

**Medical life and work : an address to students, introductory to a course of lectures on practice of medicine / by T.K. Monro.**

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**Publication/Creation**

Glasgow : Printed by Alex. Macdougall, 1913.

**Persistent URL**

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THE HISTORY OF THE

ROYAL SOCIETY OF LONDON

FROM THE YEAR 1660 TO 1703

BY JOHN VAUGHAN

ESQ; OF THE SOCIETY

AND OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

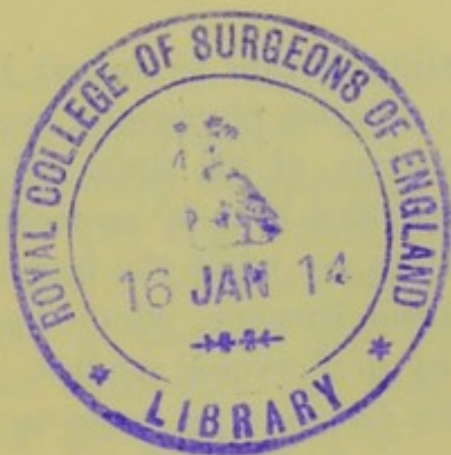
THE SECOND VOLUME

LONDON

Printed by J. Sturges, in Pall-mall

1727

Price 10s. 6d.



## MEDICAL LIFE AND WORK:

*AN ADDRESS TO STUDENTS, INTRODUCTORY TO A  
COURSE OF LECTURES ON PRACTICE OF MEDICINE.<sup>1</sup>*

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ALTHOUGH the formal oration or address at the beginning of the session has been done away with in this University—to the great relief, we may confidently assume, of many who would be called upon to be either speakers or hearers—it is nevertheless fitting that on this occasion my remarks should be of a less purely technical character than those which I may have to address to you at subsequent meetings of the class. For I cannot but be sensible both of the honour and of the responsibility devolving upon the occupant of this chair, which possesses an historic interest and importance in the annals of the University, were it only because it was occupied at one time by Cullen, and at a later period by Gairdner. If Sir William Gairdner, my former teacher and master, had been here to address you to-day, his discourse, alike by its form and by its content, would have charmed and inspired all seriously-minded hearers, and yet his modesty

<sup>1</sup> Delivered Monday, 13th October, 1913.

would not have allowed him to reveal himself in his true light as one of the greatest physicians, and probably also one of the greatest scholars, of his time. My personal debt to Gairdner is manifold, and it is by no means the least part of it that he disclosed to my mind the fascinations of medicine as distinguished from surgery, which had previously been more the aim of my professional studies. Not that he made me like surgery the less, but he made me like medicine still more, and this change in my inclinations I attribute to the systematic lectures which I heard him deliver in this classroom twenty-seven years ago.

One very obvious reason for abandoning the inaugural address is the difficulty of finding something fresh and appropriate to say, year after year, on such occasions. Even Gairdner, with his extraordinary fertility of intellect and language, was conscious of this difficulty. I was recently looking through three addresses of this kind which he published in pamphlet form some thirty years ago. The first was delivered in Edinburgh in 1855 or 1856, the second in Glasgow in 1866, and the third also in Glasgow in 1882. The intervals therefore extended over ten and sixteen years, and yet in the third address Gairdner says: "There is much of what falls to be spoken, which could only be spoken in similar, if not identical, words to those already used."<sup>1</sup> Those who knew Gairdner, however, know that he was easily capable of surmounting any difficulty of this nature.

Medicine is one of the progressive sciences. It is to be ranged with those which are still in process of evolution, and in the case of medicine this evolution is in the main, and without any doubt, in an upward direction. The beneficent powers of medicine are constantly being enhanced, so that among the civilised races the warfare waged by men against disease is assuming a more and more promising aspect; and, indeed, the successes already attained furnish us with the strongest ground for encouragement to persevere in the

<sup>1</sup> *Medical Education, Character and Conduct*, Glasgow, 1883, p. 6.

contest. The progress made in recent years by medicine—using the term in a comprehensive way—is immense, and represents the saving of many thousands of lives annually in Great Britain alone. The Right Hon. John Burns, M.P., recently pointed out that in the three years 1909-11, 772,811 fewer deaths occurred in England and Wales than would have occurred if the death-rate had been similar to the average death-rate of the years 1871-80.<sup>1</sup> Here, then, we touch upon what seems to furnish an eminently suitable subject for an introductory address such as might be delivered once at least by every occupant of a scientific chair—namely, a summary of the progress made by the science in question since the date of the last address of the kind. What an interesting and instructive history it would make if we had a complete set of reprints of such addresses delivered in succession by all the occupants of this Regius Chair of Practice of Medicine, beginning with the year of its foundation in 1637, or even, let us say, with the time when Queen Anne, of gracious memory, provided it with an endowment exactly two centuries ago! How pleasing to study the contributions of such different men as Cullen, Joseph Black, Gairdner, M'Call Anderson, and Samson Gemmell!

It is not my purpose, however, to make this present discourse purely historical, and one good excuse for this determination is that this aspect of medicine has been dealt with at considerable length quite recently at the meetings of the Seventeenth International Congress of Medicine. I would specially recommend you who are interested to read the addresses of Sir Thomas Barlow, President of the Congress; and of Mr. John Burns, M.P., President of the Local Government Board. These will give you some idea, and a very striking idea, of the great progress of the healing art since the Congress last met in London—that is, since 1881—or within the course of a single generation. They will also

<sup>1</sup> *British Medical Journal*, 16th August, 1913, p. 363.

introduce to you, by name at anyrate, the leaders of this advance—those men of brilliant intellect, of keen insight, of untiring industry, and of indomitable patience, who have captured from the foe, as the case may be, either first-class fortresses which have long resisted the attacks directed against them, or out-lying positions whose occupation permits of a more effective assault upon the principal stronghold of the enemy in that region.

Let us glance, however, at some of the steps by which the science and art of medicine have advanced. Consider the revolution brought about by the application of the methods of percussion and auscultation to the chest, enabling us to study the actual condition of the heart and lungs in the living subject. The former method, which had previously been employed in abdominal diseases, was extended to chest affections by Auenbrugger in 1761, though its value was not fully recognised till Corvisart published a translation of Auenbrugger's essay in 1808. The method of auscultation was discovered by Laennec in 1816. Think of the daily routine of clinical investigation which is the natural development of the teaching of Richard Bright in 1827, with regard to the connection of dropsy and albuminuria with changes in the kidneys. The invention of the ophthalmoscope by Helmholtz in 1851 enabled us actually to look upon blood-vessels of the living body, and by studying the condition of the fundus oculi to gain valuable assistance in diagnosis, especially in diseases of the blood, kidneys, and nervous system. The introduction of the clinical thermometer enabled us to recognise and to treat safely and successfully by the cold bath a considerable proportion of the cases of that very formidable condition, rheumatic hyperpyrexia, and it has enabled us to study with far greater precision the course of febrile diseases, such as enteric and phthisis. Widal's test for the serum of enteric is a product of the science of bacteriology—a science which was in its infancy in my student days, and still far from maturity when I was studying

it in Koch's laboratory twenty-four years ago. The test is not only serviceable in confirming the diagnosis in a suspected case, but it is now perhaps of even greater value in the detection of so-called "carriers," those individuals who act as permanent hosts of the specific bacillus, and as centres from which infection spreads in the community. In Wassermann's test for syphilis—a test which is only a few years old—research has furnished us with a potent instrument of diagnosis, which may be expected to throw light on the etiology and distribution of various morbid conditions, besides giving a clear indication for the employment of the most powerful antisyphilitic remedies.

Imagine how handicapped we should be nowadays if we were deprived of the use of the *x*-rays, discovered by Roentgen as lately as 1895. Let me just mention the polygraph and the string-galvanometer by means of which Mackenzie, Einthoven, and others, have revolutionised our knowledge of the action of the heart. Neurology and bacteriology, each of them fit matter for the study of a busy lifetime, are quite modern developments. In connection with the former the name of Hughlings Jackson, and with the latter those of Pasteur and Koch, have earned undying fame. Lister's work, which revolutionised surgery, has also been of great value to medicine. If we turn to the question of progress in the prevention and treatment of disease, how much poorer would we be, and how appalling would be our present state, if we knew nothing of anæsthetics to prevent the pain of operations, or of antiseptic surgery to prevent pain and death after accidental and operative wounds, or of vaccination against small-pox. Though quinine in the form of Peruvian bark, or Jesuit's bark, has been known as a remedy for malarial fever for centuries—for cinchona was introduced in 1640—it was the quite modern discoveries of the infecting organism, and of its modes of transmission, that led to those sanitary measures which can transform a fever-stricken territory of deadly reputation into a safe and fitting holiday-ground for

the white races. The introduction of salicylic acid in the seventies as a remedy for rheumatic fever inaugurated a new epoch in the treatment of that disease. In the early nineties the very name of diphtheria was enough to inspire dread; but the antitoxic treatment made available by the work of Behring and Kitasato has in great measure robbed the disease of its malign powers. Dysentery also appears to be yielding to recent methods of treatment. Salvarsan, discovered only a few years ago by Ehrlich and his associates, may yet do much to free humanity from one of its greatest scourges, that disease which is peculiarly liable to punish the innocent with, or instead of, the guilty, and which, in countless instances, visits the iniquity of the fathers upon the children.

As students of such a science and professors of such an art, we have to beware of undue elation on the one hand and of undue pessimism on the other. With the record of so great progress and so many achievements, the inexperienced might suppose that we are well on the road to perfection, and that there is not much more to be learned; whereas this is very far from being the case. To the skilful and the diligent there are innumerable possibilities of achievement, such as will bring not only fame and, in many cases, fortune, but also the far higher satisfaction of saving human lives, and diminishing the sum-total of human suffering and sorrow. On the other hand, medicine as a science is making greater and greater demands upon its devotees. Knowledge grows so quickly that it needs constant attention to keep pace with it; and the sacrifice of much else that is interesting in life is required of one who wishes to be a conscientious student or practitioner. Of course, as facts accumulate, they tend to become arranged in an orderly manner, and as the science thus becomes organised, the study of principles replaces in great measure the study of details, with corresponding relief to the memory and pleasure to the intellect.

According to Robert Burton, Pliny reckoned that the

number of diseases to which mankind is liable is 300.<sup>1</sup> Now, if we allot two or three diseases each to my colleagues who lecture on diseases of the eye, diseases of the throat and nose, diseases of the ear, diseases of the skin, and gynæcology, and divide the remainder between the Professor of Surgery and the Professor of Medicine, you will understand the buoyancy of spirit and the sense of confidence with which a student might, under these circumstances, embark on a course of practice of medicine. But now glance at the table of contents of a good modern text-book, and see how different is the lot of the unhappy student of the present day. Fortunately, however, as years or centuries pass, the change is not invariably in the same direction. Take the case of the pulse, for instance. We moderns recognise a pulse of large and small volume, a pulse of high and of low tension, a wiry pulse, a pulse of unfilled arteries, an intermittent or irregular pulse, and possibly a few others. Roughly speaking, there may be a dozen varieties; at least I think I may promise that you will not be expected to identify more than that number at your final examination. But it must be admitted that such skill is poor indeed in comparison with the subtle refinement of former times. Not only the number but the names of the varieties were sufficiently astonishing: "ardent," "bounding," "critical," "deep," "formicans" (like the creeping of an ant), "myurus" (a sinking pulse, diminishing like a mouse's tail), and so on. And yet it has been pointed out by Galabin that "our old physicians never quite attained the skill in pulse-feeling of which their Chinese colleagues boast, who pretend to distinguish upwards of three thousand varieties of pulse."<sup>2</sup> I am afraid there is indeed such a thing as a lost art.

<sup>1</sup> *Anatomy of Melancholy*, part I, sect. i, sub-sect. 2. "Pliny reckons up 300 from the crown of the head to the sole of the foot: elsewhere he saith, *morborum infinita multitudo*, their number is infinite."

<sup>2</sup> D. J. Hamilton, *Text-Book of Pathology*, 1889, vol. i, p. 699.

Among the *medical problems that press for solution at the present time* are those that relate to infant mortality, the infections (including tuberculosis, syphilis, pneumonia, and rheumatism), cancer, arterial degeneration, Bright's disease, the severer types of anæmia, and alcoholism. The methods of dealing with these must vary according to circumstances, and must, to a large extent, be preventive in their nature. *Infant mortality* exists in our midst to a degree which ought to stir the sense of humanity in us to its depths. Last year (1912) in Glasgow, 2,667 infants died in their first year of life, which is equal to a death-rate of 122 for every 1,000 births. It is a familiar experience when investigating the case of a working-class woman in the wards of the infirmary to find that four, six, or eight of her children have died at some period of childhood. Now, when we bear in mind the discomfort and sometimes serious ill-health of pregnancy, the suffering associated with childbirth, the attendant risk to the mother's life or to her subsequent health, and the expenses entailed on a poor household, we may realise how important it is, both to the family and to the State, that if a child *is* born, it should get a reasonable opportunity of growing up and becoming a useful member of society. This great infant mortality is very largely due to the poverty of the homes, and to ignorance or carelessness on the part of the parents. Valuable agencies have already been put in operation to remedy the latter condition of matters, but the poverty that involves a large part of the labouring classes is still terrible to contemplate, and presents itself as an urgent question for society as a whole, as well as a problem whose solution is worthy of the devoted efforts of the finest intellects.

*Tuberculosis* kills nearly one in ten of those who die in England and Wales, and nearly one in eight<sup>1</sup> of those who die in Glasgow. With proper conditions of life for the whole population—and this means good food, good clothing, good housing, and good habits—and with a proper milk-supply,

<sup>1</sup> 1,545 out of 12,760 deaths from all causes in 1912.

the frequency of this disease ought to be enormously reduced within the next thirty years. Apart from the mortality it causes, tuberculosis is a great evil because of the suffering and prolonged incapacity for work for which it is responsible.

Take again the question of *rheumatism*. A large proportion of the cases of heart disease which come under our notice owe their disability to rheumatic valvular disease. It is quite true that in salicylic acid we have a specific remedy which speedily puts away the fever and pains of acute rheumatism, but the heart is often attacked by rheumatism of an insidious and subtle kind, so that serious damage may be done to a valve long before symptoms arise which lead the patient to consult a medical man. This shows the importance of efforts at prevention.

*Arterial degeneration* is one of the commonest causes of death among people who have reached or passed the age of sixty in good health. It shows itself by its effects upon the brain or heart or kidneys, according to the organs whose blood-supply is specially interfered with. This arterial degeneration is a recognised result of the wear and tear of life, but it is probably accelerated by a succession of slight injuries inflicted on the vessel-walls by infections such as rheumatism and enteric fever.

*Pneumonia* is another very common and very formidable infection. In recent times it has shown a tendency to dispute with phthisis the position of being the most common cause of death.<sup>1</sup>

Finally, with regard to *alcoholism*, the tide has obviously turned, but as our national drink bill is still about £160,000,000 per annum, and as alcoholic excess is the cause of an incalculable amount of mortality, suffering, and incapacity for duty, it behoves us as a profession and as

<sup>1</sup> Of the 12,760 deaths which occurred in Glasgow in 1912, 1,378 (or 10·8 per cent) were due to pneumonia. The deaths from phthisis in the same year numbered 1,034 (8·1 per cent), and those from other forms of tuberculosis 511 (4·0 per cent).

individuals to consider carefully our proper attitude towards this serious question.

To some here it may seem a bold thing to contemplate with any degree of hopefulness the probability that certain diseases which at the present time cause many deaths may be abolished altogether, or reduced to a position of relative insignificance in the mortality statistics. Yet this is no unreasonable optimism, as past history, and even the experience of the present generation, can testify. Take the case of *scurvy*, which became a perfect plague to navigators when, in the fifteenth century, the revival of learning stimulated the desire to visit foreign lands, and led to the undertaking of protracted voyages. In 1498 Vasco da Gama lost 55 of his men in a short time through a malignant attack of this disease. As late as 1780, Admiral Geary, in command of the Channel Fleet, had to put back to England with 2,400 men down with scurvy. This sort of thing was due to the defective provisioning and hygiene of the ships, and the British Navy set the lead in reform. In 1795 Blane drew up a set of rules for provisioning British ships of war, and the result was most satisfactory. Nowadays it would be a grave reproach to those responsible for provisioning a ship if scurvy broke out among the crew, apart, of course, from shipwreck or other conditions of an altogether abnormal character.

Look again at the infections—diseases due to living organisms—and see what has been already accomplished. *Leprosy* was formerly prevalent in Britain, and leper or lazar houses were scattered over the country. There were more than a hundred in England. Towards 1500 the disease was rapidly declining in England, but in Scotland it survived till the beginning of the last century.<sup>1</sup> The exact causes of the disappearance of leprosy as an epidemic disease in Britain

<sup>1</sup> An indigenous case was seen in Shetland in 1798, and one was seen in Edinburgh in 1809.

cannot be stated, but it is probable that segregation was one.

*Small-pox* ought to be entirely eliminated by vaccination, followed after a number of years by revaccination. It was estimated some time ago that the average annual death-rate from small-pox in England and Wales was one-seventieth of what it was before Jenner's great and beneficent discovery.

*Malarial fever*, which used to be very prevalent, is now seldom acquired in Britain. Its diminished frequency is no doubt due in great measure to the improved drainage of the land.

*Typhus fever* used to prevail in our large cities to a formidable degree, and played havoc among medical students at a period removed from the present by only a few decades. Some of the names it has had, such as camp fever, ship fever, and hospital fever, are sufficiently indicative of its malign tendencies and sinister reputation. It is now a comparatively uncommon disease. Thirty-four cases were recorded in Glasgow last year, with 2 deaths. This mortality is at the rate of 3 per million living, whereas the death-rate in the period 1881-90 was 40 per million. The decline in this disease may be attributed to the work of the Health Department of the city, particularly in providing fine hospitals for the accommodation of those affected, and in dealing in appropriate fashion with the slum-foci in which the cases take origin.

Turn once again to the case of *tuberculosis*, which, chiefly in the form of tuberculosis of the lungs, is the most common cause of death in Britain. When Queen Victoria came to the throne in 1837, the death-rate from phthisis in England and Wales was 3,960 per million living, per annum. In 1910 it had fallen to 1,015, or little more than one-fourth of the earlier rate. In Glasgow the phthisis death-rate, half a century ago, was 4,094 per million. Last year (1912) it was 1,318—less than one-third of what it was in the early sixties of last century.

With such facts before us we may well take courage. Supposing we make progress in the directions which, in the light of our present knowledge, appear to be most likely, what may we expect to happen in our own city of Glasgow? Last year the number of deaths registered as occurring in this city was 12,760.<sup>1</sup> Of these, zymotic diseases (small-pox, diphtheria, enteric, typhus, scarlet fever, cerebro-spinal fever, measles, and whooping-cough) caused 1,080; puerperal fever, erysipelas, and other septic diseases, 177; tuberculosis of the lungs, 1,034; other forms of tuberculosis, 511; rheumatic fever, 9; pneumonia, 1,378; influenza, 42. All these together constitute 33 per cent of the whole. In theory they ought all to be preventible, and therefore to be prevented. There is no doubt, moreover, that of the remaining deaths many were due to theoretically preventible causes. It is, accordingly, easy to understand how, by an enlightened and enthusiastic co-operation on the part of the health authorities, the medical profession, and the lay public, an enormous reduction might be made in the annual mortality of Glasgow. The evil influence of alcoholism in causing fatal disease of the liver and other organs, and in diminishing the resisting power of the tissues to pneumonia, tuberculosis, and other infections, cannot be stated. Recorded figures, such as those of the Registrar-General, represent a mere fraction of the actual, as any man of the world knows. Almost everyone, however, can do something to make alcoholism less common than it is, and it is an altogether gratifying sign of the times that total abstinence is now so prevalent among our students.

The deaths from cancer in Glasgow last year amounted to 731, or 5·7 per cent of the deaths. Whether cancer is microbic or not is still unknown, and, except by complete extirpation of the seat of disease, it is rarely possible as

<sup>1</sup> 13,797, or, after making certain corrections for deaths in institutions, 12,760. For Glasgow statistics, see the *Report of the Medical Officer of Health*, 1912.

yet to cure it. But at any moment we may hear of the discovery of a cure for one or more of these diseases of which I have been speaking. As Mr. A. N. Whitehead points out, in his recently published *Introduction to Mathematics*,<sup>1</sup> it is "a fact which is being continually verified in the history of knowledge, namely, that some of the greatest discoveries are to be made among the most well-known topics." He makes this remark in connection with Descartes' epoch-making conception of the application of algebra to geometry, an idea which occurred to the great philosopher one morning in the seventeenth century as he lay in bed. At that time geometry had already been studied for two thousand years, for Euclid was born about 330 B.C., and even he only systematised and extended the work of a long series of predecessors. After his time geometry was made the subject of study by generation after generation of mathematicians of diverse race and training and circumstance—Egyptians, Greeks, Arabs, and Germans—before Descartes hit upon the method of co-ordinates.

To a certain extent, and in a small way, we have an analogy in the recognition of the *ankylostomum duodenale*, a small nematode worm, as the cause of a dangerous form of anæmia. Epidemic anæmia was met with in French miners more than a hundred years ago (from 1803-4 onwards), and in the tropics the disease was known for several centuries before its nature was understood. The worm itself has been known for three-quarters of a century (since Dubini discovered it, in Milan, in 1838), but some fifteen years more elapsed before the connection between the worm and the anæmia was established through the work of Bilharz and Griesinger in 1853 and 1854. It was much later still, namely, in connection with the deadly outbreak among the workers at the St. Gothard tunnel in 1880 that Perroncito, of Turin, demonstrated the truly formidable *rôle* played by this parasite. Perroncito further recommended that the ova of

<sup>1</sup> London : Williams & Norgate, p. 114.

the ankylostomum should be sought for in the evacuations of the French miners, and the result was positive. Before Perroncito's discovery, the anæmia of French miners was put down to various causes, such as the high temperature and the foul gases in the mines.

And now, having spoken at some length about our profession, about its past record, and about the duties that lie awaiting its attention, it is perhaps right that I should refer to the personnel—to the men who are in the ranks, and who are enlisting as recruits.

We are warned as to the danger of our position when all men speak well of us. In former times this danger was even less threatening than now. Burton says: "According to the Dutch proverb, a new physician must have a new churchyard; and who daily observes it not? Many that did ill under physicians' hands, have happily escaped, when they have been given over by them, left to God and nature, and themselves."<sup>1</sup> He also quotes the saying: "More danger there is from the physician, than from the disease."<sup>2</sup> These remarks and opinions, however, take us back hundreds of years, to semi-barbarous or barbarous days, and we can now confidently regard ourselves as followers of a profession which is held in much respect in civilised countries. This of itself is a sufficient reason why we should do our utmost, by living upright and useful lives, to maintain its honour, and to represent it before the world in a worthy fashion. We must of course be careful not to take too seriously those self-disparaging observations which will at times escape from the lips, or even from the pens, of medical men themselves, under

<sup>1</sup> *Anatomy of Melancholy*, part II, sec. iv, sub-sec. 1.

<sup>2</sup> *Loc. cit.* Caustic utterances, however, have not always been confined to the laity. One cynic, who must have had an unfortunate experience with one or two of his patients, has remarked that gratitude is to be looked upon as a symptom of the disease, which may be expected to pass away as the patient recovers.

the emancipating licence always accorded to convivial meetings.<sup>1</sup>

There must be many in the profession who have had a hard struggle to meet the financial requirements of their medical curriculum, in addition to carrying on the necessary studies; but we may take it that the great majority of medical students have now a perfectly fair opportunity of becoming good average practitioners, and that many of them, if they chose, could make themselves better than the average. The qualities that make for usefulness, and for all that is implied in the expression "honourable success," are pretty much the same for students and for practitioners, with one important difference. While you are students, your work is always ready to your hand; it has previously been planned out for you by others, and you have no worry in thinking what you should do. After graduation, things are often different, and you have to determine what kind of work you wish to do, and when and where to begin it, and sometimes you have also to wait for it.

For both student and practitioner, it is of the greatest importance to practise the art of observation. With some, this is a great gift. By all, it can be deliberately cultivated. In the study of medicine you should perseveringly endeavour to train the senses of sight, hearing, touch, and smell. But these powers, whether trained or still untrained, must be put into operation. Sir Wm. Gowers somewhere recalls a dictum of a great clinical teacher, the late Sir Wm. Jenner: "More

<sup>1</sup> Let me instance the poem by a former Secretary of the Glasgow Southern Medical Society, describing the Society's summer excursion of 1877, in the course of which he says—

"The city deaths fell four per cent  
That day the forty doctors went  
To dine at Tillietudlem."

See J. Dougall, *Historical Sketch of the Glasgow Southern Medical Society*, 1888, p. 43.

mistakes are made, gentlemen, many more, by not looking than by not knowing." This is a saying which I often quote to my students, and I would emphatically recommend it to you. You may, by looking at the patient's skin, discover that herpes zoster is the cause of the pain for which he has been unsuccessfully treated by somebody else, who did not take the trouble to look. By looking at the fundus oculi with the ophthalmoscope, you may find the changes indicative of advanced kidney disease, and thus explain the obstinate vomiting or severe headache which has been put down to some less serious cause. By examining the breast and finding in it a tumour, of which the patient may have made no complaint, you can account for the occurrence of agonising pains in the lower limbs, resulting from a metastasis in the spine. The detection of a slight angular curvature of the spine in the dorsal region may reveal the true nature of obstinate pains at the lower ribs. Similarly, an examination of the pupils, of the lower bowel, of the secretion of the kidneys, or of the blood, in cases where these investigations have not yet been made, and where the symptoms have hitherto been of a puzzling character, may immediately throw light upon the true nature of the disease, and help to further your own reputation as a careful and skilful practitioner, in addition to enabling you to apply the best treatment. Of course, in examining patients, you must always have consideration for their feelings and their sufferings. You should never cause unnecessary pain or fear, and in practice, if one exercises sufficient tact and kindness, it is remarkable how little difficulty one meets with in this direction.

We get a good illustration of the value of observation, both for the science and in the practice of medicine, by reverting to the history of our knowledge of ankylostomum anæmia. In this disease the mature worms live in the intestine, and the ova of the female are discharged in immense numbers in the evacuations of the host. The ova develop in water or damp earth, and the resulting larvæ have then to find their

way to the alimentary canal of the new host, the home of their adult life. How do they get from the damp earth to the intestine of the new host? The natural explanation is that the new host swallows them, either in contaminated drinking water or along with food conveyed to the mouth by soiled fingers. Yet actual observation has shown that this explanation, self-evident as it seems to be, is incomplete, and possibly almost entirely wrong. Looss discovered in 1898 that the larvæ penetrate the skin, and it is now known that the usual route by which they reach the intestine is through the skin, into the veins, and so to the heart; thence to the lungs, where they leave the pulmonary capillaries and enter the alveoli; then up the bronchi and trachea to the larynx, and then down the gullet and through the stomach to the intestine. Were it not that this explanation has been fully established by experiment and observation, it would have seemed too ridiculous to put forward in place of the other.

As indicating the practical importance of the question, and at the same time the serious extent to which this pest prevails in certain parts of the world, I may mention that it was estimated last year that in the Island of Porto Rico the total number of cases was now not more than 100,000, as compared with over 500,000 in 1904. It was found, moreover, that, to combat the spread of the disease, the main thing was to prevent skin infection ("ground itch"), a purpose which was not always easy of accomplishment. For instance, in 1910, when troops had to march across muddy lowlands, the muddy water got in between the shoes and the leggings, and the larvæ in this way got access to the skin. The total death-rate in the island has been reduced to half of what it was before "anæmia dispensaries" were introduced.<sup>1</sup>

That prince of investigators, Erhlich, has recently stated

<sup>1</sup> *The Lancet*, 20th September, 1913, p. 869.

that the successful issue of such researches as the one on which he was recently engaged depends on four principal factors. These are patience, skill, luck, and money.<sup>1</sup> By "patience" I understand "patient work," though it may be that Erhlich takes the need of work for granted. Be that as it may, work is part of the lot assigned to normal humanity, and it behoves us, for our own good as well as for the sake of others, ever to keep this in mind, and to bear the yoke from our youth onwards with courage, patience, and perseverance. Students of Carlyle know how emphatically he preached the gospel of work, but to those of you who would like to have it enunciated in more modern, more inspiring, and more cheerful terms I should recommend Sir Wm. Osler's beautiful and impressive address on "The Master-word in Medicine."<sup>2</sup> The master-word is work, "the true philosopher's stone;" the influence that makes "the stupid man . . . bright, the bright man brilliant, and the brilliant student steady;" the force that is "directly responsible for all advances in medicine during the past twenty-five centuries."

To different individuals, of course, Erhlich's four factors of success are allotted in very varying degree, and a deficiency of one factor may be largely compensated for by a particularly rich endowment with the others. In any case, a man can only be responsible for the talents actually committed to him.

In these days of specialisation, a man who wishes to make a name for himself by advancing a science or an art has usually to specialise in his work. I think you will find this brought out in the life and work of Hughlings Jackson, who revolutionised our knowledge of the functions of the cerebral cortex. The specialisation that is appropriate to your student days is different, and I shall simply explain by pointing out

<sup>1</sup> Address on "Chemiotherapy" at International Congress of Medicine. See *British Medical Journal*, 16th August, 1913, p. 353.

<sup>2</sup> *Aequanimitas, with other Addresses to Medical Students, Nurses, and Practitioners of Medicine.*

that you cannot expect to be the best man in your classes, the best speaker at the Medico-Chirurgical Society, the best golfer, the best bridge-player, and the greatest authority on recent fiction and on the modern drama—all at the same time. The two first are rightly to be aimed at, an outdoor recreation is desirable, and healthy fiction in tonic doses is permissible, but the greatest circumspection should be observed in your relations with the others.

Another matter of importance for a medical man is to have what is called "a good manner." This resembles the power of observation in being to some extent a gift, and also in being capable of cultivation. Several elements enter, or ought to enter, into the conception of a fine manner. Besides tidiness of person, ordinary courtesy and politeness, and the ability to avoid rubbing the patient or his friends in the wrong way, there is the power to inspire the patient with the conviction that you know your business thoroughly; and there is, in the highest development of this talent, the ability to convince the patient, without the least appearance of exercising pressure, and even in opposition to his preconceived notions, that the line of treatment you advocate is the best he can submit to, so that he, not of necessity, but willingly and cordially, co-operates with you in getting the treatment carried out. The more richly a medical man is endowed with this gift, the more absolute the necessity that he be perfectly faithful and conscientious in studying the best interests of those who entrust themselves to his care.

Granted, then, the right ambition, and honest work devoted to its realisation, the large majority of you who are medical students may look forward to becoming fully-fledged practitioners within the next few years, recognised by the State as qualified to judge when and how to use knife and drug for the benefit of suffering humanity. It is true that medical students are not all destined to spend their working lives

as practitioners of the healing art. Some, either after qualifying or without qualifying, are led aside by the superior enticements of other callings or pursuits. On the other hand, for those who stick to medicine, there are many possibilities. Many opportunities lie open to good average men for the commencement of a career which will be honourable and useful, and may lead to fame and fortune. Some will enter the Public Services—the Navy, the Army, the Indian Medical Service, or the Colonial Medical Service. Numerous appointments are available in connection with public health work in Britain. Some may follow in the footsteps of that great Scotsman, whose centenary was celebrated by this city and University in the present year, and devote their lives in other lands to one of the noblest services of humanity. Others, again, may engage in certain forms of research work, which, if successful in its aims, may lead to the saving of countless human lives, but which involves risk, as regards health and life itself, to the investigator. A goodly roll could be made up from the names of those who, even in recent times, have thus sacrificed their lives at the post of danger to which duty called them. Some one may manage to invent a pill or a powder, and get it called by his name—a very doubtful honour nowadays. But it is unquestionably an honour at the present time to have one's name conferred on a disease, and this great distinction has come to at least one well-known graduate of Glasgow University; I mean Sir William Leishman, whose father was Professor of Midwifery here when I was a student. Some of you will probably embark on hospital and teaching work at home, hoping to have a share in influencing and training a future generation of medical students. This will lead you to specialise in some department of medical work, but a preliminary experience of general practice is an excellent thing for you all, whatever it may be for your patients.

But after all, the medical profession is not made up of

professors or research men or medical officers of health. What we want, to quote certain words used by our Lord Rector in another connection, is "a steady supply of honest, plain-sailing men, who can be safely trusted with small sums, and to do what in them lies to maintain the honour of the various professions."<sup>1</sup> It is the general practitioner who answers to these requirements in medicine. It is he who truly represents the profession in the eyes of the great bulk of the laity, and on whom the honour of the profession in the main depends. These men do an incalculable amount of good in the land. In virtue of their calling, they are welcomed in the sick-room by all classes of the community, rich, comfortable, and poor; and strange and tragic family secrets come within their ken. Even in general practice, however, true genius will sometimes escape from its concealment, and scientific researches carried on in the spare minutes of a busy life may lead to epoch-making advances in medical science.

As the son of a general practitioner, and as having been personally engaged in general practice in town and country, I know the life well; I understand its pleasures, hardships, and anxieties, and I admire it. To a worthy man it brings influence, respect, and numerous friendships. It ought, if health is maintained, to bring a comfortable, if not a luxurious, income. It gives the opportunity of much service for others, and, from time to time, the supreme satisfaction of saving a life that had otherwise been lost.

I do not propose to draw up a series of rules for the conduct of your academic or professional career, but I should like you to bear in mind from the very first that, apart altogether from higher considerations, it means a great deal for the comfort and happiness of all the medical men in a community, and particularly in a small community, if they live in friendly relations with one another, and jealously guard against anything that could possibly be looked upon

<sup>1</sup> *Obiter Dicta*, first series, "Truth-hunting."

by any one of their number as unfair to him or his interests.

In an "Address delivered to the Glasgow University Medico-Chirurgical Society" in 1884,<sup>1</sup> when I was a medical student, Sir William (then Dr.) Gairdner enumerated nine qualities or endowments which he thought medical students ought to cultivate. That list is interesting to read, not only in itself, but as revealing so much of Gairdner's own mind and ideals. Sir William (then Dr.) Osler, in the address from which I have already quoted, enunciated three great lessons of life which we ought to learn. It is to me a noteworthy fact that these two great men have directed attention so unmistakably to the spiritual aspects of our professional life and work. Gairdner's ideal medical man is imbued with a deep sense of responsibility to God. One of Osler's great lessons to be learned by, and to be illustrated in the life of, the practitioner of medicine, is the essence of one of the most serious warnings uttered by our Lord. Following the example of such leaders, I would say to you younger men who intend to join us seniors in working for the sick, that without religion no man can quite attain to the best of which he is capable.

<sup>1</sup> Reprinted from the *Glasgow Herald* of 15th November, 1884.