

our more advanced physiology or the marvellous discoveries in the field of microbiology.

During your studies here you will have but little time for reading beyond what is comprised in text-books, and that little had better be devoted to general literature as a source of mental recreation from professional occupations. But the leisure hours of future life will be profitably employed in learning what has been thought and done by the great men of the past. In the history of medicine you will find much to interest as well as to instruct you. Stores of wisdom are to be found in the writings of bygone observers that may be made practically available at the present time, and assistance often obtained on questions of the day by learning the errors and mistakes, as well as the discoveries, of the past.

In practice each individual case of disease to which we are called must be made a special study. It is not enough to ascertain that we have to do with gout, pneumonia, or typhoid fever, whichever it may be; each example of disease and each patient must be made a special study. We have to take into consideration all that relates to the climate, season, hygiene, and social condition of the patient, his hereditary and constitutional characteristics, his idiosyncrasies and past history, so far as we can learn them. And in the management of each case there is scarcely any circumstance, however trivial apparently, that may not exert an influence on our success, any and every source of irritation, whether bodily or mental, the position of the patient or his bed, the aspect as well as the nature of his food, his prejudice in respect of a particular medicine, his liking or aversion for a particular attendant and all that relates to the nursing and economy of the sick room.

It is not enough to lay down rules of diet. You require to know that the food is properly prepared as well as its special adaptation to the patient's case; and to these ends you must know the principles of the science as well as the art of cookery. For cookery is a veritable science as well as an art. Among the poorer classes there is not only grievous waste from ignorance or neglect of the right methods of obtaining the full amount of nutriment from each variety of food, but many unfounded and hurtful prejudices against the use and best modes of preparing such food as is needed in sickness. You will render no mean service to your poorer patients by instructing them on such points, and will greatly enhance your therapeutic powers by a knowledge of the chemistry of food and the best means of preparing it for the purposes of nutrition. Your personal influence in the sick room will be more or less in proportion as you learn to exercise in each case the precise moral control that it requires; and whilst to secure the confidence, good opinion, and gratitude of your patients are in all cases legitimate objects, their real welfare and the fulfilment of your duty must ever override all considerations of your own social success. Assumed and affected manners are to be deprecated, whilst a kind and sympathetic manner should be sedulously cultivated. Gentleness should be combined with firmness, cheerfulness with sobriety, caution with confidence, and a general deportment consistent with the gravity of your office, and the particular requirements of the sick should be your habitual study.

In such a profession as ours every well-conducted and fairly qualified man may look with confidence to a certain amount of social success and opportunity of benefiting his fellows, may secure the esteem of the worthy and the blessing of such as were ready to perish. It is not indeed given to all to make discoveries in science, or effect important advances in our art; but each may do something, and it is imperative on all to make it an object, and consider it a duty, so to live that those who come after us may be the better for our labours. Some by the particular circumstances in which they are placed may have opportunity for special observation and investigation of particular forms of disease which should not be lost. All by careful, trustworthy observation of nature and truthful records of work may contribute somewhat to the common stock of knowledge; but such records must be made, not with a view to a fleeting reputation or the gratification of personal vanity or ambition, but with the object of eliciting truth that shall prove to be for the good of man's estate. Whatever the genius of some or their special advantages may enable them to effect, it is by that close observation of nature, which all may and are bound to cultivate, that most of us can hope to attain what should be the desire of everyone.

"Where natural logic prevails not, artificial too often faileth," says that quaint old philosopher, moralist, and physician, Sir T. Browne; "where nature fills the sails the

vessel goes smoothly on, and where judgment is the pilot the rate of insurance need not be high; where industry builds upon nature we may expect pyramids; where that foundation is wanting the structure must be low. They do most by books who could do much without them, and he that chiefly owes himself unto himself is the substantial man."

Introductory Lecture

DELIVERED AT

UNIVERSITY COLLEGE, LONDON,

On October 1st, 1884,

By W. R. GOWERS, M.D., F.R.C.P.

GENTLEMEN,—My first and chief duty to-day is a simple one. It is to bid a hearty welcome, in the name of my colleagues and myself, to those of you who are here to commence or to resume your studies. Of your choice of a profession I may have something to say hereafter. Of your choice of a place of study I need say little. For more than half a century University College has shown other schools how medicine should be taught. Almost every important step in medical education has first been taken by her. Thanks to her example, she now has many rivals, but remains surpassed by none and equalled by few, whether the test of comparison be that of method or quality of result.

With this word of welcome, my chief duty being done, I would gladly end. But an unhappy custom lays its heavy hand upon me, and compels me to introduce you to your work by the first of the many lectures to which you will have to listen. In doing so, I do not propose to pass beyond the immediate occasion that brings us together. I have too much sympathy with the interests that are foremost in your minds to-day to be able to inflict upon you any scientific dissertation. So I shall limit what I have to say to the work that lies before you and the profession you have chosen, even though I risk the accusation, so freely levelled at introductory lecturers, of talking platitudes. I confess the charge lies lightly on my conscience. For, gentlemen, what is a "platitude"? A platitude, dictionaries tell us, is "something flat." Well, this world of ours seems a flat place to people who are up in a balloon; but to those who have to live and work upon it—to climb its shelving slopes—to thread its mazy labyrinths, and rest beneath their shade, the world has characteristics which the epithet of flatness fails to epitomise.

And so I will begin with the most common-place of questions, and ask why you are here, and will anticipate the most common-place of answers, that you are here "to study Medicine." Would, for your sakes, that the act were as simple as the words. Even in outline the process is somewhat formidable. I have said that this is the first of many lectures to which you will have to listen. I am almost afraid to tell you how many they are, lest the prospect should be too much for your resolution. It is certainly, however, within the mark to compute the number of lectures and class meetings, that you will have to attend, at not less than two thousand. It is not our fault, gentlemen. It is ordained and prescribed by the powers that be that you shall learn all things by oral instruction. Many subjects could not be taught otherwise. As regards others, I for one think that more laxity might be shown, and that the method by which knowledge is acquired might be left, in larger degree, to the choice of the student.

Nor is the prospect less formidable if the nature of your work is looked at. Those of you who aim at the higher qualifications will have to learn something of about half the sciences into which human knowledge has been divided, and of many you have to acquire not an elementary, but a practical knowledge. Besides the sciences that you are expected to study, many others have applications to the subject of disease, its prevention, and its treatment, although those applications are not so direct or so extensive as to make their study compulsory. Indeed, the sciences that

have no such relation are few. Almost every branch of knowledge, whether it deals with earth, or air, or water, with the physical properties of matter, or with the phenomena of organic life, with the processes of thought, or the social economy of communities, touches at some points the varied problems that present themselves to the practitioner of medicine. Nor can it be otherwise. For what is the work to which you address yourselves to-day? What is this Medicine to which you propose to give such strength as you possess and such life as may be before you? Let us try for a moment to gain a wider view of it, and see how vast is its significance, how extensive are its relations. Your life work is to be the prevention, cure, or alleviation of the diseases of man. Whatever else man is, he is at least this—the highest and most complex phenomenon yet discovered, or likely to be discovered, in the material universe; that in which the interactions of force and matter attain the greatest elaboration known to us or, indeed, conceivable by us. The highest form of matter, the most delicate adjustment of force, are in a nerve-cell of the human brain. Of the slow, never-resting tide of creative development, sweeping on, through ages far behind us, ebbing and flowing, and yet with sure advance—moulding into new forms and higher phases the mysterious elements on and in which it works,—it is with the ultimate result, the highest product, that your work lies. Physically man is part of the material world, inseparable. The phenomena of life are continuous with those outside the living organism, depending for their existence on that continuity, acted on by, and reacting upon, all the strange waves of varied forces, which, in their blending interaction, weave what we call the outside world. But elevation entails instability. The exquisite capacities of organic bodies are obtained by a complex adjustment of forces, held in restraint, ever striving to gain some lower and more stable state, kept in check by delicate counterpoise, in equilibrium that is destroyed by the slightest change, is indeed in constant process of destruction and renewal. By altered constitution or action the human body responds to every external variation, to every change in temperature, mechanical force, chemical constitution of its surroundings, and doubtless also to every alteration in electrical and magnetic states. No cloud can form, no rain can fall, without its influence. Each motion of our rolling world, each wave of light that reaches us from the far-off sun, each wind that bears to us the warmth of tropic seas or cold of mountain snows, determines some change in us. An alteration in the soil on which we live may modify altogether the processes of life. Hence we may see how wide must be laid the foundation of at least a general acquaintance with the sciences that deal with the material world, before an intelligent superstructure of special knowledge can be reared. With increased exactness in the study of the human frame, that necessary foundation has to be made wider and deeper. We are only beginning to see the application to physiology and pathology of the physical sciences. The structure of the body abounds with mechanisms and its action with processes, both in health and in disease, that can only be comprehended by a knowledge of the sciences that deal with the precise relations of constant forces, with the action of energy in solids and liquids, with the laws of light and of sound, and with the changing forms of force. Mathematics have a future application to human physiology and pathology of which only one province, the functions of the eye, affords at present an adequate illustration. You cannot properly understand the higher forms of organic life without some knowledge of the lower, in which the problems are simpler, and can be more readily comprehended, even if they cannot be solved. Moreover, the very lowest forms of life have been lately found to have the closest connexion with our work. Nature is always surprising us by the union of extremes. The labours of pathologists have added to the realm of biology a new province where it was least expected, and we may say least welcome. When I was a student the Professor of Zoology, whose genial enthusiasm will never be forgotten as long as his pupils live, commenced his lectures on the animal kingdom with an account of the corpuscles of the blood, and I presume our esteemed Professor of Botany will soon have to save his subject from its threatened exclusion from the curriculum by devoting half his course to bacteria, unless—which perhaps is more probable—a new chair has to be founded of, let us say, bacterio-phyto-zoology. When you have gained a knowledge of the sciences on which medicine rests, unfortunately, indeed, at the same time, you have

to enter on the more special studies to which most of your time will have to be devoted; the study of those combinations which are so far distinct as to constitute, currently at least, separate sciences, and which we call by names that properly have wider meanings—"anatomy," or the art of cutting up; "physiology," or the science of the nature of things; "pathology," or the doctrine of deep feeling; "medicine," or the art of healing; "surgery," or handiwork. Around these chief divisions of the knowledge you have to gain are others of subordinate position, although scarcely of subordinate importance. Some of this preliminary knowledge you have doubtless already acquired, but that which remains is sufficiently vast in extent, intricate in arrangement, and complex in nature, to make the 2000 lectures only too few, and the four years you devote to the work only too inadequate. The task before you can only be accomplished by strenuous labour, pursued with even tenour, allowing no alluring pleasure to divert you, or idleness to hinder.

The mode in which the various studies should be pursued, will be sufficiently explained to you by those whose task it is to teach them. I would only impress on you one general principle, that should be ever kept in conscious view. It is a trite observation, often repeated, familiar enough in abstract but never enough familiar in daily effort, that the object of study is twofold. You are here for education as well as for instruction. You are here to acquire the knowledge of fact and rule and theory that you are to apply hereafter in the daily work of your lives, but you are here also to obtain the mental training needful for that application, needful to enable you to use your knowledge under conditions that are ever new and ever changing, to distinguish fact from fancy when they present themselves in unfamiliar aspect and often in borrowed garb—to trace new facts, new laws, among the manifold combinations of phenomena that will be around you in every day's work. Happily in each department of science the mental training needed to pursue it may be gained in the acquisition of the facts already known. No separate education is needed. If you study well, both wisely and thoroughly, the subjects that form your course, you will be, at the end of the time, qualified not only in the diplomatic, but in the fullest, sense of the word to enter on independent work. But the extent to which you obtain this training rests largely on yourselves. It is at once an important, perhaps the most important, part of your work, and it is that in which your teachers can do least for you. They can put before you fact and reason, but they cannot, or can only in small degree, compel you to observe, to realise for yourselves the value of evidence, to distinguish fact from theory, and to be on guard against the fallacies that lurk on all sides. They can test your knowledge: they or others can "coach" you and "grind" you, but the process of the instillation of facts, represented by these somewhat inept metaphors, may leave you wholly untrained for subsequent work. Your "coach" may carry you through the lofty portals of Lincoln's-inn and Pall-mall, or the lower archway at Blackfriars, and leave you altogether unfitted for independent progress. Your "grinder" may pass you through his mill with such success that you emerge a flabby mass of factitious atoms kept in the semblance of form by the sack of a diploma, but it is only by your own continuous effort that you can gain cohesion and the power of organic growth. And this effort must be made from the commencement of your studies. Each of the subjects that occupy your earlier years has its own method, and yields you a separate training. In each facts are ascertained and theories are verified in a different manner, and this you should endeavour to keep before you in your daily work. This subject has been often dwelt on, and once here with an ability that I cannot hope to rival. I would refer you to, and urge you to study carefully, an introductory lecture that you will find in the library, bearing the revered name of Parkes, and I will content myself with a few instances to show you what I mean. The training given by the study of anatomy is chiefly that of observation—at once the most fundamental, and I might say the most difficult of all the mental processes involved in medical work; difficult, partly because it seems so easy, and a first clear impression is allowed to deter from thorough investigation; partly from the well-known tendency to confuse observation and inference, and to lose sight of the sources of error that the latter introduces; partly because facts have an inconvenient habit of presenting themselves where they are not expected, and when the attention of the observer

is otherwise engaged, often in some manual occupation. This is a fertile source of error and omission. It cannot, from the nature of the case, be altogether avoided, but it may be to a large extent lessened by careful training, such as that which is supplied by the study of anatomy. This, if properly used, is of inestimable value. The facts are simple, in that they are of one class only. They are limited; it is possible to make an observation thorough and complete. But much of the value of anatomy as a training is lost because the student is content to separate too completely, often endeavours to separate, the two parts of his work, the process of dissection and the process of learning. During the processes of tracing and cleaning, largely mechanical, he allows his mind to be occupied with other subjects, and when the task is over, sits down to learn his part as from a picture or a model. But by keeping his attention constantly fixed on his work, by noting over and over again, and in a systematic manner, the relation of the parts he is tracing, he may not only almost know his dissection by the time he has completed it, but he may gain the power of seizing every fact as it presents itself, although his attention is at the time occupied by the work of his hands; a power of inestimable value, especially to the surgeon and pathologist. Microscopic anatomy takes the student to a fresh range of facts of greater complexity, and ascertained by a more complex method of instrumental, instead of simple, observation, and experiment by means of reagents plays a minor but important part in the processes of identification of structures, an introduction to the use of experiment in its simplest form. He should endeavour to analyse the steps by which each conclusion is reached, since by this training in simple methods he will be better able to trace the process, far more complex, by which inferences are drawn, and so detect the dangers of fallacious reasoning, in the more complex sciences that constitute his later studies. So in chemistry, in which experiment attains its highest development, and the training in exact reasoning which it affords to the student is of inestimable value. It is unfortunately unavoidable that most students should study these three subjects simultaneously, but it is a wise modification of the older order that study of inorganic chemistry should precede that of physiology.

So large has become the cargo of knowledge with which the course of medical study has become charged, that the question has been necessarily raised whether the overlaid vessel cannot be lightened by throwing overboard at least one subject, and by common consent Botany has been selected as that which may with least loss be spared. The loss, it seems to me, would be greater than is commonly assumed. From the point of view of education, as opposed to mere instruction, the value of botany to the student is very great. No elementary subject in the whole curriculum is capable of supplying in equal degree the training in the methods of his ultimate work. Structural botany supplies an additional and most useful training in observation; the practice of describing plants, so admirably systematised as it is in the teaching here, is an excellent education in note-taking, afforded by no other subject in the earlier course; while the process of the identification of plants, involving as it does exact observation and comparison of characters and the estimation of evidence, is almost the same in method as that of the diagnosis of disease.

If the student has duly profited by these earlier studies, he is prepared to enter with advantage on the study of physiology, in which he is introduced to the chief methods of ascertaining and verifying facts that are employed in the ultimate subjects of medicine, pathology, and therapeutics. Although the methods are, in part, the same, the higher degree to which experiment can be applied renders the conclusions of physiology far more certain than those of medicine and pathology; although far be it from me to suggest that everything in physiology is free from doubt. The value of this study as a mental training was insisted on not long ago, with characteristic ability, by one of whom University College is justly proud—Professor Michael Foster of Cambridge—and his main conclusions must command universal assent. But the student can only utilise physiology properly after the training afforded by the earlier studies I have mentioned, and its proper place is between those and pathology.

When you come to the practical study of the subjects that are to constitute your later work, and especially to clinical medicine, surgery, and therapeutics, you will feel the value of your earlier studies if you have properly used the training

they afford. Strive in all your work after exactness, thoroughness, and keenness in observation; endeavour to analyse the process by which each fact is reached, remembering that the processes are always more complex than they seem; look out for every opening by which fallacy can enter; strive by every method you can think of to gain the utmost certainty attainable, in whatever it be, whether the diagnosis of a disease or the action of a drug; or, at least, relentlessly expose, and candidly admit to yourselves, the degree of uncertainty. It would be a help to the student if at the beginning of his career, instead of sometimes at its close, he had to acquire some knowledge of formal logic, but the steps of reasoning can be effectively traced, and the value of conclusions duly estimated, almost as well without the aid of formal logic as with it, provided the student uses every opportunity of acquiring the art, and begins with the simpler instead of the more complex processes. It would also be a great assistance if the methods of reasoning adopted in each science could be explained and illustrated to him in a systematic and formal manner when he commences its study.

I have ventured thus to insist on the importance of deliberate and conscious effort on your part to obtain to the full the mental training that your studies afford, because I can do so here without any qualms of corporate conscience. Although you have, alas, no longer the privilege of listening to one, whom here I need not name, through whose unrivalled teaching his pupils learned the importance of exact reasoning by the most masterly example of method ever presented to students of medicine; still I believe that there is no other medical school in which so much is done to educate as well as to instruct, to train the student as well as to propel him through his examinations. And I have ventured to insist upon this subject, because if we look around us, and read much of the medical literature of the day, it is difficult to avoid the conclusion that there is, to put it mildly, room for improvement. To put it more exactly, there is no department of science in which there is so much imperfect observation, hasty generalisation, and fallacious reasoning as there is in medicine. I was going to say, "there is no department of intellectual work," but as that would include politics, which is supposed to be intellectual work, the statement might be open to question; so I will leave you one comforting comparison. But in medicine, almost every day, fancies are formulated as if they were facts, theories are elaborated on data absurdly inadequate, and almost every conceivable error in reasoning is gravely perpetrated, and what is more, these things are welcomed with acclamation, when in any other department of science they would be put by with a smile. This is no doubt due in part to the large number of workers in medicine. There is of course some admirable work, researches as brilliant, and reasoning as exact, as any department of intellectual work can show. I do not say that the bad is out of proportion to the good, but I am sure that the bad would be less if more could be done to utilise the mental training afforded by the course of study.

There is another and very different province in which self-training is desirable. When you come to the practical study of disease, strive to acquire the habit of entering into the feelings of the sick, and into their modes of thought, to such a degree as to ensure considerate tenderness in dealing with them. Never forget that a "patient" means one who suffers, and that you come in contact with the tenderest parts of human nature. Remember that in those in whom pain, disease, and death are stern and trying realities of the present or the nearer future, the mental tone is altogether changed; and do not judge the sick by the standard of the sound. "Invest suffering with the reverence that is due to its sad mystery. It has its roots deep down beneath the surface of our life, and reaches, in each one, the inner depths of calm or storm, in a region into which you cannot pass except by tender sympathy and thoughtful care."

It is true that to enter fully and deeply into suffering, with the sympathy that is not only intelligent but "with-suffering," is impossible. A doctor's work would then be simply beyond human endurance. To him, as to no other, the darkest side of human nature is ever open; in his ears the deep undertone of sadness rings through every chord and melody of human life, now in the wail of pure distress, now in the discord of passion, now rising into the sweet but still sad music of patient resignation and self-sacrificing

love. Well is it for the world that it is possible to understand without enduring, or the helpers would be few. As it is, our lives are often saddened by the suffering that we cannot but share. No statement more untrue was ever uttered than that familiarity with the sight of suffering destroys the capacity for sympathy in medical men. It is one of the many statements that are made by crotchety-mongers and others in the present day regarding the members of the medical profession, their feelings, actions, and motives, which could not be made in public if the character of the profession as a whole and the value of its work were duly appreciated.

It has always seemed to me that the value of that work to the community is underrated in public estimation, and that its character is inadequately recognised. I do not say that it is so in the individual relations of practitioners, but the frequent depreciation of our efforts, the misconception of motive, deliberate or unconscious, the bitter and unjustifiable attacks permitted upon individuals, even in journals otherwise respectable, could not be made, because they would not be tolerated, if the public knew what our work as a whole is. Of course, in a body of men so large as that of which our profession consists, there are and must be some who disgrace the colours with which they serve. For their exposure we may be grateful; and if humour banters us, we may join in the smile that it excites. But the cases to which I allude, examples of which must occur to the minds of many of you, are very different from these.

Consider one or two aspects of our work. Take the service it renders directly to the community. Attempts might be made to estimate the money worth of the lives that are saved, but the data are too imperfect to show more than how large it is. In Great Britain and Ireland there are about 20,000 medical men in actual practice. Most of these have scores, some have hundreds, of patients under treatment every week. I do not think it is an over-estimation to assume that each practitioner in active work is instrumental in saving one life a week. If you consider the varied cases that come under his care, the acute diseases, accidents, the double perils of childbirth, the dangerous maladies avoided by timely treatment, I think that this assumption is below the truth. But halve this estimate; assume that he saves two lives a month, or twenty-five a year—and many practitioners demonstrably save this number in childbirth only. In the aggregate even this low estimate amounts to half a million of deaths prevented every year. Is not this a service to the community before which most others, and many far more highly honoured, pale? And to this must be added the cases of slighter disease and suffering prevented and relieved, many times exceeding in number the deaths prevented, even when every allowance is made for the cases in which, alas! the resources of our art are still powerless. Take again the progress of sanitary science, which is adding so much to the health and longevity of the nation. To whom is this due? Sanitary work has passed so largely into special hands, that few remember that the movement is all but entirely due to our profession. It is to medical science that all the knowledge of the causes of disease is due, which has shown the way for prevention. It is to the efforts of practitioners of medicine that we owe the stirring of public opinion, by which the progress of sanitation has been rendered possible, and which has produced outside the ranks of our profession noble workers—only too few,—who have aided our efforts and advanced our cause. And to-day, in town and country, over the face of England, in the gloom of crowded cities, and in the fairer cottage homes, where Nature spreads her beauty over man's neglect, it is the members of our profession who labour untiringly in the cause, against the obstructions of ignorance, prejudice, and almost criminal apathy—obstruction too often successful, until the warnings given receive some fearful emphasis, as by such an outbreak as that at Kidderminster, or the awful avalanche of Death that has fallen on the city—of all in Europe the fairest and most foul. And in this labour, which is a part of the ordinary work of medical men, their motive is pure benevolence. The inverse ratio of the prosperity of the doctor and the health of the people has passed into a proverb. If all the efforts that the members of our profession are at this moment making, with all the energy they possess, were to be crowned with success, immediate and complete, one-half of the practitioners of medicine must starve or find some other calling. Search where you will, in the wide scenes of the present or

the narrowing vistas of the past, and you will not find another instance of such a body of men making it a main and constant object of their lives to deprive themselves of half their livelihood. But the fact, of course, excites no surprise, because every man who enters the profession, in so doing, puts self and self-interest aside so far as his work is concerned, and places the welfare of others before his own. To approach his work in any other spirit would be monstrous and intolerable, if it were not inconceivable. The vast majority of our fellow-workers subordinate not only their own interests, but their own feelings and their own lives, to the welfare of others in constant and uncompromising self-sacrifice. And this being a matter of course to us is taken by the public as so much a matter of course to them, that it is almost ignored in the public estimate of the profession. Medicine is ranked the lowest of those callings that are by courtesy termed learned, and the highest social dignity that is conferred on her most honoured members is the lowest that could be offered.

It has been objected that many of the lives we save are worthless to the nation, and lessen instead of augmenting the common-wealth. But when every allowance is made for these the residue of useful workers saved, of those whose existence is the nation's strength, is vast enough to startle the most indifferent if it could be assessed at the lowest estimate of its money worth. But the objection carries us to a wider survey of our work, at which I can only glance. If we look, not at the individual or the nation, but to the race in general, what are we to say as to the influence of the art of medicine? The question is but part of a subject of the highest interest, but also of profound obscurity—the part played by disease in the physical progress or degradation of man. Few questions in the whole range of science have an equal interest, perhaps no one is involved in greater difficulty. We can get glimpses of the outlines of the problem, hardly any of its solution. And yet it is a question towards which many lines of discovery converge, and its elucidation would be their grandest crown.

It is sometimes suggested that the influence of our art upon the race is to promote its physical deterioration. We save from death many sufferers from constitutional maladies, or from actual disease many who possess a morbid tendency, and by them that tendency is passed on to their offspring, and thus the area of liability is slowly widened instead of being lessened by the early death of those affected. It has even been urged repeatedly that the tendency of modern civilisation and of the medical art as part of it, by enabling the weaker to endure, is to cause an infraction of the great law of the survival of the fittest. The last assertion is an example of the inability of even brilliant thinkers to grasp a problem beyond their own familiar province. Fitness is here a purely relative and not an absolute term. If the conditions of life are so changed that the weaker may survive, the change in the conditions at once transmutes unfitness that would be fatal to a fitness that secures survival. The great doctrine of the survival of the fittest seems to me less a law that has to be proved than an axiom, as self-evident as that two straight lines cannot enclose a space. And it must be remembered that whatever be the influence of medicine in favouring the hereditary extension of morbid tendencies, it is simply an instrument of the moral force, which, in range and in effectiveness, progresses with the advance of humanity, the force that finds its expression in benevolence and philanthropy. Absent from savage life, these have now become recognisable and increasing factors in the influences that are moulding the future of the race, and they appear likely to gain in force in ever-increasing ratio. But I think it is open to question whether the gloomy forebodings to which I have referred are justified. It is easy to gather facts in support of the opinion; but it is very easy to look only at one side of the question. Our knowledge of the influence of heredity in the causation of disease is constantly increasing, and we are apt to hastily assume that the influence itself is increasing; but of this there is no proof. The strict evidence is equally consistent with the assumption that the influence of heredity is unchanged, or even lessening. For, be it remembered, the facts on one side of the question are obtrusive; on the other they are inconspicuous, however numerous. Even in families with strong hereditary predispositions, it is the common rule for many more to escape than to suffer, and this in every generation. There is a constant tendency for the race to clear itself of disease, just as a polluted river purifies itself while it flows. Were it not for this, man, or at least civilised man, would long ago have disappeared

from the earth. And is it too much to hope that the growth of social wisdom, and the progress of medical science, may succeed in augmenting this influence to a far greater and more effective power than it is at present?

In another province—that of zymotic disease—the promise of the future is still more distinct. One of the elements of their origin seems almost within our grasp, and few can doubt that the investigations that are even now in progress and the discoveries already made, which have added a fresh lustre to medical science, discount them as you will, must soon be followed by practical results of the first importance. But we must not forget that the nature of the specific material in which these diseases apparently consist is but one element in the phenomena. On the other, the strange fact of specific liability, no light has yet been thrown; and yet, in its relations to individual, race, and species, it is at present far more strange, and may ultimately be found even more important, than the other. The familiar facts of the protection afforded by an attack of disease, a protection which bears no relation to severity, the virulence of disease in races which constitute a virgin soil, and the strange manner in which new diseases arise and develop into prevalence, suggest problems of the present and questions of the future to which no answer or solution can be offered, but they need not lessen the hope that is raised by the discoveries that are now in progress.

Such are your studies in the nearer future; such your labours in the years the distance hides; and what is your reward? Small enough, as recompense is weighed in the common balance. A living; that is something. Bread—and cheese, perhaps—for each who wisely selects and patiently pursues his course of work; placing duty before pleasure, fitness before inclination, permitting no errant impulses, no distaste for steady labour, to determine his career, or any fancy-fledged ambition to tempt him to a flight beyond his powers, a flight in which he cannot hope to soar, but must from inherent weight and by all-potent gravitation, quickly fall. For every steady worker there is perhaps a more sure prospect of what is called “earning a living” than any other profession or occupation presents, with less risk of a disastrous failure from causes outside his own control. Moreover, you have other rewards if you do not wilfully close your eyes to them. Much of your daily work may be drudgery; some may be repulsive; but the subjects that engage your energies are of transcendent interest. The world is not to you as it is to most other men. To you the book of Nature lies open. The knowledge you have gained has, or should have, given to you a new interest in the world of living creatures of all kinds—ay, and in what we call dead matter too. Human life, in its development and decay, and the ever-varied phenomena of disease, present problems of the highest interest and of never-failing succession. For you, as well as for the great student of Life to whom they were addressed, the poet's lines are true, if you will make them so:—

“Nature, the old nurse, took
The child upon her knee,
Saying, ‘Here is a story-book
Thy Father has written for thee.’
And whenever the way seemed long,
Or his heart began to fail,
She would sing a more wonderful song,
Or tell a more marvellous tale.”

But greater still as a reward for your labour should be the consciousness of the character of the work you are doing. To relieve suffering, to cure disease, and, above all, to preserve health—these are the objects of your life. It is to achieve these that your energies are taxed, your drudgery bestowed, your days and your nights devoted. Each hour's work sees, or should see, these ends in some measure achieved. Failures must come, and, baffled in many a struggle, you may at times despond; but remember that the good you do is always far more than you can see. Our failures are obtrusive; our greatest triumphs often imperceptible. “Nature effected a cure” we or others say, and say correctly, but it is certain that Nature would often effect a death were it not for the guiding influence of medical treatment; an influence that we often cannot trace in the unit, but which comes out clearly enough in the aggregate. In the region of preventive medicine the results, however vast, are, taken separately, quite invisible. We can no more trace the influence that keeps a man in health, who would have otherwise have died of fever, than we can trace the breeze that wafts a cloud across the summer sky. Hundreds of persons every day are saved from disease without the fact

being known to them, or to those who save them. Is it no reward to have the consciousness that life and ease and health follow your daily path? I know that cavillers may object that motives relatively low may compel your work; that the maintenance of your own existence may be an object in prolonging that of others. But this does not influence the intrinsic character of your actions. The choice of a sphere of work you make or ratify to-day will leaven your future life, and the knowledge that the world is better for each hour's labour may be, and should be, to you a constant and enduring satisfaction.

There may be—nay, there must be—many here to-day to whom words of farewell are more appropriate than those of welcome with which I commenced. Your student life is almost over; the graver work for which you have been training is close at hand, and soon in town or country, upon sea or shore, you will have entered on it. Wherever your lot may be cast—it may be near, it may be far away, under strange stars, in unfamiliar scenes—your College looks to you, and will not look in vain, to keep her name unsullied, to make your place of study a passport among members of your calling, a guarantee of honour and trustworthiness. She looks to you, and will not look in vain, to carry on the high traditions of her past—to keep the torch she hands you brightly burning, to lighten the dark places of human life. She looks to you, and will not look in vain, to take your part, humble or high, in the great contest with disease and death, in the great work of gathering the knowledge that is power, and the wisdom that is life. Vast is the field of labour: no hand unwelcome, no effort to be spared. Fierce is the contest, unrelenting; ever spring afresh the Hydra-heads, and for no moment can the sword be sheathed. But it is not for ever; not, at least, in present inequality. Who that reads, with thoughtful eye, the signs of this century's advance, can doubt the issue? Though still the storm-clouds gather and the sky is dark, yet far away, and slowly coming nearer, there is light. Not we nor our successors for many generations yet to come may see it, save in glimpses few and faint. But come it will, and you may aid its advent. You may lessen the present gloom, and you may hasten the dawn, which, now flushing only here and there a mountain peak, shall surely broaden into perfect day.

ON PREPUCE GRAFTING.

By R. CLEMENT LUCAS, B.S.LOND., F.R.C.S.,
SENIOR ASSISTANT-SURGEON TO GUY'S HOSPITAL, AND TEACHER OF
OPERATIVE AND PRACTICAL SURGERY IN THE MEDICAL SCHOOL;
SURGEON TO THE EVELINA HOSPITAL FOR CHILDREN.

AMONG the disadvantages which may be urged against the practice of skin grafting taught us by Reverdin are the pain and scarring the patient must suffer to provide himself with the cuticular fragments required to close his granulating wound. Whilst working men yield up their arms without murmur to supply cuticle for other parts, with women the difficulty of obtaining skin increases, and with children it becomes a cruel torture which no surgeon would willingly subject his patients to if he could obtain good results by other means. It is, therefore, at children's hospitals that the difficulty of obtaining skin to cover the enormous granulating surfaces often left after burns is especially felt; and my object in this paper is to point out that at these institutions there is a plentiful supply of skin removed which may be usefully turned to account. The number of children that are brought to these hospitals for phimosis is so great that many days will never elapse without the surgeon being called upon to perform circumcision. In recommending that the skin of other patients be used to assist in the closure of wounds, I cannot too strongly urge that the surgeon should use every precaution, never to lay himself open to the charge of having thereby communicated disease. But in the prepuces of children there is seldom any danger. When, however, balanitis is associated with phimosis I always make it a practice (for the sake of the child to be circumcised) to cure the balanitis before removing the foreskin. The surplus skin of this part, from its suppleness, thinness, and vascularity, appears to be peculiarly adapted for transplantation, so that I have found grafts from this source adhere when those from other parts