

**The academic element in medicine : address to the graduates in medicine, Thursday, July 30th, 1891 / by John Ferguson, M.A., LL.D., F.S.A., Regius Professor of Chemistry in the University of Glasgow.**

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*ADDRESS TO THE GRADUATES IN MEDICINE,  
THURSDAY, JULY 30th, 1891*

BY

JOHN FERGUSON, M.A., LL.D., F.S.A.

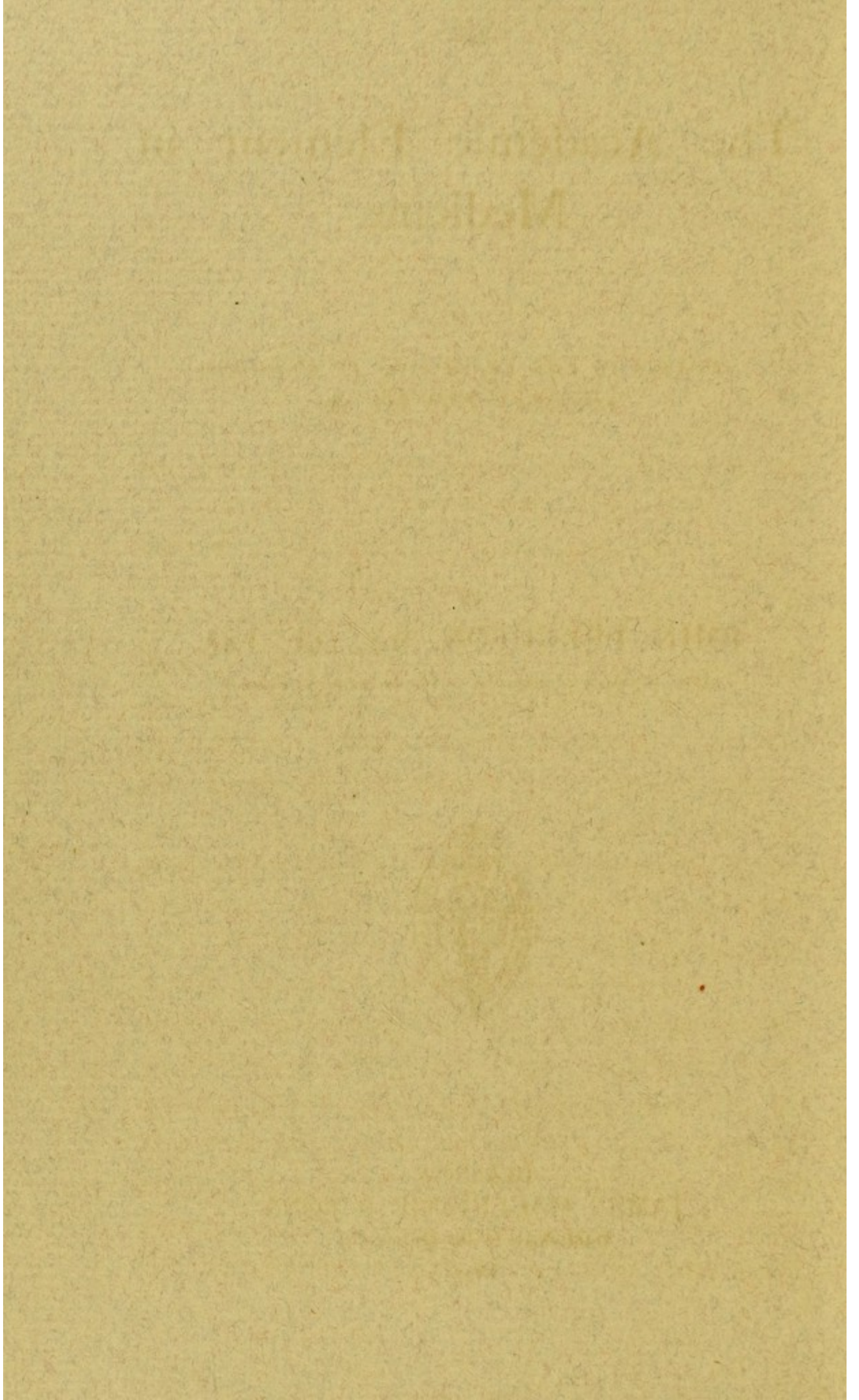
REGIUS PROFESSOR OF CHEMISTRY IN THE UNIVERSITY OF GLASGOW



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The Academic Element in  
Medicine

By  
John Thomson

John Thomson, M.D.,  
F.R.C.S., F.R.C.P.

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## ADDRESS

TO THE GRADUATES IN MEDICINE, UNIVERSITY OF  
GLASGOW,

THURSDAY, JULY 30TH, 1891.

IT is my honour and privilege, on behalf of the Senate, to congratulate you all on having successfully concluded the course of study and the various examinations for the degrees in medicine of this University, and also to welcome you as permanent members of it.

You have at last reached the summit which seemed so distant some four years ago, and you feel doubtless at the moment very well satisfied with yourselves, and with things in general. But I should hope that the eminence which bounded your vision when you entered the University, has, now that you have mounted it, only opened up another prospect before you—that of unrestricted research in medical science—which, if not illimitable, is at all events spacious enough to tax all your powers for all your years to come fully to traverse.

At the present time, however, the sense of having attained is too strong and too pleasant to be dashed with any other, and you feel yourselves fairly entitled to a rest before entering on a fresh spell of work.

For my own part, I may perhaps be permitted to congratulate you also on having at last escaped from a region of examination—pity such a place exists!—into one where you can pursue your own ways of study, your own tastes and proclivities. You have now leisure to look about you, and to select the subject or department which proves most suggestive and attractive to you, to study it as you like best, without having to prepare for an irksome catechizing. That has come to an end, and the mind luxuriates in its newly-acquired independence.

Now, however, in this interval of quiet is the opportunity for considering in what you have been engaged for the last few years, and trying to estimate the gains and losses of that time. You have found yourselves compelled to do a number of things from which you would sometimes have willingly escaped; to study subjects in which you took less interest than in others, or in which you could not always detect a very intimate connection with your main aim, which was to acquire a knowledge of medicine. You have heard in lectures something of what is known

by others; in examinations you have had brought before you what the experience of others indicates that you should know, and what you are expected to know; you have seen in practical demonstrations how facts are observed and reasoned upon. All this and much more you have year after year subjected yourselves to, trained yourselves in, been educated in, with the result that you have been at length considered qualified—academically at any rate—to undertake the distinguished and responsible duties of practitioners of medicine.

I have said *academically* qualified, for it is of importance to you to consider how far you are *actually* qualified to practice, without more experience than you have as yet had an opportunity of acquiring. How far at this present time do you feel yourselves masters of any one of the dozen subjects which make up the education of a medical man? I do not mean so as to pass an examination on all that is known about them. I venture to say that hardly even an expert would undertake to do that, but do you feel that any opinion that you could form upon a doubtful point in any one of them would be of critical value? Is there any question that you could feel confidence in discussing from actual personal contact with the phenomena, with the certainty that you could say something of weight? With what self-



reliance would you undertake before a number of onlookers a great surgical operation? Do you feel that, with all the knowledge you may have got by reading, reflection, observation, you have the experience and practice necessary to success? I should suppose not. Now, if this be so, it follows that, while you are academically qualified and legally qualified to practise, there is still something wanting which only time can give, and that is experience, and the sifting of your knowledge by experience. If you will now at this stage of your student life (for remember whether we be teachers or scholars, nature and life and mankind are giving us new lessons to the very end), if you will, I say, pause and look back as well as forward, you will see that hitherto you have been only furnishing yourselves with a stock of other people's experience to begin work upon, and that you will have in the future partly to establish and augment, partly to alter and discard your University attainments.

Hitherto you have simply learned what you heard or read. You have not been in the position, and were not expected, to criticize. If it were wrong, you were not at fault, and the erroneous statements or ideas involved you in no awkward consequences. But now, emancipated from prescription, you have become responsible for your

knowledge and your statements. If these are defective or wrong, it is you who have to bear the brunt of the results. You will by and by discover that there is a harder examination than even the "first professional," and that is when you have to bring all the resources of your knowledge and skill to deal with some difficult professional problem with the certainty of being criticized for your decision and action.

You will, therefore, soon come to understand that your strictly professional training is only now commencing, and could not have commenced sooner. But the feeling of responsibility will give a new zest to your work, and many subjects which to you as undergraduates appeared dry and unattractive will now be endowed with vitality and interest.

Is then the academic training of less use than is usually supposed, when, after years spent on it, what may be called your actual training is only beginning?

Such an opinion as that, I have no doubt, is entertained by some, who would perceive no great harm in getting rid of the academic element in medical education; but if such a view be held and supported by argument, it must be due to misunderstanding the relative domains of academic and professional training, and expecting from the former what in the nature of things it cannot supply.

There is obviously, however, one thing upon which I cannot with a clear conscience congratulate you, and that is on having reached your degree in four years, when in the course of another year or so it will be necessary to spend five before obtaining it. It is quite plain that if medicine require five years' study, all who have spent only four must be proportionally deficient. The present brain wave of the medical educationists is that a four years' curriculum is too short, and that it should be lengthened to five. The only question that suggests itself to me is, Is five not too short? It takes something like six or seven to qualify a candidate for the office of the church. By how much less comprehensive is medicine than hitherto four years have been enough? That there are certain practical difficulties in the way may be conceded—there are such everywhere—and these difficulties bring up the two-fold aspect in which medicine ought to be regarded. The confusion of these two aspects is, I fear, leading more decisively to evils which have been always aggressive, although they could be to some extent met and palliated. It is the confusion between the disciplinary part of medicine in its academic aspect, with the exercise of medicine as a technical art or department of applied science.

Those who have the efficiency of University

training in medicine at heart would do well to consider two questions: (1) What subjects should a student be taught? (2) How much can a student learn during a given number of years?

In medicine there is hardly any room for variation in subjects to be taught, though there is great latitude in the methods of dealing with them or the length of time to be apportioned to each. "All the ills that flesh is heir to" defines pretty nearly what the subject is, and indicates what an amount of study, and thought, and care, and tact, and most other qualities the mediciner has to bring to bear upon his work.

How is an uncultured lad to be developed into an embodiment of all these qualities? What possible knowledge or skill in the art and practice of healing—that is, in dealing with all the states, normal and abnormal, of the human body and mind—can an average human intellect up to twenty-one years of age acquire either in four years or in five? If medicine be a science, its principles and fundamental facts may be acquired by dint of study; but if it be an art as well as a science, or if it be mainly or solely an art, as the last is impressed upon us, then the acquisition is all but *nil*, for an art can be acquired only by constant and long practice, and that demands time.

I look, therefore, upon the proposed extension

of the academic curriculum to five years as a delusion, if the extra year is to be spent in acquiring mere practice. If medicine, however, can claim to be at least based on scientific principles, these ought to be considered academically as taking precedence of practice both in time and importance.

An academic degree should, above all things, bear proof of academic proficiency. It is something to begin with ; it is not final. In the academy it is impossible to produce consummate practitioners; it may be possible to put a student on the way to become one, but the University may be as well expected to supply him with a practice at once as to supply him with the skill to conduct one.

The one thing to be acquired is a knowledge of the phenomena of life, and after that is done the treatment of its disorders may be fairly considered. Without a comprehensive knowledge of anatomy, physiology, and pathology, the structure, the composition and functions, the disorders of the body, and these three fundamental medical subjects, which of necessity include chemistry and physics and a general survey of life in plants and animals—without these, and the training necessary to acquire them, the practitioner is a mere empiric. He deliberately discards the whole accumulated medical experience of the past. Medicine, if unscientific, must be empirical. There seems to be a tendency

with some to separate medical study from its fundamental sciences, to draw an illusory and vicious distinction between so-called preliminary scientific and strictly medical studies. As if science were something external to medicine, and not its very essence; included out of deference to custom or prejudice, but really after all something without which medicine could quite well stand alone, and would be all the better to be liberated from. How much, then, can University instruction impart to the student? and how much must be left to himself in the future? Now, if it comes to a definite issue like that, the decision is obvious. A student can be trained in methods and instructed in results; he cannot be equipped with personal knowledge and experience. The former is a piece of academic instruction, the acquisition of which, in a proper way, may be fitly rewarded by the conferring of such a distinction as a degree; the latter the man must make for himself through his subsequent career. The former he has no opportunity of getting except at the University; the latter will be before him, if he so will, at every moment of his life, and he cannot get it at the University.

Considering that the history of medicine shows that advancement in it has been from the side of scientific investigation rather than from empirical luck; considering that in the future medicine will

have to follow more and more the lead of the scientific investigator in chemistry, physics, anatomy, physiology, and natural history, it ought to be the aim to make the academic course as full of these fundamental sciences as possible. To me three years devoted to these sciences seem short enough. They not only furnish the essential training in observation and reasoning which are indispensable to the medical practitioner, but they are fundamental to medicine itself. It cannot be too strongly urged and too often repeated that, in so far as the human body is a piece of matter, medicine, the function of which is to know and deal with the states of the body, is a physical science, and ought to be, if it be not, acquainted with the chemistry and physics of the body.

The demand or necessity for lengthening the curriculum has arisen from the greatly extended character of medical science, as is commonly said. To what is that extension of medicine due? Largely, if not solely, to scientific investigation, made in many cases without reference to medical applications. That is to say, not only has medicine become more comprehensive in its general views and theories, but the sciences upon which it relies have also become much more extensive.

Now, while a medical practitioner has every opportunity and every inducement to study the

new branches of medicine, he has none afforded him more than he had before of becoming acquainted with the extension of the sciences themselves. Nay, by virtue of certain new regulations, if passed as they are now, he has less; for, while the medical student is not allowed to graduate till he be twenty-one, the curriculum he has to follow is to occupy five years. That means that the age of entering the University for the study of medicine is to be virtually lowered by one year. At all events, it will have the effect of inducing students to come at an earlier age than is desirable, before they can have acquired such a school education as will enable them to pass even the preliminary examination for medicine.

I take my own subject: the time allotted to it is precisely the same now as thirty years ago, though during that time not only has our knowledge of the chemical properties of matter in general, but especially in relation to medicine, been enormously increased. The initial difficulties of the subject to the student, however, remain as formidable as ever, and take as much time to surmount, so that by the time he is prepared to appreciate the parts which would appeal most strongly to him, he has to hurry on to some new topic. But, hereafter, I expect to see students less mature, less able to understand and to follow generaliza-



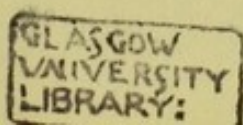
tions, less able to assimilate the ideas of science. I fear that the fifth year thus necessarily and really put on at the beginning will be detrimental in almost every respect. If a whole year is to be devoted at the end of the course to nothing but clinical study before graduation, it should be a year more than the present curriculum, and the degree should not be attainable under the age of twenty-two. There would be no hardship in this if the age for the higher degree were still kept at twenty-four. It would mean that one of the years of study required for M.D. was needful for M.B. It matters little which of the two titles has the year in question. Any arrangement would be better than inducing students of medicine to come to the University at the age of sixteen in order to graduate at twenty-one.

These questions do not concern you very particularly at present, but they will do so hereafter, and, in any case, whatever is likely either to increase or diminish the efficiency of the medical curriculum is worth your careful attention.

Of one thing, however, we may all rest assured, no ordinances or regulations can possibly stop investigation or prevent it having an effect upon both the study and practice of medicine. There are subjects with which you will have to familiarize yourselves in sheer self-defence in the struggle

for existence. You must be prepared for all new discoveries, new methods, new remedies, new treatment of disease. These will come upon you whether you wish it or not, and he who is most receptive and best attuned to the new order will outstrip his competitors. The prizes, remember, fall to the man of skill, and energy, and acquirements.

In concluding, may I be allowed to express the hope that, while all of you will show hereafter that the training you have had here, the examples that you have had put before you, and the ideal of the physician's life which you may have formed, will enable you to do the wearying work of everyday life faithfully and well, and that none of you will stand still in your acquirements, but will strive to become better, more resourceful, more considerate and enlightened in the great profession to which you are now committed, some one of you may be of the select number to whom the prizes do come, and to whom the University that has trained you may point as one of her distinguished sons. It rests now with yourselves. Lose no time; up and be doing, for the night cometh.



The first part of the report is devoted to a
 description of the work done during the
 past year. It is divided into three
 sections: the first deals with the
 general progress of the work, the
 second with the results of the
 various experiments, and the third
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