typhoid fever within three months of their occupation of the new premises. The next shepherd and his children still live, healthy, in the old cottage, which fortunately had not been pulled down. The raid upon dairies, one of the most oppressive consequences of panic, has made it clear, if sanitary officers would only state the facts intelligibly, that typhoid fever may originate spontaneously, and the contagion be distributed with the milk from the seat of outbreak, because both residents and milk have been contaminated from the same source. Dr. Billings, who first gave milk a bad name after the Islington outbreak, scarcely realizes the evil he has done to a trade, or the excuse for inertness with which he has supplied health officers, while



he has stimulated amateur legislators, whose law is as weak as their physiological knowledge, into amusing supersession of the Home Secretary at the expense of a trade. The water supply is a frequent source of mischief. The exact determination of infective water is an inquiry still open.

Not only have arguments at least as strong as those on which the bacillar hypothesis rests been adduced in support of the view that cholera has started in one locality without the importation of the disease from another locality, but there is reasonable evidence that the sufferers from one disease may start in a new locality a disease of quite another sort from that under which they suffered. The typhus outbreak at Liverpool was traced to a ship whose crew suffered from dysentery, not typhus ; that disease had not existed at the port of embarkation, and the voyage had long overlasted the ordinary period of incubation, and it is obviously not likely that rough weather, severe toil, bad food, bad ventilation, and dysentery would prolong that stage. Yellow fever is another instance of the action of ochletic poison, or poison generated from the excretions of the human body. It is a poison transmissible from body to body, yet the negro is singularly exempt from it. It is peculiarly localized, occurring within the tropics, and there only in particular ports, dying out speedily when carried by a sufferer to other places ; and still more interesting, a small number only of the personal attendants on the sick are affected. The whole history is strikingly in contrast with that of a germ-nurtured epidemic. It may originate, Flint says, in ships at sea ; and Creighton affirms that it has done so in vessels formerly employed in the slave trade. There is reason to believe that slavers have been the means of starting this terrible scourge of the white race, though the negroes had no disease among them, just as jail fever, a pestilent typhus, was spread in court by prisoners from



crowded dungeons, and proved fatal to bench, bar, and audience, though the prisoners ailed nothing. It has assuredly started also from Chinese coolie ships, though the Chinese do not enjoy the same immunity as the negroes. It is of further interest that typhus is known as ship fever in New York, where emigrant vessels have made it familiar. I lay stress on this as a point for your careful consideration, that a kind of parasitism (wholly dissimilar to that of tapeworm or scolecid, from which every host is a sufferer) may render a man not suffering a fountain of death to others. If he is the carrier of germs, the germs cannot have lived innocuous in his blood ; they must have developed or been eliminated. If they did live without producing the specific fever, they obviously did not need a specific nourishment. It is of course easy to conjecture of temperature unfavourable for development, but such guesses are not of value ; and Koch's statement must be kept in mind that "bacteria do not occur in the blood nor in the tissues of the *healthy* living body of man or the lower animals." This, though the conclusion is disputed by other microscopists, is an important admission, pointing to the antecedent unhealth which allows the germ to enter. Now, bacilli have been found in quantities in the intestines of cholera patients ; but, as Macnamara remarks, the necrotic state is sometimes marked for a considerable time before death, the proof being that food or physic has been found unassimilated, the function of digestion having been arrested. Two facts regarding intermittent malarial fever, where above all others bacilli are held to be potent, are of extreme interest. The one is that chloroform in drachm doses curtails the cold stage, and that 3.5 grains of quinia injected hypodermically have kindred effect ; the other is that urethral fever is most common and paroxysmal in malarial districts. How are germs affected



by these drugs ? What influence on them has the passage of a bougie or catheter ?

In an address at the Glasgow Veterinary College, in 1881, I ventured to question some of the dogmata of the germ school, not wishing to imply that germs are fanciful, but that their operations are conjectural and not so supported by the consensus of observers as facts asserted to be so obvious should have been. I regret that the gap between the study of human and veterinarian medicine is still so great that the practitioners of a common profession are rarely mutually instructed. Dr. Cameron, M.P., the other day alluded to the honours rendered to veterinarians by Government, and to the honour which this University did itself by conferring a degree on the leading member of that department of the profession. If it were possible that Comparative Pathology should be taught, if it were in the power of a few of our students to attend such a course, the advantage to medicine would be great. Myself once on the point of becoming a teacher of Veterinary Pathology, I have ever since used all opportunities of urging on all whose time, means, and aptitude for research justified the extension of their studies, the vast advantage of acquaintance with disease as it is found in the lower animals. But we have no chair of human Pathology ; the comparative study is yet, I fear, not an immediate prospect. I sought on the occasion referred to to recall attention to the catalytic or ferment theory of diseases, and had intended on the present occasion to discuss the source of the albuminoid matter to which specific action might be credited, typhoid fever being the instance selected. But the address of Dr. Creighton to the British Medical Association, which you will find in the *British Medical Journal* for August 4, anticipates much of what I wished to say, putting the question on a broader anatomical basis than it was in my power to suggest. It was a remarkable address, as Pro-



fessor M. Foster well said, and the published work of Dr. Creighton well entitles him to a hearing when his remarks are not on the lines of the popular faith. Briefly put, his suggestion is that normal secretions may put on abnormal character—that an abnormal character once assumed, is thereafter independent of the life of the body in which matter possessing such character is found. The resistance which should restore health wastes itself on matter which has started an independent career, just as digestion has no influence on the living parasites introduced with food into the intestine. He discusses cancer, bovine tubercle, small-pox, yellow fever, and purulent ophthalmia, and shows how innocent matter, normal secretion, may become altered and acquire infectiveness in the process of alteration. The address is one to be studied. Here I can only indicate it to you as a model of a Natural History of Disease. One of his critics, himself a supporter of the germ theory, is compelled to admit that the germs may be simply the carriers of such infective matter. Naegeli thought the contents of the bacilli were the active substance: Bergmann and Panum obtained sepsin from putrid matter, and used it with the same results as if septic bacilli had been used for inoculation. These experiments indicate what I ventured to anticipate as the final solution of the question—viz., that the omnipresent germs owe their specificity not to their inherent specific character, but to that of the albuminoid matters on which they live. The labour spent in bringing out this result has been vast; the history of the researches, ranging over half a century, forms one of the most remarkable chapters in medicine. Every resource which science could muster has been made use of; imagination has opened up new fields of research, and conflict of opinion has been the means of throwing light on many a dark corner in Physiology and Pathology, and has hastened enormously the



natural classification of disease. But the chapter is not yet closed, and I have endeavoured to point out to you the directions in which you may still find ample scope for your researches, whether in Biology, Chemistry, Pathology, or practical Medicine. I hope I have succeeded in showing how great is the dependence of medical theory on the so-called elementary sciences, and so far have held out inducements for you to pay attention to them not as compulsory work of no further use, but as valuable for the knowledge they impart, still more valuable for the principles they instil. In them or in their bearings on medical practice you will find ample field for the selection of a subject which, elaborated during your student days, may, in the interval between your graduation and proceeding to the degree of M.D., receive its final form as a thesis worthy to be presented to the University, worthy of the University, and worthy of its author.

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In *Nature*, July 10, 1884, the reader will find an interesting commentary on the foregoing paragraphs. Klein throws doubts on Koch's facts, hypotheses, pathology, and treatment. Had Koch found the comma-shaped bacillus in the blood and tissues, "there would have been some sure element in *the chain of surmises.*"\* Klein further fully recognises the fatal effects of sepsin generated in a wound in which specific organisms are found, but *the blood contains no such organisms.*\* These organisms generate a *ferment*\*—ptomaine or some other—which is absorbed. In the face of such criticism by so competent an observer, we must hold that Koch has not yet established his position. Klein's language marks another step in this curious phase of modern pathology.

\* The italics are mine.







