AN ADDRESS ON THE USES OF KNOWLEDGE.

*Delivered at the Sessional Opening of the Medical Department of the
Yorkshire College, Leeds.*

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LADIES AND GENTLEMEN,—The part which the managers of your Yorkshire College have assigned to me in to-day's proceedings is one which I feel to be a high honour. A Yorkshireman myself, apprenticed and educated in my native county, I may assure you that it was with feelings of both pride and pleasure that I received your invitation to preside on the present occasion. The only drawback to the gratification which I felt in accepting that invitation was the knowledge that I must give an Address, and that my audience would be one for which specially professional topics would not be suitable. I will not pretend that I felt that I had nothing which I should like to say on the many and important topics which are appropriate to an educational celebration such as this. It was rather a feeling of great doubt whether I could say what I wished to utter in a manner which should be at the same time interesting to you, and not liable to be misunderstood.

In this dilemma I appealed to a much valued adviser, who is herself a native of Leeds, and who was also very desirous that I should accept the honour you had offered me. "If I say so-and-so," I asked, "shall I cause misapprehension?" "You may say what you will to a Leeds audience," was practically her reply. "If you are right they will appreciate you, and if wrong they will easily put you right." It is in the assurance thus obtained, that I purpose to address you this afternoon, and to bring before you in simplicity, without, perhaps, much, even of arrangement, and without any attempt whatever at oratorical display, certain thoughts and suggestions as regards the future of education and the increase of knowledge, on which my mind has often dwelt with pleasure and profit to itself. It may be best, perhaps, to begin at the beginning, and to ask, Why do we value knowledge? Why do we need our Colleges? Why do we meet year after year to distribute rewards for diligence and success, and to cheer each other on at the commencement of new sessions of educational work?

So far as this world is concerned, we can find, perhaps, no better symbol of human life than that given us by an evergreen tree. The leaves are the generations of men; the root, stem, and branches, the social institutions by which each successive generation is borne up into higher life. We live in the most literal manner upon the past, and are what we are in virtue of its former life. If, during any one year, the production of leaves had failed, if they had been found unequal to their task, the death of the tree, in part or in whole, must have followed, and no further outbursting of its leaves would have been possible. Upon the vital vigour of each generation has depended, in the past, the growth of the tree. They were the digesters of its sap; they prepared its wood. It is, of course, a mistake to suppose that evergreen trees do not shed their leaves; they simply escape to a large extent the influence of season, and retain their leaves longer than others; but, as anyone who has ever stood under a fir will know well, their leaves are constantly submitting to death when old, and are replaced by new ones. An evergreen, therefore, rather than one which becomes bare every winter, must be our symbol, and none perhaps better than the Norway pine. Anyone musing upon the magnificence of this splendid tree may usefully remind himself of the beneficence of the law of individual death. It is thanks to that law that its growth has been attained, and its greenness made lasting. Each successive generation of leaves has taken up the work of its forerunners, and, "eager to do and die," has in turn submitted to the same fate. The result has been increasing growth and perpetual youth. There has been permanence of life amidst unceasing change. So is it in the human family.

It needs but a few moments' thought to reconcile us to the beneficent institution of individual death, and to make us see that it helps the progress of mankind, and interferes not in the least with our real immortality. The life which seems to be lost, is simply transferred to others. In many other details the symbolism on which I have ventured might be developed, but I have said enough for the present

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purpose. In one remarkable feature the human tree differs from the pine. Not only do its successive generations of men inherit from the parent stock their life-vigour and its tendencies, but they are capable of receiving, by direct communication with their predecessors, a vast wealth of impulse and power, which has not as yet assumed a form in which its acquisition by inheritance is possible. This communication must be voluntary, and to it we give the name of education. Were the habit of death abolished, and did personal life last indefinitely, the need for education would almost cease, for although our patriarch pupils would probably be learning still, it would be rather in classes for mutual instruction than in school or lecture-room. As it is, the most important duty of each generation, next to that of the hereditary transmission of sound organisation, is the transference of its own acquired knowledge to the minds of its successors. Laborious and endless as this transference-task is, we can easily see that some advantages attend the scheme. Especially in reference to the advance of knowledge, its changes of form, and the additions which it is constantly receiving, can we perceive that it is a gain that young and fresh minds should be offered to its influence. The prejudices, the narrow formularies, and the erroneous conceptions of the past, are thus much more easily left aside. No process of cleaning the battered soot-begrimed leaves of last season could compete with nature's plan, which covers the tree with new and untarnished foliage. If, however, we accept thankfully the ordinance of death, we must not neglect for a moment to remember the responsible duties which it imposes upon us. Each generation has to select, as best it may, from the enormous stock of floating knowledge, those portions which it deems most likely to be useful to those who will follow it. With each generation this task becomes more and more difficult, for the sum increases with wonderful rapidity. The botanist, the geologist, the statesman, the surgeon, one and all have to consider what is to be taught to their successors, how far and in what respects the instruction received by themselves must be modified or extended for the use of the next generation. Not a single department of human knowledge, turn where we will, but is growing with a rapidity which, alike to the teacher and learner, may well seem appalling. A child asked as to which reign she would like best to have been born in, chose that of William Rufus, on the plea that then she should have had but one date to remember. There are times when the teacher may almost sympathise with her sentiment, and wish that his vocation had fallen in earlier times, when the mass of knowledge to be taught and learned was somewhat less than it now is. We may, indeed, admit without cavil, that one of the most valuable faculties of the teacher of the present day is the power of bold determination as to what may safely be left unlearned.

The capacity of the human mind, varying much in individuals, is yet limited in all. It is not so much defective power of comprehension as of retention. We can easily understand a hundred things for one that we can clearly and permanently remember. Most humiliating are, I suspect, the defects of memory to us all. I have no wish to assert that all that has been forgotten is wholly lost. On the contrary, we may safely believe that much that has faded away, past all possibility of recall, has yet helped very efficiently in the general development of our minds, and been in this way a lasting gain. This consolation, extend it as we may, is, however, only a very partial solace for the loss of our facts.

This law of limitation in reference to memory is, I think, not sufficiently taken account of in education. It is most surely the fact that the packing of our minds is like the stowage of a cargo. We cannot put in more than a certain quantity. Dexterity in arrangement will go for something, but it has its limits, and when these are reached, it is impossible to put in fresh articles without displacing those already there. The busy man, with his mind hurried from one topic to another, and still more those whose minds are exposed to grief, sorrow, or anxiety, will realise this, and may sometimes amaze their less occupied brethren by their capacity for forgetting. The power of remembering riddles is a fairly good test of the power of memory when unaided by intellectual associations. I have seldom found any of my friends of middle age who could remember six. Children, whose minds are unstored, and who are not constantly accumulating facts, can often retain very many; but for myself, I may confess that if I try to acquire a seventh, it always displaces one of the original six. This physical limitation in the number of our brain pigeon-holes is a fact which we do well to remember. Do what we will to improve and develop our faculties—and we can do very much—yet sooner or later a limit is reached, and we are then compelled, however reluctantly, to choose what we will keep, and what we must surrender to the waves of oblivion. Nor is it less the part of wisdom on some occasions to determine beforehand resolutely to forego the acquisition of

new knowledge when we know that it will displace that which we already have and which we value more.

A few words must be said as to the relative value of different kinds of knowledge. To most of us, some special departments are matters of duty, and beyond the range of choice. We must all keep our minds clear of everything which is likely to interfere with the memory of those facts which are needed in our professional lives. For knowledge of this kind, we are responsible to the community. The surgeon who allows the facts of astronomy to push those of pathology out of his head, acts unjustly towards those who employ him. How well the public recognise this danger, we all know. It is difficult, indeed, to persuade our clients that some brains can find room for proficiency in other subjects as well as in medicine. Although absurd occasionally in its developments, we cannot doubt that this prejudice is well founded. The knowledge of a man's own profession being then allowed its paramount position, we come next to the selection of other subjects. What are the uses of knowledge? and is it better to aim at a superficial acquaintance with many subjects, or a detailed familiarity with one or two? As regards the greater part of the community, I unhesitatingly record my vote in favour of an acquaintance with things in general. Let those who have leisure, or industry, or special aptitude, cultivate to the utmost special sciences, and restrict themselves as closely as they like. It is from them that new observations and discoveries are to be hoped, and for such we will pay any price. They are, however, and always must be, a minority. For the chance of a discovery, be it in astronomy or entomology, we can well afford to pardon almost any amount of ignorance in political economy or geology. Where discoveries are not to be hoped, however, then ignorance in any department is much to be regretted; for it limits at once a man's enjoyment of life and his usefulness to others. The prospectus of your Yorkshire College is neither a sheet nor a pamphlet, but a bound volume of very respectable size; and, when we use the honourable term "a well informed man," we mean one who knows at any rate a little about most of the subjects which are merely catalogued in it.

Let me press the question as to the uses of knowledge. Our estimate of those uses, if I mistake not, has advanced greatly of late. Not only do we now value knowledge more, much more, than we did, but we assign to it a quite different kind of worth. The time was when, apart from what was needed in a man's avocation, his attainments were looked upon as a sort of ornament, as that of which he might be proud, but as by no means essential to his usefulness as a citizen. It was believed that a man might be wise without possessing knowledge, and honest and loving without being even wise. We have, however, of late taken broader views, and recognised the fact that we have been using different terms for things essentially the same. That the noblest faculty of the mind, the noblest emotion, if you prefer that term, is Love, is a fact to which all religion, all poetry, the general verdict of mankind, bear witness. His is the best endowed organisation who can love the most widely, and the most intensely. Why is the capability of affection thus a test of the strength and vigour of the character? I answer, because it implies sympathy; it implies sense of brotherhood; it implies perception of beauty; and all these, in turn, imply the faculty of insight; in other words, the possession of knowledge. Love and sympathy are not abstract qualities, springing up causelessly in our hearts; they are the results of hereditarily transmitted faculties, by which we take cognisance of beauty, be it moral or be it physical. If we could not perceive the beauty, we should never feel the love. A little reflection will, I think, convince any one that this is so, however numerous and prominent at first sight may be the apparent exceptions. We shall be misled if we allow ourselves to be embarrassed by isolated and ill-estimated facts. We must look broadly at their whole range; and, doing so, I am sure we shall be obliged to admit that the power of loving wisely, well, and strongly, is always proportionate to the intellectual development of the being. Obviously, if we go downwards in the scale of organisation, we shall come to a point at which the want of development is such that we cannot conceive of the possession of personal affection.

It is the same with what we call wisdom, a faculty or possession which has often been set in a sort of superior contrast with knowledge, as of distinct and nobler birth. The more we think, the more sure shall we feel that there is no such thing as wisdom apart from the matured results of hereditarily transmitted knowledge. No ignorant person born of ignorant predecessors can possibly be wise. In the divine order of human events, there are no means of intensifying the faculty of love, or increasing the endowment of wisdom, other than by obtaining better knowledge. It is ignorance which is the foe of both. Our great poet never penned a more comprehensive line than when he declared, "There is no darkness but ignorance."

It is clear, I trust, that, in thus speaking of knowledge, I am not thinking of school-books. I mean the real, the living thing, the sight of Nature, the perception of the real, the revelation of the true; and my estimate of its transcendent value rests on the assumption that the real, could we get at it, is beautiful, and of a character and quality to claim and secure our love. He who cannot grant this, lacks the fundamental sentiment of reverence, and can obtain, so far as I can see, no foothold for his faith. "Let good men feel the force of Nature, and see things as they are."

Having thus, so far as my feeble powers of expression permit, exalted knowledge; having claimed for it no lower position than this, that it is the seed—possibly in itself not beautiful, but still the seed—of that plant of which wisdom and love are the flower and the fruit, I need say but little as to the worth of the office of the teacher. If faithful, single-hearted, and zealous in his task, he may rest assured that, whether working alone in a parish-school, or as a part of a great collegiate organisation such as that which I now address, he is engaged in that which is simply the noblest vocation of man. "The teachers," said Richter, "shall shine for ever, like stars in the firmament of Heaven." Next to the ambition to discover something new, which, after all, is only a higher form of teaching, the desire to be the means of spreading knowledge is the noblest aspiration of the human mind. It is so because it shows faith in light, because it is inclusive of all other aims. "Let there be more light" will ever remain the morning and evening prayer of every benevolent man.

Permit me to try to illustrate what I have asserted in general terms as to the fundamental relationship between knowledge and the development of what we term the moral instincts, or the affections. It is time that I should try to come to close quarters with my topic.

You will understand that I am speaking now not of the kinds of knowledge which are obviously useful in the affairs of daily life, but of those which men and women may get or not, as they like, and which are usually considered matters of personal pleasure or social adornment. Surely, if we think of it, we ought to rank some knowledge of astronomy, geology, zoology, botany, natural philosophy, human history, and the like, as essential to the formation of character. If the truths which they teach be once ingrained in the mind, so that they become the bases of all its processes, the person concerned has become capable of meeting the changes of life with patience. He has learnt that best of all lessons, the doctrine of continuity. It is impossible for him to despair of the world's progress, or to think lightly of the value of individual work. He has seen in how wonderful a manner great things are made of little things, and how in the past nothing has really perished or been lost, but how, on the contrary, all force has been conserved, and how, through periods of time too great for the faintest attempt at realisation, the progress of the world has been ever onward towards better things. He has seen with his mind's eye the great trinity of Nature, the three persons of which are, the past, the present, and the ever brooding life. It is quite impossible for anyone to rise from such a contemplation without a firmer faith in the Fatherhood of the Eternal, a deeper and a warmer sense of brotherhood with all that lives.

In order that such result should be obtained, what is needful is that the knowledge should be real. It should be a matter of heart-conviction. So long as the distances, the sizes, and the numbers of the star-worlds are simply entertained by the mind as matters of speculation, so long will they be barren of further results. So also if the age of this planet, the succession of life upon its crust, and the history in particular of the human race, are esteemed as matters of mere opinion, they will profit nothing. It is only when we begin to believe in earnest that we reap the reward of knowledge. The sceptic and the half-believer must not hope for the joys of faith. The mellowing influence of creed on character cannot come to him who doubts.

It will require several generations for us to realise the full influence of recent revelations in science. The doctrines must have been taught familiarly in childhood, their influence must have been transmitted hereditarily, before we shall be able to see what it really is. It would shake my belief in the relation between cause and effect if I could doubt that the influence of modern knowledge in reference to the history of the world and of man, and the relation of man to animals, could be other than ennobling. We shall witness from such causes an increased sense of dignity in life. Mankind will become more sincere, more earnest, more sympathetic, more hopeful, and our gain in all these respects will be the result chiefly of increased confidence in terrestrial life.

To those who know something of what schools were half a century ago, there are few subjects more suited to "broed perpetual bene-

dictions" than the state in which they are now. The improvement has been immense, but it is still far from complete. We emancipate ourselves only slowly from the traditions of the past. The value which Latin and Greek possessed in the days when English literature scarcely existed, still lingers as a tradition of great force amongst us. We have, it is true, risen above the belief that the one sole object of school-teaching was to ensure, by any method, and often by those which were little better than brutal, a boy's knowledge of those tongues; but we still submit our minds helplessly to a superstition that they are essential to a liberal education. By some strange accident, for which we can never be too thankful, Hebrew has been left aside; and it has been tacitly assumed that, as regards the most important book of all, it is enough to read it in translation. With regard to Homer and Virgil, it is different, and few making any pretensions to education would be willing to admit that they had ever read them in other than their original tongues. The study of these grand languages, and of many others, must ever remain, for teachers and for specialists in literature, of the utmost importance; but I am concerned to here express emphatically my conviction that, as matters of general knowledge, it is a great waste of time and memory to teach them. Perhaps there are few subjects which make greater demands upon the memory and the retentive power than the details of a strange language. The remark of Heine was as sound as it was witty, when he asserted that it was well for the Romans that they were born knowing Latin, for if they had had to learn it, they would never have had energy left to conquer the world. There are three main arguments in use by those who defend the retention of these languages in their present place in the educational course: first, that the study tends in an especial manner to develop the mind; next, that they are the key to an invaluable literature; and thirdly, that they are essential to a sound comprehension of our own language, especially of the terms in use in science. To these it may, I think, be justly answered, that the study of a language is for the most part a mere matter of rote memory, and encumbers rather than strengthens the mind; next, that there now exist abundant facilities for becoming familiar with the literature and history of Greece and Rome, without the toilsome acquisition of their modes of speech. May it not be added that, when Homer, Virgil, Tacitus, and Caesar, shall cease to be school-books, and when it shall be held not discreditable to be acquainted with them in translations only, a sound knowledge of them will probably become a far more general possession than it is at present?

The third objection is one which it is far more difficult, in the present state of our scientific literature, to meet. There is not the least doubt that the student who knows not Greek and Latin is at an immense disadvantage in respect to his reading in botany, zoology, or any of the sciences. Our text-books teem with words which are derived from these languages, and of these the meanings are most difficult of memory to anyone not previously possessing a good vocabulary in those languages. For this purpose, however, let it be observed, a good vocabulary is sufficient. It is not necessary to study grammatical construction in detail. Even against this necessity, real as it is for the present, let me enter a most earnest remonstrance. Surely the preference of the professors of science for terms taken from the dead languages is again the mere survival of a bad custom, and one from which it is our duty to free ourselves as soon as possible. Never will the knowledge of the sublime facts of science become as wide as it ought amongst us until we effect a reform in this matter. A young person unskilled in languages, but fully able to enjoy the study of botany or geology, opens an elementary book on either of these subjects. It may be one professedly of first lines, such as Professor Oliver's excellent little introduction; but, be it large or small, he will find in every page such words as gamopetalous, monœcious, syncarpous, pleistocene, miocene, and the like. If he looks them up in the glossary, he still, at each recurrence, finds it an effort to recall their meaning. Now, every one of these terms might just as conveniently, and in many instances far more elegantly, be expressed in English. The number of English-reading students is now quite sufficient to encourage some enterprising publisher in the production of books from which all needlessly learned terms shall be rigidly excluded. It would be a little effort at first to get accustomed to their English equivalents. Some little ingenuity would doubtless be necessary in devising them; but, if once the thing were done, the gain would be immense. Let it be understood that we do not want words made easy in the sense of being childishly explanatory; of these we have enough. All that is required is, that no word shall occur the full meaning of which would not be clear to a person knowing only his mother-tongue. Not only are these pedantic words a source of hindrance, in that to many they are incomprehensible, and to all a burden on the memory, but they bring with them other definite

evils. The mind unconsciously associates its own meaning with a word which it is compelled to use, but does not understand, and thus often is not only left ignorant, but actually led astray. Further, I am sure that it is true that a high sounding name often leads us to believe that our knowledge is far more definite than it really is. Science would be greatly simplified if all its exponents were compelled to express their meaning in modest English. I will not, for want of time, venture to illustrate what I mean in asserting that the reform asked for would not be very difficult.

We should be sorry to miss many of the beautiful names which have come into use; and regarding many of these, it does not matter in the least whether or not we attach any meaning to them. They are simply names. The objection which I urge applies chiefly to descriptive names, and especially to appended adjectives.

In thus venturing to suggest that, as regards the progress of English students in general, it would be a great gain if the dead languages were forthwith honourably buried, I am quite aware that I shall do great violence to the feelings and tastes of almost all well educated persons. We naturally prize highly the possessions which have cost us dear; and great also, I fully admit, are the intrinsic claims of classical lore. My protest is this, that, at the present stage of the world's progress, such lore is very far indeed from being our most important acquisition, and that the present custom of exacting it is a great bar to real mental development. May I venture one step further, and say that the learning of modern languages is also, in the present day, far too much insisted on? We have inherited a sort of infatuation in this matter, and accept the dictum without a question that the first thing for a child to be taught is the language of some other nation; if a boy, it must be Latin and Greek; if a girl, French. The outcome of it is usually, in the one case, a rooted antipathy to the classics, and in the other, an unwilling acquaintance with the adventures of Telemachus. To many of us, a knowledge of the modern languages is a matter almost of necessity in daily life; but to by far the larger number of those to whom they are taught they are useless. The time and labour consumed upon them would usually be far more wisely devoted to other subjects. A young lady will be contentedly ignorant of the very first principles of geology, may not know the title of one of Mrs. Browning's poems, may think Wordsworth dull and Robert Browning incomprehensible, and may yet pride herself upon being able to speak French. Of those who have spent months or years in the acquisition of German, how few ever make any compensatory use of it. Goethe is not attractive to many; of Schiller we have translations as good as the original; and *Soll und Haben*, read as a matter of duty, is the summit of the attainments of most.

I do not believe that the acquisition of a new language is at all easier in youth than in adult age; and respecting modern languages in general, would suggest that it would be wise to delay learning them until a definite need for them has been realised. That a large number will do wisely to acquire them, I do not doubt; but that it is necessary to make them an essential part of the education of all, I am, I repeat, concerned to deny. If once we could exempt ourselves from the routine of fashion, rid our minds of the prejudices born of long-established custom, we should see that foreign languages are means only, and not in any sense ends; that, for the majority, they are almost useless, and that it is quite possible that, over and above the loss of time and brain-fatigue involved in their acquisition, they may prove only a memory-burden in the end. Far better that a young man should know well the general course of French history, and be familiar with the lives of its heroes, its men of science, and its saints; that he should have followed carefully the struggles of the Huguenots, and watched the long-gathering causes which led to the Revolution, than that he should know ever so perfectly the irregularities of every French verb. The one kind of knowledge is living, is in itself fruitful in incentive to sympathy, to action, and to vigour in social life; the other is, for the most part, dead and abortive. It will be a great gain to English education when a man is left full liberty of selection in this matter for himself and his children, and when he will feel no more shame in admitting that he knows neither German nor French than he does now in confessing ignorance of Spanish or of the ancestral tongue of us Yorkshiremen, the Norse. Why, if we must learn French, should we not also make a *sine qua non* of Italian? Surely, neither Molière, Racine, nor Fénelon, can compare in value with Dante; yet, without disparaging the genius and sublimity of the great Florentine, I will venture to express a personal opinion that a man in the nineteenth century may find more food for his soul, more that is fitted "to stir, to soothe, to elevate," in any fifty pages of the *Excursion*, or, for the matter of that, of the writings of John Ruskin, than he will in the whole *Inferno*.

Let me not be misunderstood. I would be far from wishing to decri

any branch of learning. I heartily, though at humble distance, applaud the declaration of Bacon: "I take all knowledge to be my portion;" and I would fain, if I dared, say, with Mr. Browning's *Grammarian*—

"Let me know all;
Prate not of most or least,
Painful or easy;
E'en to the crumbs
I'd fain eat up the feast;
Aye, nor feel queasy."

What I have wished to say is, simply that we should do our best to put a right relative value on things, and not waste time and labour in planting laurel-bushes in mistake for apples. Let me urge once more, and even at the risk of being wearisome, that we must distinguish between the knowledge that is fruit-bearing, and that which is likely to prove barren, however ornamental or fashionable it may be. Nor is it in the least wished to suggest any sudden change. The study of languages must obviously long keep its present place in the educational curriculum. As yet, they are well high essential to a very large number of students, certainly to all engaged in medicine.

To those who mourn over the frailties of memory, it is source of much gratification to know that year by year the means of acquiring knowledge are being developed and improved. It is objective teaching which really helps both understanding and memory.

In the development of that objective teaching which will be the great gain of the future, the formation of educational museums, and the improvement of educational examinations, are two of the most important features. When the history of museums is written, it will be observed, I believe, that the medical profession has always taken a very large share in their formation. We have always been zealous in observation and lovers of facts; and not only in pathology and zoology have physicians and surgeons delighted to accumulate the materials which afford proof and illustration, but they have been foremost to perceive the value of such collections in respect of scientific observation in general. It would be fitting, therefore, if we should give impetus to a further development in the art of making and using museums, which is much needed. We have been content long enough that museums should be used by a few, and simply gazed at by the many. It is time that we set ourselves earnestly to make them what they should be in our educational scheme. Hitherto they have been mainly collections of the elements of proof, too unwieldy in extent, and too miscellaneous in character, to be within the grasp of the general student. Even in our own profession, how very little has usually been the amount of industry bestowed by our students on the task of mastering the contents of the hospital-museum. Some attention to them has of late been made needful by the customs of examining boards; but, I believe, I may still venture the opinion that only a few of our best men have learned to resort habitually to the museum-shelves as being, next to the hospital-wards, the most profitable place for study. The majority despair of being able to gain much for themselves from the interminable rows of bottles, and are content to trust that their lecturers will bring forward in the class-room the selected ones which are of importance. What we want is museums arranged specially for the student's needs, the specimens few in number, and, by the aid of label and catalogue, telling their own tale. The museum should be by no means restricted to bones and bottles, but should avail itself liberally of the art of the photographer, the modeller, and the artist. The appearances presented during life should thus be brought into easy juxtaposition with the conditions found after death. Our museums should cease to be wholly allotted to *post mortem* pathology, and should include also the clinical element. If this department were well developed, our museums might, indeed, so far as things of which the eye can judge are concerned, become an invaluable supplement to the hospital-ward.

Leaving professional topics, and returning to speak of museums as means of general education, I have to say that it is to be hoped that the time will soon come when every town, however small, and every school, will have its educational collection of objects illustrating the history of man and the natural sciences. These collections should not be large, and they should be supplied with clear catalogues, carefully freed from all pedantry, which would enable any person of ordinary intelligence to understand them. All objects should have detailed labels, and be helped in the best possible manner by photographs and drawings; the museum would thus become a richly illustrated book, which those who would might read. It would be a place to which teachers would take their pupils, not once a year as a holiday-outing, but frequently, and as the best method of serious study. Never until something of this sort is accomplished will museums take their proper place; and never till they do will the natural sciences become attractive to the young, and a knowledge of them be easily got, and well retained.

Our botanical and zoological gardens ought, in the same way, to be better utilised for objective teaching. What, indeed, hinders that every inclosed city-square should, in the first place, be open to all; and, in the second, should contain a miniature collection of suitable zoological and botanical objects; and, again, on a very small scale, a conservatory and a museum. In all these, the objects displayed might be, from time to time, exchanged under the direction of a central organisation, and thus a constant succession of new and interesting material would be maintained. Were I to give my own answer as to the hindrance to the realisation of such a scheme, I would say that it is simply the ignorance of those concerned as to the amount of good which might be accomplished.

I had intended to say something as to possible improvements in our methods of examination, but time scarcely permits. What we all aim at is that examinations should be made to encourage industry and the attainment of retainable knowledge; and that they should, much less than they do at present, offer incentives to mere cramming. What we all wish, also, is that they should be made more certain in their results; that they should take more accurate measure of those who submit to them; and that their verdicts should be less liable to question and criticism on the part of teachers and lookers-on. These desirable objects will be attained only, so far as I understand the matter, by making examinations more objective, and by taking more time for them. I am not sure that they might not with advantage be subdivided much more than at present. These are matters of detail upon which I cannot now enter. It is, however, impossible to leave the subject without remarking that the improvement in methods of examining is a matter of the deepest interest to all concerned in education.

I have left but little time for what, perhaps, ought to have been the chief part of my discourse, that is, for addressing remarks to those present who are now commencing the study of medicine. If, however, what has been said as to the scope and aims of study in general has been made clear, it is not needful that I should add much in reference to that of medicine in particular. I shall, however, do injustice to my own feelings if I neglect to congratulate the medical students present upon their choice of a profession. The study of medicine has an advantage over many others which are adopted as means to livelihood, in that it is itself full of scientific interest. To this it may be added, that it is a pursuit to which no knowledge comes amiss. You can scarcely secure knowledge in any direction without finding that it may be made collaterally useful in your daily pursuits. Carefully avoid taking a too narrow view of the life's work which is before you. First, unquestionably, and as a thing which admits of no excuse for its neglect, you are to acquire a matter-of-fact familiarity with the common diseases and accidents to which the human frame is liable, and their means of remedy. In these matters, you must put aside all crotchets, and seek to become, as far as possible, compendiums of empirical knowledge, and embodiments of common sense. Your first duty is to advise people for the best when they are ill, and from this duty there must be no shrinking whatever. Your vocation will not, however, end here, for your training will have fitted you to assist in the formation of social opinions in a great variety of directions. The influence of food and clothing on health; the hurtfulness, or otherwise, of such articles as tobacco, tea, and coffee; the desirability, or otherwise, of abstinence from alcohol; the relative value of different climates to different states of health; the causes of mental disorders; these, with many others, are questions upon which it is important that trained medical observers should form and express sound opinions. I need not remind you of the invaluable services to sanitary science which have been rendered by a Leeds surgeon, who has, at the same time, maintained a very high position in the profession which he adorns. If you would speak from more than mere conjecture or caprice, if you are honestly desirous that what you say in daily conversation shall be helpful to those who hear it, you will find incentive for hard work in many directions. Acquaintance with the structure of the world in which we live, the peculiarities of soil and atmosphere, a wide knowledge of the history of man and his development in civilisation, a familiarity with plant-life and with the facts as to health and disease amongst the lower animals, will each and all in turn prove of great value. In addition to all this, you will, I trust, many of you, become, in the several districts where your future life may be cast, leaders in the cause of general scientific education. Our profession is, indeed, in this matter, little less than a sort of unendowed Church of Science, sending its pastors and teachers to reside in the most various and distant parts of the world, and become bearers of the torch of knowledge wherever they may go. Nor have I the least doubt that the usefulness of our profession in this way is destined to large increase.

There are yet other subjects upon which I might offer you my unfeigned congratulations. You have had the good luck to be born in Yorkshire, and you have wisely followed it up by becoming students in a Yorkshire college. I feel sure that you will never have cause to regret either of these important steps in life. Leeds has always held a high position in respect to her medical men. Talent, indeed, seems to be hereditary here, after a fashion which we do not witness anywhere else; and the Heyes, Teales, and Chadwicks follow each other in line like princes in their own right. Nor, I may safely add, did the repute of the Leeds School of Medicine and Surgery, great as it has been in the past, ever stand higher than it now does.

I might congratulate you, also, upon good fortune in respect to the times upon which you are entering. Whether we regard the development of our own profession or the general progress of mankind, unquestionably we live in an age of most unusual interest. Great advances have been very rapidly made, and there is every indication that still better things are to follow. At the same time, it is impossible not to both see and feel that problems of no ordinary difficulty are being forced upon us for solution.

I have invited you, gentlemen, to dignify the calling of medicine which you have chosen; permit me now to invite you to dignify yourselves who have chosen it. I remember well a story which is told, I think of John Foster, that he having once, in a fit of melancholy, declared that the world was "a wild beast, untamed and untameable," his friend reminded him that, at any rate, he himself was part of it. "Yes," he rejoined, "a single hair at the end of its tail." I prefer, I may confess, and I am sure that he would have done so in a cooler moment, the comparison with which I began my address, when we likened individual men to single leaves on a mighty pine-tree. As each leaf in quietness and confidence does its duty, so may it be with us. To every student here I would say, and say very earnestly, "to thine own self be true." In hours of lassitude or moments of temptation remember this maxim, and, acting upon it, all good things will follow. Do not think lightly of your own individual value in the world's work, and always think hopefully of the world's progress. The world, you may feel sure, never had a more happy day than that in which you were born. Lest you mistake my meaning, let me hasten to add that it will be happier still on the day you die; and permit me to take leave in urging the reflection that the ratio of its gain in happiness will depend, in some degree, now and for ever, upon how you live.

INTRODUCTORY ADDRESS ON MEDICAL EDUCATION.

Delivered at the opening of the Winter Session of the Medical Faculty of University College.

By PROFESSOR E. A. SCHÄFER, F.R.S.,
Jodrell Professor of Physiology in the College.

It has long been the custom to inaugurate the commencement of each academic year of the Medical School of University College by an introductory address delivered by some member of the teaching staff to the students of the faculty, old and new. In some of the medical schools of the metropolis, the custom is now honoured more in the breach than in the observance, and it is possible that this may soon be the case here also; for there are those among us who regard this function as an anachronism—harmless enough, perhaps, but productive of no particular benefit, and therefore a thing to be got rid of. I must even admit that I have myself been constantly on the side of the abolitionists. An engagement is not likely to be less successfully fought because it has not been preceded by a fanfare of trumpets, and the work of a session is not likely to suffer because it is begun without a corresponding introductory flourish. No doubt there are a few things to be said in favour of these addresses; they are not entirely barren. They do undoubtedly afford a convenient occasion of formally welcoming into our ranks those who have determined to cast in their lot with us, and of reassembling those who have already pursued a portion of their studies in our school; and they also give the person who is deputed to deliver the address an opportunity of bringing before the world his views upon some subject connected with medical

science. On the other hand, there is a chance that these views, interesting as they may be to the author himself, may prove somewhat less interesting to his audience; and, even at its best, the address is neither more nor less than a "lecture"—that is to say, an addition to the ever increasing burden which the modern student of medicine is compelled to bear, in obedience to the oftentimes illogical but always legalised commands of the licensing corporations. Whether, however, we approve or not of the system, the fact remains that I am here to give you an address, and you are here to listen to it; so the sooner we begin the better. The utmost I can do is to promise to be as brief as possible.

In the first place, then, it is my duty and pleasure to welcome, in the name of my colleagues, the new faces that I see amongst you. The selection of a particular school in which to follow the study of medicine must always be a difficult matter for those who are ignorant of the relative advantages offered by the several schools. Those who are here present have probably already made their selection, and it is unnecessary for me to do more than to tell them that, in my opinion, they have made the best selection possible. For twenty years I have been familiar with University College, and intimately connected, as student and teacher, with its medical school; and I believe I may honestly say, without desiring to draw comparisons unfavourable to other schools, that there are many advantages attending the study of medicine at a great college of arts and science, such as this, which cannot be overestimated. Let advertisements say what they will, I maintain that it is impossible for those sciences which form the basis of medical education, and in the absence of which the whole art of healing lapses into a mere mass of shallow empiricism, to be thoroughly and effectually taught elsewhere than in institutions which are mainly devoted to their study and teaching. And when with these advantages are combined the soundness of clinical instruction and thoroughness of clinical and pathological investigation which have always characterised the work at the hospital which is connected with our school, I have not the slightest hesitation in affirming that you will have no reason to regret the choice you have made. When she looks back along the ranks of her *alumni*, observes them occupying important positions in the profession, welcomed upon the staffs of other hospitals and medical schools both metropolitan and provincial, fulfilling the important duties of officers of health and other public appointments throughout the length and breadth of the land, each and all pursuing their profession with pleasure and with profit—even although the profit is, in some cases, more to others than themselves—what wonder that Alma Mater is proud of her children, and that they retain a feeling of affectionate attachment to her? That this feeling of pride and loyalty should exist as it does, and that it should be gathering in force as the number of those who have received their education within these walls is steadfastly increasing, cannot but be a source of satisfaction to one and all of us who are permanently placed here, seeing that in the existence of such a mutual attachment lies the best hope for the future prosperity of our institution.

I now pass to that portion of this address in which the author is privileged to put forward his individual views upon some subject connected with the study or practice of medicine—a privilege which is conceded to him in consideration, I suppose, of the fact that his holiday is curtailed, the restoration of his nerve-force arrested, his life for at least a week made burdensome to himself and those near him, by the thought and preparation necessary for the fulfilment of this important function. I propose to avail myself of that privilege by disburdening my mind of certain ideas relating to the subject of medical education, which have long been fermenting there—a subject which is, indeed, well worn, but which has the advantage that there is always something new to say regarding it, and respecting which, it is admitted by all—not even excepting the General Medical Council—that there is abundant room for reform.

In offering suggestions as to the course which ought to be pursued by those who seek to become qualified for admission to the medical profession, a commencement is generally made from the time of leaving school; and the recommendations as to the way in which a student's time should be employed, leave out of account that most important period of his existence during which he is subjected to the wholesome restraint of strict discipline. I shall venture, however, to go further back, and to tender a few suggestions as to the best way in which he may be employed in laying a thorough foundation for what may be more properly and technically termed his medical education. For, in considering this matter of education for the medical profession, we must, first of all, understand clearly what it is that the education in question is designed to attain. It is important, above all, to remember that it is education for a profession, and not for a trade, that is required; and, more than this, for a liberal and learned