

On universities and libraries, teaching and examination : address to the graduates in medicine at the close of the Summer Session, University of Glasgow, Tuesday, July 30, 1878 / by John Ferguson, M.A., Professor of Chemistry, University of Glasgow.

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*ON UNIVERSITIES AND LIBRARIES, TEACHING AND
EXAMINATION.*

A D D R E S S

TO THE

GRADUATES IN MEDICINE

*AT THE CLOSE OF THE SUMMER SESSION,
UNIVERSITY OF GLASGOW,*

TUESDAY, JULY 30, 1878.

BY

JOHN FERGUSON, M.A.,

PROFESSOR OF CHEMISTRY, UNIVERSITY OF GLASGOW.



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ADDRESS TO GRADUATES IN MEDICINE.

IN the recently published report of the Conference of Librarians, held last autumn in London, there is a paper by an Oxford Fellow and librarian on "University Libraries as National Institutions," in which a contrast is drawn between Universities and Libraries somewhat to the disadvantage of the former. I hope you will pardon me if I select some passages as pegs on which to hang a few desultory reflections.

"If universities," it is said—and it is plain that for the writer there are only two Universities, Oxford and Cambridge—"no longer exercise their former power, it must be ascribed in part to the extraordinary increase of printed books; partly also to the great development of wealth, which has drawn the means of cultivation to the centres of commerce and population, and in many other ways affected the ancient position of the universities in relation to learning and letters."
[*Obviously the writer knows nothing of this University.*]

"The conditions and environment of modern universities have been completely changed by these causes. We now learn everything from literature, of one kind or another, and the lecture of the university teacher is very frequently a tedious repetition of some text-book which we could ourselves refer to with far greater ease and profit."
[*Once more the writer can have only Oxford and Cambridge in view.*]

“Although Carlyle’s words,” the writer proceeds, “on this subject have often been repeated, and he himself has called attention to them after an interval of thirty or forty years, they still remain practically unheeded so far as the universities are concerned. ‘The true university,’ he urges again and again, ‘is a collection of books. Universities arose while there were no books procurable, while a man had for a single book to give an estate of land. It is now 700 years since universities were first set up in this world of ours. Abelard and other thinkers had arisen, with doctrines in them which people wished to hear of, and students flocked to them from all parts of the world. There was no getting the thing recorded in books, as you now may. You had to hear the man speaking to you orally, or else you could not learn at all what it was he wanted to say. And so they gathered together, these speaking men, the various people who had anything to teach, and found themselves gradually under the patronage of kings and other potentates who were anxious about the culture of their populations, and nobly studious of their best benefit, and became a body corporate, with high privileges, high dignities, and really high aims, under the title of a university. Beyond all doubt, this is greatly altered by the invention of printing, which has modified the existence of Universities to their very base. Men have not now to go in person to where a Professor is actually speaking, because in most cases you can get his doctrines out of him through a book, and can then read it, and read it again, and study it.’ ‘The university which would completely take in that great fact of printed books, and stand on a clear footing for the nineteenth century, as the Paris one did for the thirteenth century, has not yet come into existence. I know of no university where the whole of that fact has yet been completely taken in.’”

“It is,” continues this Oxford librarian, “from this point of view here brought out that the development of a perfect library organization, free and open to the learned of all countries, as the central feature of the modern university, acquires significance.”

The author then proceeds to point out that the number of books surpasses the readers; that multitudes of books

which are printed are never practically published, are never even opened, but die almost as soon as they have seen the light; that the collection and arrangement and classification of all this literature is beyond the power of individuals, but might be partially effected by the resources of the Universities.

“Books,” he says, “it is true, are not learning; and with equal truth but with equal uselessness, it may be urged, learning is not wisdom. Nevertheless, as in Bacon’s time, libraries are the most effective works of merit towards learning. When the universities are reorganized in their proper relation to literature, perhaps some of the difficulties referred to may be overcome; but in the meanwhile there are opportunities available to Oxford and Cambridge which they cannot afford to neglect, whether they are regarded as literary or as educational centres, or as centres for the encouragement of research. Much of this work, it may be admitted, is of a mere mechanical kind; but it is one of the very objects of library organization to provide these mechanical aids. Moreover, all this machinery of learning has its special place in the acquisition of knowledge” And he adds—

“Much, however, as may be done by mechanical means, and much as may be accomplished by the adoption of a perfect system of cataloguing and classification, all this will be a sorry substitute for the privilege of being able to consult living and intelligent guides. The appointment of a Professorship of Books has been frequently urged by Emerson, who describes it as the one professorship of more value than any other.”*

The great mass of readers value books not for themselves, but only for their contents. A reader wishes to know a subject, and he will read the books which give him the best account of that subject. These books he must either

* *Transactions and Proceedings of the Conference of Librarians held in London, October, 1877.* London, 1878, pp. 33-35.

discover painfully for himself, or he must be advised by those who know them. Now, if Universities are to be reorganized as Mr. Carlyle desires with respect to printing and books, and if Mr. Emerson's plan is to be adopted, we should require to have all present professors of literature, and philosophy, and science, and medicine, replaced by professors of the books about literature, and philosophy, and science, and medicine.

These new professors of course would tell the students what to read. They would tell them where the best information and facts were to be got. But to do this efficiently, it seems to me that the professor must have previously read the books himself, and be able to give his reasons for commending one rather than another. He must have arranged his matter systematically; in short, is there any reason why he should not at once give his own views on the subject of the books of which he is professor, and tell his auditors how they can supplement by reading what he imparts to them orally? If there is any meaning in the phrase, "a Professor of Books," either all professors of subjects are of necessity professors of books, or else the Emersonian professor is to be a muzzled ox treading the corn.

As for Mr. Carlyle's hypothesis that because a professor's doctrine can be got out of him through a book, there is no need to go and hear him speaking—facts seem to contradict it. My observation is that the more successful a text-book is, and I confine myself to that

as a crucial instance, the more likely are the oral teachings of the author to be frequented. Does the fact of Professor Huxley or Tyndal having written many books prevent crowds of persons going to hear them lecture? Would the fact of Mr. Darwin having published numerous books stand in the way of his getting an audience if he were to give a course of lectures on Natural Selection in this very room? Would the existence of the "French Revolution: A History. By Thomas Carlyle," deter "students flocking to him from all parts," as he himself says about Abelard, if it were known that he were going to discourse upon that remarkable event in European history? Does the mass of books read and unread prevent people crowding to the British Association to witness the authors of these books perform daring acts on their own particular hobbies?

That Universities have existed for 700 years in the face of an ever increasing mass of literature, much of the best having emanated from these very institutions; that the number of those who frequent the Universities is increasing, and doubtless will increase; that there is even a tendency to increase the number of Universities, to meet the wants of this book-suffocated century; that Professors are writing, and will continue to write text books, in which their own doctrines and systems are contained, with the result of attracting rather than repelling students,—all this shows that Universities and Libraries run in parallel lines, and are not at all an-

tagonistic or at cross purposes, and do not supersede each other, as Mr. Carlyle, and Mr. Emerson, and the Oxford Librarian would have us believe. How comes it, in fact, that the Libraries, with one or two notable exceptions, have up to within the last few years been part and parcel of the Universities—except it be that books form the stock-in-trade of teachers and taught, and the more books the better for the teacher? Indeed, the higher and more abstruse departments of a library are in the first place for teachers or professors perfecting their work, and for persons pursuing special literary researches. The Universities are places where men skilled and experienced in separate subjects can guide those who wish to acquire those subjects, by telling them the points of chief importance, the best way of learning those points, the authorities that should be consulted and studied, in a word can give in the course of six or twelve months, what it has cost them years of reading, of investigation, of reflection and study to acquire, and to reduce to the shape in which it can be imparted most profitably and pleasantly to the learner.

No amount of book-study will ever be equivalent in educational and knowledge-imparting value to the carefully prepared lecture of one who has mastered his subject, who can give it new form and life, place it in new relations, illuminate it by side lights from other sciences, supply it with new illustrations and applications which are not to be found in printed books at all.

This I know by experience to be distinctly true of literature and science, and it is particularly true of all studies of observation, such as botany, and zoology, and geology. I would ask you, because you know, if you can get in any book whatsoever the kind of instruction which you may get from a botanist on an excursion, or from a zoologist in the field, or even in a museum. It may not be so minute, or so universal, or so systematic, it may possibly not be so strictly accurate as you would find in a flora or a fauna, but it would have a vivid reality, a personal impress, a local colouring, a pertinency to the object in hand, a quickening effect on the memory, the attention, the whole mind, of which the other in its very nature is devoid.

And, I should think, that what is true of these sciences, must be far more true of practical medicine and surgery. I cannot conceive two more different methods of acquiring knowledge and training than a student sitting at the bedside of a patient, studying the case for himself and trying to piece together what he can find about it in the treatises on the healing art, published, say during the last 25 years, and the same student giving the same amount of pains and attention to the thorough demonstration of it by one who has made clinical exposition a specialty for a lifetime.

I should be the last to undervalue the teaching of books. No man can ever become truly learned who does not devote himself to them for long years. But, on the other hand,

in the early stages of one's acquirements, they are mere aids, and in no sense substitutes for the voice, influence, and interest, the living personality of a teacher. It is some time, and requires considerable training, before one can get the good out of books which they will certainly yield to those that can use them aright, but it is not always the beginner who can so use them.

Happily, however, it is possible to praise books to the utmost extent without the necessity of depreciating oral instruction.

It is nevertheless very strange that a feeling should prevail so widely in some medical circles, that one can take the place of the other, that it is highly desirable that it should be so, and that instead of intelligent direction of a student's work, helping him here, stirring him up to exertion there, encouraging him everywhere, it should be considered likely that a higher pitch of knowledge will be attained, and a broader scientific and special education given, by leaving the student to get his knowledge from any quarter, and then passing him through an examination-mill as the test of his ability to enter on the practice of medicine.

It is very strange that in an age of meetings and councils and congresses and associations to discuss and settle all things, there should be antagonism shown to those systematized councils, such as the Universities, where the work can be elaborated to the utmost, where the results can be tested at every stage of progress,

where the tests can be made more and more exhaustive, where the methods of instruction can be modified to suit new requirements, new classes of students, new discoveries.

It is of infinitely greater importance to know the mental calibre and power of work in a student, a candidate for a medical qualification, than to be able to say that he has answered a certain set of questions well or ill. The power of preparing for and passing an examination bears no sort of proportion to the character of the examinee, and is no criterion of the dexterity and diligence he may afterwards display in practice. The examination, as a final test, may be, properly enough, held in high estimation, but to consider it as the sole test, or as one giving insight into the candidate's qualifications, so much superior to what is gained by the teacher through the whole course of the candidate's career as a student, that the latter is not to be reckoned at all, is one of those notions which can find a suitable soil only in the brain of an unpractical theorist. The system defended and commended by some is: get your knowledge where you like, come to me to be examined, and I will decide by a few questions whether you are worth 50 marks or 50½ marks, and how much better 50½ marks are than 50. Whereas, to the intellect, not thrown off its balance by an examination craze, this would seem to be the most sensible arrangement: be superintended in the acquisition of your knowledge,

and you will hardly require to be examined in the formal manner at all.

But the doctrinaire goes a step further, and maintains that no teacher should examine his own students. A teacher, it is said, is always tempted to pass his own students easily. Such an idea, again, can only originate in the minds of those who are neither teachers nor examiners, or who are examiners of miscellaneous sets of candidates. It is difficult to see how one can favour one's own students, when all the students under examination are one's own. On the contrary, more evenhanded justice is likely to be dealt when all stand in the same relation, when all have had practically the same amount and kind of teaching, when their attainments and diligence and regularity throughout the course are known to the examiners. Many a case has occurred where a student beginning under great difficulties, perhaps with the production of an unfavourable impression, has, by care and energy, and by that process of attrition or polishing which University life gets the credit of imparting, has overcome his difficulties, and has turned out with credit to his school. That, however, is only possible where a student, in case of failure, can consult the examiners with freedom as to what he should do, and where he knows he is to appear again before the same examiners.

But it is easy to see what an inducement there would be to favour one's own students if they were mixed with an equal number of strangers. It is easy to see, besides, the

temptation there would be to teach for the examination and examine on the teaching ; to pass only those who had been shrewd enough to prepare the examination subjects, no matter what their diligence and scientific acquirements ; and as for the rejected strangers, to take no heed to mitigate the rejection, or to show them what they would require to study in order to come up to the standard of those who had passed.

I can see, in short, nothing but a deterioration of the whole mode of instruction as soon as the function of examiner is separated from that of teacher or professor. The examiner gives at once the tone to the teaching ; the students will spend time over nothing, however good, however important, if it is not likely to come up in the examinations ; the professor will only waste his time and his energy in trying to train the mind and instruct his students in science when he knows that the students do not reciprocate his efforts. That this is no mere fancy, no recent discovery, is only too well known.

The late Dr. George Wilson, Lecturer on Chemistry, and afterwards Professor of Technology in Edinburgh, in the year 1839 was invited to go to London to occupy the post of Chemical Lecturer in one of the smaller schools. But after some negotiations he gave up the idea, and some of his remarks show what he thought of the London system. He says—

“The London students are notoriously the most unscientific students on the face of the earth. My English friends need not take offence at

this, for the Englishmen who come here are abundantly characterized by scientific enthusiasm; but the professional business spirit of the London schools is alien to the true study of their subjects, and on such things as chemistry they only ask what will pass the halls. I had full opportunity of seeing this, last winter, in the practical class of Griffith of St. Bartholomew's Hospital. An experienced and popular teacher told me it was useless to discuss law or theory before them; they did not care for it."*

Such is the obvious result of separating teaching and examinations, such is the system that is to be forced on us whether we will or no, without any attempt to find if it is desired or required, and whether it will not be followed by the most disastrous consequences to the profession, to the Universities, which are incessantly endeavouring to heighten the efficiency of their instruction and the standard of their degrees, and to the future students, who will be deprived of much of the benefit of University life, and who will lose the stimulus they have at present to make the best possible appearance before their teachers and examiners.

This is a topic on which one could descant to any extent, it is the burning question at present, one which is going to try whether our systems have aught of pure metal or consist only of wood and stubble, but it is not perhaps the topic in which you are all at this moment so particularly interested.

It will be more to the point if I say that, having completed the formal part of your medical education,

* *Memoir of George Wilson, M.D., F.R.S.E.* Edinburgh, 1860, p. 244.

you have at last reached the goal which you may sometimes in dreary days have thought was very far away. But by patience and perseverance you have now received the assurance of having satisfied the University that you have with diligence availed yourselves of the opportunities put within your reach, for acquiring a knowledge of the different departments of medicine. You have during the long period of four years been slowly acquiring both training and knowledge, and at the present moment you feel as Captain Cuttle said of his friend Mr. Gills, "chock full o' science." You naturally ask what are you to do with it all. Well, if I may judge from my own experience there is some of it that you will forget, and there is a good deal of it that you will never forget. The knowledge which you have acquired will remodel itself gradually: slowly it will be sifted by actual use, by fresh observation and extended experience, and after some time it will be less dependent on mere memory, and more a part of your very self. But while this process of transmutation and assimilation is continually going on, you will find the training you have received will remain more constantly with you. You have, partly by external influences, partly by self-imposed efforts, directed your thoughts in a particular direction for four years, and that training you will never altogether lose, even though from circumstances you should

cease to pursue the profession for which you have qualified yourselves.

From the very first moment of your course you have had to unlearn much, you have found out very soon that in all departments there is a wrong way as well as a right, that the untrained man is almost certain to select that which collective experience shows is wrong, that the acquisition of the right way is attended with laborious and sustained effort, and that the power of making this effort, which is called study, has itself to be acquired, or, at least, to be brought under control and to be properly directed. It is this effort which it is at first so painful to make, it is this which the beginner tries to shirk if he can; he tries to get a short cut or an easy road to the skill which he desires, to the facility which he sees in others, and the standard of which he feels somehow he is expected to reach, and when he is baffled in these attempts and has to march along the road of personal exertion, which his models have traversed before him, it is then that he grows disheartened at the enormous distances he has to go, the seemingly inaccessible heights he has to scale. Now, if you have done yourselves even a modicum of justice in your studies, if you have sometimes resisted the impulse to neglect an obnoxious but pressing piece of work in favour of something, possibly meritorious in itself, in which you

took a real interest, then you have at least begun what only requires some continued practice to result in a habit of thorough self-control and self-command, the best result of all education whatever.

Endowed with this you are about to quit the University, and now the real examination of your knowledge begins, examination for which no preparation, no cramming can qualify you, examination which will task all your energy, your knowledge, your tact, your self-reliance, and failure in which will be followed by far more serious consequences than any that can be inflicted by a board of examiners. You are now to engage in actual practice, and the exercise of your profession is to be conducted under condition of personal responsibility for the results to which you have hitherto been strangers. You will find that you have now to commence the second stage of your education—the longest, for if you are true to yourselves and keep yourselves abreast of every discovery and improvement, it will last through your whole professional career—

“No end to learning;”

the hardest, because it is desultory and irregular, because it is wrung out of spare moments, when, fatigued with the succession of daily work, you had rather be at rest, and yet withal the pleasantest, because every new acquisition fills up the round of your knowledge, makes learning in the future easier and easier, gives you more and more confidence in your own ability and greater delight in

the exercise of it. Not till the learning and practice of your profession cease to be a labour and begin to afford positive pleasure, can you say to yourselves that you have in your own way mastered yourselves and it.

That you may succeed in the profession you have chosen, that you may be so distinguished among your competitors by your acquirements and possibly even by your inventions, that the University in which you have been trained may point with satisfaction and pride to you, as you may recur in memory with pleasure to it, is the desire of all those with whom you have had intercourse so long.



