Inaugural Address ON THE PROGRESS OF SURGERY.

By HOWARD MARSH, F.R.C.S.,

DELIVERED BEFORE THE VICE-CHANCELLOR AND MEMBERS OF THE
UNIVERSITY ON HIS APPOINTMENT AS PROFESSOR OF SURGERY
IN THE UNIVERSITY OF CAMBRIDGE.

MR. VICE-CHANCELLOR.—I must begin by assuring you that I am fully conscious of the honour of the position I occupy as Professor of Surgery in your University. I am conscious, also, that as the honour is great, so likewise is the responsibility. This responsibility, which to-day weighs heavily upon me, I shall henceforth at all times bear in mind, and endeavour to meet it to the full.

Having now joined your medical school, and having in the future to take part in its work, I am able to reflect—with more complacency than was possible when I was attached to, in a sense, a rival institution—that this department of the University of Cambridge occupies a position which you may well contemplate with genuine satisfaction. The number of students shows that your medical school is highly successful, and this success depends on the fact that the various departments are presided over and personally conducted by great masters who have themselves, in their generation, considerably advanced the sciences which they severally represent. Anatomy is taught—in Professor Macalister by no mere human-anatomist, but by one who is deeply versed in many other fields of research, and able to expand and enrich his particular subject by making the neighbouring sciences largely contribute to it. In your late Professor of Physiology, Sir Michael Foster, you had one who has long and easily held the first place, whose name is known and revered wherever physiology is taught, and whose position in the world of science outside and in the public eye is one of the highest importance and distinction. As you yourself, Sir, have said, "It is not easy to express the greatness of the debt which the study of biological science among us owes to Sir Michael Foster, both before and after his election to the Chair" in 1883. To follow him and to adequately continue the work which he has so long carried out, must be indeed a difficult task, but every one concerned feels that in Dr. Langley, at first his pupil and subsequently his most able and accomplished fellow-worker, a worthy successor has been found. For your Professor of Pathology you have secured in Dr. Sims Woodhead a man whose departure from London was regarded as a very heavy loss. This, I am able to state from personal knowledge, was especially felt to be the case by the Royal Colleges of Physicians and Surgeons, where his services in the Conjoint science laboratories were much valued and appreciated.

Your Regius Professor of Physic, Dr. Clifford Allbutt, has for many years been my intimate friend. As a man of wide scientific culture, as a learned physician of unusually wide experience, as a teacher, and, as I may be permitted to add, in his whole personality, he occupies a foremost place, and it must be gratifying to him to observe that his *System of Medicine* has been an unqualified success. The constant and earnest work of Dr. Bradbury, Downing Professor of Medicine, is well known to all. There are many others among you whose names are household words. Of these I cannot refrain from mentioning Dr. Donald MacAlister and Mr. Shipley, whose co-operation and unstinted labour and devotion are conspicuous factors in your success. Indeed, Cambridge occupies a position as a medical school which has excited the envy—always however mixed with admiration—of us all, whether in London or elsewhere. And for two principal reasons. First, because as I have said, the staff is so distinguished; and, secondly, because as if by magic, there has sprung up a mass of new buildings allotted to your various departments which, for convenience and fitness, are unsurpassed, and I might even, I believe, truly say, unrivalled in this country.

Now, any one who has studied the subject of education, not necessarily in detail but in its broader lines, must be struck by recent events in this renowned University. The closing half of the last century must always remain a landmark in the intellectual progress of our race, for during these years there was a new departure, which was to issue in what was scarcely less than a transformation. Until that time intellectual activity here and elsewhere had been largely

expended in the field of literature and in the cultivation of general learning. The leaders were poets, pure mathematicians, historians, and great novelists. Then we had our great ecclesiastics, our renowned Parliamentary orators, and our illustrious judges, all as examples of the strength which culture adds to mere intellectual powers; while in the imperishable literature of Greece and Rome was a field which offered ample opportunities for the acquirement of culture in its highest forms, and which afforded also welcome relief and refreshment to many a one who was wearied by the anxieties and worries of life.

But in the years to which I have referred another world was more and more distinctly disclosed, and as it gradually emerged from the nebulous stage and took specific form, every observer felt that a new order of things was being established. The new power which now assumed its sway, which was so profoundly to modify human progress, and under whose beneficent influence events as yet undreamt of and inconceivable, till they stood revealed and established as matters of fact, broke in upon us on every side. And here was the advent of modern science, which like light itself was to be all-pervading and vivifying, promoting, and controlling. It touched everything with creative power; nothing was left unaffected by it.

Now, these two departments of intellectual activity to which I have referred, the *literae humaniores* on the one hand, and modern science on the other, are no natural foes whose interests are opposed, but influences which are intimately related, and destined to travel side by side, yet with a gradual approach, until, blending in closest assimilation and interaction, they shall at length embody the highest developments of human achievement. They are in fact but

parts of one stupendous whole
Whose body Nature is, and God the soul.

Now, of all human institutions, it was clear that those most closely concerned in these events were the universities, among the foremost of which stood the University of Cambridge; and here, obviously, the new order demanded early recognition and a fostering home. By the new order, I mean the intimate association of modern science with the culture and elevation of the human mind and character which naturally spring from the pursuit of the *literae humaniores*. It is in the just balance between these two departments that true progress lies.

If we glance at this University to-day we cannot fail to see and, seeing, to be unfeignedly satisfied, that this consummation has been safely and in good time achieved. The renown of this great University as, in the words of your statutes, "a place of education, religious learning, and research" is not only as splendid as it has ever been, but it constantly increases.

I have been among you all for so short a time that there are many things of which it would be presumptuous of me to speak. But this much I will say without fear of contradiction. I am perfectly certain that no one who has not looked into the matter for himself can have any idea of the amount of work that is being at present done at Cambridge, or of the activity, the vigour, and the success with which your numerous departments are being developed and maintained. Some may, and I believe do, ignorantly think that the older universities are half asleep: that they are living on their reputation and droning away their time.

A short residence here has completely demonstrated the fact to me—of which I must own I was not previously quite fully aware—that the amount of work which is done in many of your departments is constantly so heavy and exacting as to tax the endurance of strong and determined men. Idlers no doubt there are, but they are few in number and opposed to the spirit which pervades your university life. On the scientific side we find that almost every department is assiduously followed, from astronomy—in which your distinguished Professor and delightful exponent, Sir Robert Ball, is confronted with distances which even he cannot always quite accurately measure, and with periods of time in which millions of years appear more brief than fly ephemeral which has its day, down to those sections of pathology which are concerned with a study of objects so minute that their presence is revealed only by the most elaborate methods of research. These two blood relations—learning, which is power and comeliness; and science, which in the keen competition of our daily life will with many henceforth mean daily bread—must work heartily together for mutual support and progress.

Now the development—on the science side of the University—of your medical school was largely due in its inception and

early progress to my predecessor in this Chair, Sir George Humphry. Later on several of his colleagues who shared his views, and notably among these was Sir Michael Foster, worked heartily with him. Sir George Humphry was well suited for this new departure, which was to reach such important developments. He was a man whose cast of mind was essentially scientific. He constantly worked as if he wanted to know; and with this natural mental attitude he combined sleepless perseverance and quite remarkable shrewdness. He would take nothing for granted, especially statements made by other people. Discussion, even controversy, he dearly loved. He was the best I have ever known at holding his own, and that not only with the keenest tenacity, but with an ingenuity of resource which must in some cases have provoked his opponent to protest.

An' I thought he had been so cunning in fence
I'd have seen him damn'd ere I'd have challeng'd him.

Now here are the elements of which men who achieve great results are made. Imagination, or in other words the power of conception, as, for example, the power by which Cecil Rhodes conceived great imperial ideas, the mental endowments necessary for the work in hand, and the abiding tenacity which ignores all opposition and goes on steadily, even, I had almost said, stealthily, upon its way. We used to watch Humphry not only with interest, but with amusement, and think that his biography was summed up in the words of a popular advertisement, "He won't be happy till he gets it." For my own part, I felt that had he been a soldier instead of a professor he would have left his mark on the history of his country. As a teacher, I have never met his superior, and in teaching I have myself constantly tried to copy him. As to his personality, two separate estimates were formed. Those who did not know him did not like him. They did not understand his attitude of caution. They could not get him out of his shell. They were conscious that they did not know what he was at, or what he would do next. Those, however, who were his intimates, and who knew him well, found him friendly, warm-hearted, and genial, and as an intellectual companion in a quite rare degree interesting and entertaining. Yet he was always Humphry, and at his best when he was discussing some question in surgery or pathology with some one who he thought might throw some light upon it, but in whose harness he was determined, if possible, to find a weak spot. You will not, I think, Mr. Vice-Chancellor, be surprised that I have availed myself of this opportunity of alluding to him as one whose memory will long be kept green amongst us. To follow such a man, who grounded his claims to be remembered not only on the character of his work, but on the long period during which he was a conspicuous figure amongst you, is so difficult that any success that is possible to me can only be very limited. It can be only *longo intervallo*. But it shall be as far from failure as my most strenuous efforts can remove it.

As I have but recently come among you as the representative of a not unimportant department in the field alike of science and of art, for in both surgery now holds an established place, you may expect me, speaking to an audience which includes a considerable lay element, to say something of surgery not as surgeons study it, but as a subject in which the public must feel a keen and increasing interest, seeing that every advance which is achieved is an event which in case of illness or accident, which, however, may Heaven avert, might by any one be found a valuable personal asset. I will venture to say that the changes which have taken place in surgery in recent years are as great as those which have revolutionized so many other departments of human energy. Views which were but lately universally held have been completely and for all time swept away, and discoveries have been made which have fundamentally altered our conceptions, and enabled us to establish new principles, and to elaborate new methods of procedure. These results have been mainly due to the work of Pasteur and Lister—work which must last as long as the discovery of the circulation of the blood by Harvey, or of the principle of the steam engine by Watts.

Before their time the surgeon was met at every turn by blood poisoning in the form of erysipelas or some of its allies, and these complications were so certain to attack even small wounds that there were many operations which, warned by bitter experience, no one ventured to perform. And there were many parts of the body (for instance, the organs within the abdomen) which it was believed were so intolerant of interference that any operation would be attended by almost

necessarily fatal results. Thus, while many operations were never attempted, even minor operations were frequently followed by the death of the patient.

The new starting point consisted in the discovery by Pasteur that many diseases in the vegetable and animal kingdoms are due to the action of minute organisms or *bacteria*. The next step was the application of Pasteur's discovery to surgery by Lister, who commenced investigations into the use of substances by which these harmful micro-organisms, these bacteria, might be excluded or destroyed. I have heard him describe his first experiences. He found that when he used carbolic acid in a case in which he had opened a large abscess, the behaviour of the wound and the subsequent progress of the patient were absolutely different from what had hitherto been observed. He found also that wounds which before had taken six weeks to heal now healed soundly within a week, or, as the technical expression is, by first intention; and that whereas previously inflammation had occurred and a large discharge of matter had taken place, attended with fever, or with some dangerous form of erysipelas, or even mortification, now there was no inflammation, no matter was formed, no fever was developed, and recovery was rapid and entirely without complication. Can we not all understand Lister's astonishment and the delight with which these results were contemplated? Of course he was at first regarded as a visionary, some even thought him scarcely honest, so great was the difficulty of believing what he declared his experience to have been. Surgeons who pinned their faith to established authority, and whose minds had passed their plastic stage, would have none of it. Men, however, who were younger, and whose minds were receptive and untrammelled by stereotyped impressions, hailed Lister's announcement with enthusiasm, and at once set to work to enlarge his observations and improve upon his first attempts. But his glory must always be that he set this great stone rolling. He demonstrated the main fact as to the part played in surgical cases by micro-organisms in the production of disease. Following his lead, his disciples soon spread themselves over the whole field of surgery, and constantly established new records of success. To paraphrase Goldsmith, one may say:

And still they worked, and still the wonder grew,
Lister was right, and everything was new.

The thirty years that have elapsed have been years of revelation and advance in every direction. While the fundamental principle is the same, methods of procedure have undergone rapid development. Many agents have been ascertained to be efficient in dealing with these micro-organisms. First there is cleanliness secured by soap and water, while carbolic acid and mercury in dilute solutions are the substances most commonly, but by no means exclusively, employed in their destruction. These are used for the patient's skin and for the hands of the surgeon and his assistants and the nurses, while all instruments are prepared by so simple a method as boiling. Thus the patient, the surgeon, and his instruments are all protected, and the operation is rendered, as the term is, aseptic. The general results have far transcended the most sanguine expectations. It has been gradually disclosed to us that there is no organ anywhere in the body which is not amenable to operation, no part which is so constituted or endowed that it cannot, under the aseptic method, be treated by surgical interference. Whereas in the olden times no surgeon dreamt of operating on the abdominal organs, every one of them is now operated upon with a degree of success which steadily increases as experience accumulates and methods of procedure are perfected. Whereas to operate on a nerve was supposed to produce lock-jaw, nerves are now, if they have been divided and the parts they supply are paralysed, sewn together as a sailor would join a rope. If a part of a principal nerve has been destroyed, the lost piece can be replaced by the spinal cord of a rabbit, with the result that complete recovery may take place. Perhaps the most astonishing thing of all is that there have been several cases in which patients have recovered from wounds of the heart which have been sewn up.

The study of anatomy has now reached so advanced a stage that those who are to be operating surgeons are able to prepare for their future work by making themselves intimately acquainted not only with the structures of the body and with minute particulars concerning their component parts in their usual formation and relations, but with the deviations from the normal which, when complicated operations have to be

performed, might, if unknown, lead to failure or serious difficulty.

The safety with which surgical operations can now be performed has added greatly to our resources in another direction. There are numerous cases the exact nature of which it is impossible to ascertain by mere external examination. To make sure of the precise condition nothing less than direct investigation will suffice. As matters at present stand, the required information can be obtained by what is called an exploratory operation, during which the part concerned can be fully examined, so that the surgeon may know not only what can be done, but the exact manner in which it should be carried out.

A very important result of this development of surgery has been to produce a kind of secondary revolution in the practice of medicine, for the only remedy in numerous cases which are termed medical consists in mechanical interference—in other words, in a surgical operation. In many forms of that grave condition, peritonitis, in many forms of malignant disease of the stomach and intestines, in gall stones and stones of the kidney, in some diseases of the brain, in paralysis depending on growths which press upon the spinal cord, in perforation of ulcers of the small intestine in the course of enteric fever, and in numerous other instances, the surgeon can render the physician indispensable assistance.

Again, it has been found that many of the most dangerous or fatal diseases met with in surgery are in their simpler forms comparatively mild and easily treated. It is only when they are complicated by the action of bacteria, that is, when infection occurs, that they assume a grave character. Thus there are forms of mortification which, if the part attacked can be kept free from the influence of bacteria, in other words, if the aseptic condition can be maintained, remain confined almost entirely to the part originally involved, and they do not disturb the general health. But should bacteria be allowed to enter upon the scene the whole aspect of the case is forthwith changed. The process of mortification becomes active and rapidly extends; the life of all the blood is touched corruptibly, fever is developed, and frequently in a few days a fatal result is reached.

Furthermore, the revealing light which was thrown on the field of pathology by the discovery of Pasteur has enabled observers to discern the fact that many dread diseases—for instance, tetanus or lockjaw—are due entirely to infection by a particular micro-organism. Let such infection be prevented and these diseases disappear from among men.

A very remarkable event in the chain of progress was the discovery of anaesthetics or of those agents by which consciousness can be completely and safely suspended while operations are being performed. Here was the realization of a dream which poets and philosophers had dreamt for centuries. It took place in 1846, and was the work of an American dentist of the name of Morton. The agent he employed was ether. Shortly afterwards, Simpson of Edinburgh discovered chloroform. Since those early days the subject has, of course, been carefully investigated, and at the present time several agents are regularly employed, either alone or in combination, in such a way that the peculiarities and susceptibilities of different patients may be met with the least amount of danger and subsequent discomfort. These agents are in so much demand, for example, at St. Bartholomew's Hospital—whence I have lately emigrated—that no less than four anaesthetists are occupied exclusively in giving them. Last year upwards of 8,000 administrations took place in that institution. Under the system which has now been established and in skilful hands, the administration of these various agents is so free from risk that accidents scarcely ever occur. And to provide as far as possible for the safety of the public every student at the hospital attends compulsory lectures and classes on the subject, and himself, of course under the most careful supervision, gives anaesthetics to from thirty to eighty cases. Similar arrangements are in vogue at all the other hospitals. At the present time every surgical operation which entails more than slight and momentary suffering, whether it be the removal of a firm tooth or one of the most formidable and critical operations, anaesthetics are given as a matter of course, as they are also in the numerous examinations that are called for, especially in those in which it is necessary that the muscles should be all relaxed. Surely this discovery of anaesthetics was one of the most priceless gifts that have ever been conferred on the human race, particularly as it was made before the dawn of the new surgery, for without it obviously surgery in its recent developments would have remained an impossibility.

And now, Mr. Vice-Chancellor, while heartily thanking you for having spared time to pay me the honour of your presence to-day, and for many acts of courtesy and kindness which I have already received at your hands since I assumed my office under your jurisdiction, I will conclude by quoting words which were recently used by the Master of Trinity, and which appear to me to embody grand and exalted conceptions, and to be instinct with noble eloquence:

"Let us all, if we can, agree in this... that the noblest function of this ancient Mother of all is to be a source of light, to cherish and diffuse what has been revealed already; to believe and hope that there is always more on its way; to search the heavens for it before it has shone; to hail it with joy when at last it dawns; to diffuse it also without reserve to all; and, finally, to own with humblest reverence at each glorious discovery,

"Not unto us, O Lord, not unto us, but to Thy Name give the praise."

An Address ON

THE WORK AND PURPOSE OF THE ROYAL ARMY MEDICAL COLLEGE.

Delivered at the Opening of its Eighty-eighth Session.

By SIR WILLIAM TAYLOR, K.C.B.,
Director-General, Army Medical Staff.

GENTLEMEN,—It is a great pleasure to me to welcome you here to-day on the threshold of your life as army medical officers. My welcome is sincere and honest, for I feel assured that, in the selection you have made of a career, you have chosen wisely.

It is fitting, too, that your career in the army should begin in this College, for here, I believe, you will find that, though qualified to practise medicine, your education is not yet complete, but you have yet to be instructed in certain special branches of professional knowledge with a view to your being the better equipped for your military medical career, and which you might never have found it necessary to take up had you remained in civil life. Though you are now, each one of you, legally qualified to practise your profession in civil life—are fully equipped for such practice—there are still subjects you must master before you can be considered, or can consider yourselves, able to take up the varied and multifarious responsibilities of an officer of the Royal Army Medical Corps.

You are further to be congratulated on the fact that you are now enabled to study these other subjects here, in London, one of the greatest centres of instruction in matters bearing on medicine, surgery, and hygiene.

THE HISTORY OF THE ROYAL ARMY MEDICAL SCHOOL.

The recommendations of Mr. Brodrick's Reorganization Committee have, through the labours of the officers of the headquarters of the Army Medical Service and of the Advisory Board, been brought to a successful issue. You should know that a special Subcommittee of the Reorganization Committee dealt, in a somewhat exhaustive manner, with the details of a college scheme; and further experience of the methods which have been in operation for the early and advanced courses of study for army medical officers has enabled the Advisory Board to put forward proposals of a comprehensive nature.

The course of post-commission study, now happily provided for and established, renders the establishment of a military-medical teaching institution in the metropolis essential, and the location of the College in London entails the attendance of junior officers there.

It is unnecessary to enter fully into a consideration of all the conditions which the College is designed to meet, but it appears plain that the effects upon the efficiency of the medical services of the country should be valuable. It goes without saying that the closer the union between the civil and military members of the medical profession (and in the latter I include the auxiliary medical services) the better for the State and for the Royal Army Medical Corps. For it is not the least of the objects sought to be gained by the College that it should become a centre towards which, for imperial purposes, the