

**Graduation address by John Gray M'Kendrick, Professor of Physiology in the University of Glasgow : 17th July, 1906.**

**Contributors**

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# GRADUATION ADDRESS

BY

## JOHN GRAY M'KENDRICK

PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF GLASGOW

*17th JULY, 1906*



GLASGOW

JAMES MACLEHOSE AND SONS

PUBLISHERS TO THE UNIVERSITY

1906

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LADIES AND GENTLEMEN,

Allow me now, on behalf of my colleagues, and especially of my colleagues in the Medical Faculty, to offer you the right hand of fellowship, to bid you welcome into the ranks of the Medical Profession, and to congratulate you on having your names enrolled among the graduates of this ancient University. This will always be a memorable day in your lives, and years after, when you will be amidst the storm and stress of life, and when you may be far from the influences that now surround you, you will look back on this scene, which is the beginning of your professional life. You are now surrounded by your comrades and friends, your minds are filled with the joy of achievement, and hope beats high in every breast. Your teachers rejoice with you, your friends rejoice with you, and all desire for one and all of you an honourable and useful career.

It is the custom of this University for some one to say a few words to the graduates before they finally leave this hall. My colleagues have asked me to do so on this occasion, no doubt with the kindly intention of giving me another opportunity of addressing you before I quit the position I have



had the honour to hold in this University for thirty years. You are about, as I have said, to begin your careers and, in a sense, I am about to close mine. It is forty-two years since I was in your position, and during those years I have been wandering along the road of life, picking up a little knowledge here and there, and gathering experiences of hope and disappointment, of joy and sorrow, such as fall to the lot of every man. Could I transfer to you the lessons I have learned, they might be of some use to you, but that is not the order of the world. We cannot transfer much from one generation to another; each one has to learn for himself, and to have his character moulded by the circumstances and experiences of his own life. Still it may be of interest to you if I place before you some of the aspects the medical profession presents to me, from my present point of view, and after the experiences of a lifetime.

In the first place, I have seen an astonishing development in connection with Universities, and more especially in connection with our own University. The old tree has been putting forth buds and new shoots in every direction, and I feel sure that, although the trunk has withstood the blasts of centuries, there never was a time when there were evidences of greater vitality. The wave of progress that during the last thirty years has swept over the world has also affected our University. Without in the slightest degree disparaging our predecessors, I feel sure I am right in stating that the methods and means of teaching are better



than they were thirty or forty years ago; more, much more, is done in the way of demonstration, and greater facilities are afforded for students doing work for themselves. Then, by the establishment of lectureships, subsidiary branches of science are cultivated, and thus opportunities are given for specialization. Take chemistry as an example. We have now five men devoting themselves to this subject in this University, thus: Chemistry, Organic Chemistry, Metallurgical Chemistry, Physical Chemistry, and Physiological Chemistry. Had it fallen to me to develop the Physiological Department in the new Laboratories, it was my intention to subdivide the subject, so that we would have had at least five teachers, namely, Physiology, Experimental Physiology, more especially in connection with nerve and muscle, Histology, Physiological Chemistry, and Experimental Psychology. I have no doubt my successor will work on similar lines. We have also lectureships on Practical Anatomy and Embryology, and probably others that have not come under my observation. I cannot help alluding to the new laboratories for Medical Jurisprudence and Public Health, for Materia Medica and Pharmacology, and for Physiology. To indicate what is being done, I will only again mention the circumstance, alluded to in my valedictory address to the summer class, that for thirty years I have worked in five rooms, but my successor will have the command of twenty-five rooms, for various purposes. No doubt all this development will cost money, and I do not wonder that those who take charge of the finances of the



University are fearful as to the future. But let them take courage. Expenses will be heavier, but the University and the country at large will get full value for all the expenditure in increased efficiency, in the progress of science, and, consequently, in the welfare of the public. I have myself no fears. Convince the public that the advancement of the University, or rather I would say of all universities, is of the utmost importance to our national well-being, and money will be forthcoming. Our statesmen are becoming more and more alive to this consideration. If we, the British people, are to hold our own among the nations of the world, if we are to contribute our share to science and to the world's progress, we must cultivate the best brains that we can find. This will be best done by increased facilities in all technical colleges and universities for efficient teaching and for research. I know enough of the citizens of Glasgow to doubt for one moment that they will ever suffer their ancient university, of which they are justly so proud, to lag behind for want of funds. The municipal and industrial enterprise of Glasgow is known all the world over, and already the best heads in Glasgow recognise that this enterprise has been closely connected with the work of the University, and that it will be more so in the future than it has been in the past.

The next consideration I desire to lay before you is that medicine and surgery have both made remarkable progress during the last thirty years. You are all familiar with this fact. I need not



enlarge on the wonderful progress made by so-called preventive medicine, by which the mortality from fevers and other infective diseases has been enormously reduced, more especially in our great towns. Nor need I do more than allude to aseptic surgery, by which thousands of lives are saved annually and the surgeon is able to perform with success many operations that were at one time deemed impossible. Gynaecology also has become a well-defined and most important branch of surgery, and by its methods lives are saved and existence to thousands made enduring. Nor can we forget that during the last thirty years the science of Bacteriology has assumed such dimensions and is of such importance as to affect all departments of scientific medicine. Such progress has been made in all branches of the healing art that possibly some of you may feel discouraged, and you may think that little will be left for you to do. But you could not make a greater mistake. Marvellous as has been the progress of the last thirty or forty years, it appears to me that we are on the road to great discoveries that may, as regards some details of practice, revolutionise the medical art.

Ideas precede discoveries in the onward march of Science. The secrets of nature are not revealed at haphazard. Sometimes one with merely an inquisitive mind discovers a new phenomenon, apparently almost by chance; but the best work is done by the thinker, who meditates over phenomena with which he is familiar, and who invents a working hypothesis to explain the facts. Then he



appeals to observation and experiment. The observations and experiments are then not at haphazard. The investigator knows what to look for, and he knows the kind of experiment that must be tried. Thus great general principles are established. It seems to me that we have in our day striking examples of this process of human thought. New ideas are everywhere in the air.

Physiology, pathology, and pharmacology are the hand maidens of medicine. Practical medicine is no doubt an art, not a science, but it is based on knowledge derived from the three sciences I have mentioned. In these days it seems to me that these three branches of human activity are becoming more and more closely connected, and they are fertile in new ideas, ideas that must influence not only our conceptions of disease, but also our modes of treatment. It is now recognised that there are gradations both in health and disease. Probably a state of perfect health in any individual is rare; there are ups and downs; there are as it were different planes of health. Even in a person supposed to be in perfect health there may be morbid activity in some part of the body, some disease or other in its very earliest stages. One organ may not be performing its functions efficiently, and all the organs suffer more or less with it. It is becoming more and more clear that each organ may have more than one function, and that if one organ is the seat of disease, other organs may, within limits, act vicariously for it. We also see that morbid changes have a beginning, and if we could



only detect them at this stage we might be able to employ therapeutic measures that would avert the morbid changes, or at all events modify their progress.

We also see that the body has numerous protective arrangements for defending itself against enemies, such as micro-organisms or poisonous substances generated even by itself. This is an idea only dimly perceived by our forefathers. The acidity of the gastric juice, the portal circulation, the abundance of adenoid tissue crowded with leucocytes in some of the so-called blood glands and in the alimentary tract, the influence of internal secretions, are all examples of what we may term a protective mechanism. The old physicians wrote much about a *vis medicatrix naturae*. They had a glimmering of the truth. There is no *vis*, there is no principle that thus acts, but there is a tendency on the part of every tissue to resist attack, and if altered in a morbid direction, to revert to the condition that is normal. In your future work you will recognise these ideas, and they will help you in your practice.

It is instructive to observe how one idea leads on to another. Leucocytes were detected in the blood even by the early microscopists, but it is only in recent days that their importance has been suspected. First their power of amoeboid movement was observed, then their tendency to migrate in inflammatory conditions, and then the phenomena of phagocytosis, by which they are capable of devouring foreign micro-organisms. At the same



time the life history of micro-organisms was studied. Ere long it was discovered that in many cases the micro-organism might not be injurious to the body *per se*, but that it produced a poisonous substance, a toxin. The next important step was taken when it was found that the toxin, in some mysterious way, produced an antitoxin, which neutralised the poisonous action of the toxin. This led to the formulation of the theory of Ehrlich, which has been singularly fruitful in the way of suggesting research. By the cultivation of antitoxins in serum, valuable remedial agents can now be used in the treatment of acute diseases caused primarily by micro-organisms. Nor is this the end of the wonderful story. It is found, as you are aware, that in serum there may be present bodies—chemical substances—no doubt derived from the tissues themselves, which have anti-bacterial powers. Little is yet known of the true nature of these so-called opsonins, but we have a method by which their power may be measured, and the opsonic index of the blood as a whole, or of the blood of different organs, may be determined. Here is another remarkable protective measure that may be taken advantage of in therapeutics. Whether the opsonins act by stimulating phagocytic action, or whether they so injure the infective micro-organisms as to lower their vitality, and thus make them an easy prey to the phagocytes, is not yet determined. All this has led to theories of immunisation and to measures of immunisation. It seems to me not improbable that we are entering on a new field



of serum-therapeutics which may be of the greatest value. In many cases, no doubt, we will be beaten in our efforts, and the surgeon will be called in to remove, or lop off, or relieve from pressure, or give rest to ulcerated parts, but I cannot help thinking that in the future there will be less for him to do in this direction than in the past.

Another idea that is taking possession of the medical mind is that by therapeutic measures, while we cannot cure the disease, we can help the body to carry on its functions, not certainly on the high level of perfect health, but on a lower level of comparative comfort and efficiency. Physicians do not invariably attempt to treat actively a new set of symptoms that may make their appearance in a chronic case. They are afraid to do harm when they cannot see clearly that they can do good. This is well brought out in a remarkable book I have recently been reading, *Principia Therapeutica*, by Dr. Harrington Sainsbury, and which I would strongly advise you all to peruse. He tells of a case under the care of Sir William Jenner which illustrates the point. "The patient had been long under his guidance for chronic renal disease, when, in the course of a journey abroad, active symptoms developed, were at once taken on hand, and as actively treated; within a short time the patient succumbed. A lady recounting the case to Sir William, spoke her regret that he had not been present, for then, as she expressed it, her friend would not have died. The answer came that this



was unreasonable, seeing that the patient had an incurable disorder—‘Ah, yes, doctor,’ she replied, ‘but then you would not have attempted to cure it.’”

There is only one other idea I wish to refer to. You must have often been struck with the sad ravages of disease as revealed in the *post mortem* room—the condition of the heart and kidneys, for example, being apparently incompatible with life. The wonder you felt was not that the patient died of the disease, but that he lived so long with organs that presented such morbid changes. When one sees a case like this, there is a tendency to be sceptical as to the use of drugs. But the condition was not of yesterday. Changes must have been going on for years, and yet the individual may have lived to a fairly old age and even been active in the discharge of daily duty. Now, no remedies can work miracles. They cannot materially alter the condition of a diseased heart or of degenerated kidneys. And yet, if we recognise the idea that the body as a whole has wonderful compensatory arrangements and adjustments, by which life may be beneficently prolonged, we can do much by therapeutic means to assist nature. I frankly confess that as I have become older the crude scepticism of early years as to therapeutic measures has given place to a recognition of how much may be done to help by the judicious use of our *materia medica*.

It is evident then, ladies and gentlemen, that there is still much for you to do in the active treatment of disease. Keep up your knowledge of



physiology, pathology, and pharmacology. Link them together and you will find that one will illuminate and help the other. Study, for example, such a problem as that of helping a weak heart by the use of digitalis. You will find this problem full of instruction, and it will be a good test of your physiological knowledge. Do not practise by rule of thumb. Scrutinize each case that comes before you *per se*. Examine it with the physiological and the pathological eye, and not through the distorting medium of a text-book, full of descriptions of "typical" cases. Then use your remedies wisely and well, with as full an acquaintance as you can command of their pharmacology. Take care not to do harm, and always have a definite idea as to how you hope to do good by the use of a particular remedy. This will give you satisfaction with your work.

Long ago I heard the late Rev. Dr. John Service preach in our University on the text that tells of the poor woman who had spent all her living on physicians and was none the better but rather the worse. Dr. Service had a saving gift of humour which often illuminated his discourses. We had an instance of this when he suggested that it was questionable whether medicine, in the saving of life and the relief of pain, had yet paid off the debt accumulated against her during the ages by insufficient knowledge and maltreatment of millions of human beings. Well, if the balance is not yet on the right side, we are wiping off the debt year by year. You will take your share in this great work.



Called to a profession that has no rules of etiquette but those that ought to regulate the conduct of every lady and gentleman, you have a noble mission before you. May God bless you all and help you to be worthy daughters and sons of your *alma mater*. Always have before you—

“The lesson pondered o’er with thoughtful eyes,  
The faith that sees in all a meaning wise.”













